Abstract - ID: 2

Author(s):

William Stoops **(Presenter)**, University of Kentucky
Justin Strickland, University of Kentucky

Title: Relationship between loss aversion and delay discounting in an online drug-using sample

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Other Drug Category: Stimulants

Topic: Behavior

Other Topic: Behavioral Pharmacology

Aims: Loss aversion is the greater sensitivity to the prospect of a loss than an equivalent gain. Recent evidence suggests reduced loss aversion drug-using populations. However, the relationship between loss aversion and other common choice biases is unclear. This study evaluated the relationship between loss aversion and delay discounting in an online sample of cigarette and cocaine users.

Methods: Cocaine-using (n = 36), cigarette-using (n = 48), and control (n = 47) participants completed this study on Amazon.com's Mechanical Turk. Loss aversion for non-drug and drug commodities was evaluated using a within-subjects willingness-to-accept and purchase task. Delay discounting for money and drug commodities was examined using a 5-trial adjusting delay task. Loss aversion scores (?) were compared to normative values (i.e., ? = 2) by using 95% confidence intervals. One-way ANOVAs were used to compare discounting rates. The relationship between loss aversion and discounting were evaluated with bivariate correlations.

Results: Loss aversion for non-drug and drug commodities was significantly lower than normative values in the cigarette and cocaine groups. Group differences in monetary discounting rates were significant and robust, with greater discounting observed in the cigarette (p = .02) and cocaine (p < .01) groups relative to controls. Higher cigarette discounting was associated with lower loss aversion for non-drug (r = -.37) and cigarette (r = -.24) commodities.

Conclusions: These findings replicate previous reports of lower loss aversion and higher discounting rates among substance-using participants in an online sample. Modest correlations between loss aversion and delay discounting may indicate that these processes influence one another, but more work using other loss aversion and discounting measures (e.g., probability discounting) is needed to clarify the relationship among these behavioral mechanisms of choice.

Financial Support: Professional Development Funds from the University of Kentucky and NSF 1247392

Abstract - ID: 4

Author(s):

Jan Copeland **(Presenter)**, University of South Wales
Peter Gates, University of South Wales
Stephanie Todd, University of South Wales

Title: Survey of Australians' knowledge, perception and use of cannabis for medicinal purposes

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Epidemiology

Aims: As the US did over the past two decades, several State governments of Australia have recent made legislative changes allowing the legalization of cannabis for medicinal purposes without consultation of the Australian public. This project aims to provide the most detailed survey of the Australian publics' knowledge, perception and patterns of cannabis use for medicinal and nonmedicinal purposes in the context of these national and state policy changes.

Methods: An online self-complete survey was published using the 'Survey Monkey' service. Cannabis users and non-users aged over 18 years were recruited solely through the Facebook Advertisement Platform. Analysis to date was limited to simple ChiSquare comparisons and analysis of variance between users and non-users.

Results: Preliminary results from 963 completers showed 33% had used recreationally, 55% medicinally, and 12% were non-users. Of those who identified as medicinal users, only 12% reported no recreational use. Recreational users were younger than non-users while purely medicinal users were older and more likely to have a health condition. Medicinal users had more entrenched use and greater likelihood of police involvement. As frequency of medicinal use increased, belief in the evidence base and opposition of further clinical trials was more prevalent. Perceptions of policy and use of pharmaceutical preparations will be discussed.

Conclusions: There is a need to better communicate the current evidence for medicinal cannabis use and harm minimisation practices. The use of cannabis for purely medicinal reasons is uncommon, however; this important minority report particularly heavy cannabis use via methods which are otherwise thought to be a health risk.

Financial Support: The National Cannabis Prevention and Information Centre was supported by the Australian Government's Department of Health

Abstract - ID: 5

Author(s):

Silke Behrendt **(Presenter)**, Technische Universitaet Dresden
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Title: Prediction of alcohol use disorder onset by latent internalizing psychopathology risk profiles in adolescence and young adulthood

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Epidemiology

Aims: To investigate latent internalizing psychopathology risk profiles as predictors of DSM-IV AUD onset in adolescents and young adults.

Methods: Data from the prospective-longitudinal EDSP study (baseline age 14 – 24 years) were used. The study-design included up to three follow-up assessments in up to ten years. DSM-IV mental disorders were assessed with the DIA-X/M-CIDI. To investigate baseline MD risk-profiles and their prospective associations with AUD onset, latent class analysis with auxiliary outcome variables was applied in subjects without baseline AUD (N=1683).

Results: A four-class model fit the data best. Apart from a normative-male (45.9%) and a normative-female class (44.2%), it included a class (5.3%) with elevated probabilities for internalizing disorders, especially major depression, and a class (4.5%) with a high nicotine dependence probability. Compared to the normative-female class, all other classes were associated with a higher risk of subsequent alcohol dependence onset ($p < 0 .05$). The male-normative class predicted alcohol abuse onset (OR: 4.9, 95% CI: 3.5 – 6.8).

Conclusions: An internalizing vulnerability may constitute a pathway to alcohol dependence onset in adolescence and young adults. The differences observed between the subgroups at risk of AUD indicate a need of adapted preventive and intervention measures.

Financial Support: This work is part of the Early Developmental Stages of Psychopathology (EDSP) Study and is funded by the German Federal Ministry of Education and Research (BMBF) project no. 01EB9405/6, 01 EB 9901/6, EB01016200, 01EB0140 and 01EB0440. Part of the field work and analyses were also additionally supported by grants of the Deutsche Forschungsgemeinschaft (DFG) LA1148/1-1, WI2246/1-1, WI 709/7-1 and WI 709/8-1.

Abstract - ID: 6

Author(s):

Richard Miech **(Presenter)**, University of Michigan, Institute for Social Research
Megan Patrick, University of Michigan
Patrick O'Malley, University of Michigan
Lloyd Johnston , University of Michigan

Title: Has college put students at higher risk for marijuana initiation in recent years?

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Epidemiology

Aims: To examine a potential increase in the level of marijuana initiation among U.S. college students as compared to their age-peers not in college before and after 2013, a watershed year for increasing tolerance of marijuana use in the U.S.

Methods: Data come from *Monitoring the Future*, which since 1977 has followed longitudinal panels drawn from nationally-representative, baseline samples of 12th grade students. The analyses focus on panel members age 19-22 who had never used marijuana by 12th grade.

Results: College as a risk factor for marijuana initiation increased significantly since 2013. The increased probability of past-year marijuana use for those enrolled v. not enrolled in college was 51% in 2015, 41% in 2014, 31% in 2013, and averaged 17-22% from 2012-1977, among youth who had never used marijuana by 12th grade.

Conclusions: College has emerged as a substantial risk factor for marijuana initiation since 2013. College students are in position to usher in new increases in population marijuana use in the coming years unless colleges soon develop and implement new policies/interventions to curb marijuana use.

Financial Support: NIDA R01 001411 (Johnston, PI)

Abstract - ID: 8

Author(s):

Croff Raina **(Presenter)**, Oregon Health and Science University
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Kelly Alanis-Hirsch, Services Effectiveness Research Program
James Ford,II, University of Wisconsin-Madison
Dennis McCarty, Oregon Health and Science University
Laura Schmidt, UCSF

Title: Overcoming barriers to adopting and implementing medication-assisted addiction treatment: The medication research partnership

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Medication Assisted Therapy

Topic: Treatment

Aims: Aims. Medication-Assisted Treatment (MAT) includes a growing number of clinically effective medications for substance use disorder, yet there are significant barriers to adopting and implementing MAT in routine clinical practice. The Medication Research Partnership (MRP) was a successful effort to promote adoption of MAT for opioid and alcohol use disorders in nine substance abuse treatment centers and a commercial health plan.

Methods: Methods. Using coaching, planned change cycles and other technical assistance, the MRP changed organizational practice and culture to improve patient access to MAT. This qualitative analysis of interviews (n = 39) conducted with change leaders at baseline and at the end/beginning of 6 month change cycles explains how treatment centers overcame barriers to the adoption, implementation and sustainability of MAT.

Results: Results. Unique barriers to adopting, implementing and sustaining MAT can be overcome through incremental testing of organizational change strategies, accompanied by expert coaching and a learning community of like-minded professionals. The greatest challenges lie in overcoming abstinence-only philosophies, establishing a business case for MAT, and working with payers and pharmaceutical representatives.

Conclusions: Conclusion. Adoption of any new innovation involves uncertainty but data suggest that the MRP made MAT adoption less risky by approaching change in small, incremental ways that were relevant to each stage of the innovation process, and with the support of a learning community.

Financial Support: An award from the National Institute on Drug Abuse (R01-DA029716) supported the study design, implementation, and analysis.

Abstract - ID: 9

Author(s):

Emily Stockings **(Presenter)**, University of South Wales
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Kate Bartlem, University of Newcastle, Australia
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Rebecca Hodder, Hunter New England Local Health District
Melanie Kingsland, Hunter New England Local Health District
John Wiggers, Hunter New England Local Health District

Title: Multi-setting community-based interventions to reduce population level harms arising from alcohol and other drug use

Abstract Category: Literature Review

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Alcohol and illicit drugs (e.g. cannabis, opioids, amphetamines, or cocaine)

Topic: Prevention

Aims: To examine the efficacy of multi-setting community-based interventions in reducing population-level harms arising from alcohol and other drug (AOD) use.

Methods: A systematic review of electronic databases CENTRAL, Embase, Medline, Medline in Process, and PyscINFO from database inception to 16 July, 2016. Studies were required to have a parallel comparison group, implement interventions in two or more community settings, and collect data on AOD use or harms (e.g. road traffic accidents, hospital admissions).

Results: A total of 22 trials from 59 publications were included in the review (*n* = 247,360 participants). Most studies were conducted in the United States, using a cluster-randomised design. The intervention components lasted 30 months on average, and most targeted alcohol use and harms, with implementation occurring in schools, home, community organisations, law enforcement agencies, on and off-premise alcohol outlets, healthcare settings and sporting clubs. The 22 identified trials found limited impact on prevalence of AOD use. There was no impact on past month alcohol use (Relative Risk [RR]=0.95, 95% Confidence interval [CI]: 0.89-1.02), binge drinking (RR=0.97, 95%CI: 0.89-1.06) or 12 month marijuana use (RR=0.98, 95%CI: 0.86-1.11). There was some evidence to suggest that reductions in risky drinking may have occurred, however this effect was borderline significant (RR=0.77, 95%CI: 0.60 to 1.00). There was some evidence of a reduction in AOD-related assault rates and arrests, however there was no effect on delinquency (RR=0.99, 95%CI: 0.88-1.11). Two studies reported a reduction in AOD-related traffic accidents in the short term, but longer term evaluations found no effect.

Conclusions: There was little impact on AOD use, and some evidence for reduction in AOD-related harms, however evaluation was difficult as reporting was suboptimal. Future multi-setting community-based interventions should seek to maximise their effects through the use of evidence-based interventions, the use of multiple interventions strategies, and ensuring implementation fidelity is high.

Financial Support: The Alcohol and Drug Foundation (ADF); The Australian National Health and Medical Research Council (NHMRC).

Abstract - ID: 10

Author(s):

Einat Peles **(Presenter)**, Tel Aviv University
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Title: Perceived stress among methadone maintenance treatment patients - a cross-sectional study

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: To study the prevalence of high perceived stress and characterize its risk factors among methadone maintenance treatment (MMT) patients, as stress dysregulation is known to be normalized during MMT.

Methods: Random sample of 107 of the current (January 2015) 326 MMT patients were studied using a Perceived Stress Scale questionnaire. History of adverse events, ASI questionnaire, 21-Ham-D rating scale and urine test results were taken.

Results:

Of the 107 patients, 25% were females. Mean age of opiate use onset was 22.1±7.2, at admission to MMT 41.2±11.0, and current age 50.4±10.8. Mean stress score was 17.6±9.3 (range 0-38), and a high stress level (scored >18) was found among 48.6%. Higher scores were found among the 31 benzodiazepine abusers (24.0±9.1 vs. 15.0±8.1, $p < 0.0005$), and 19 cocaine abusers (22.4±9.5 vs. 16.5±9.0, $p=0.01$). Scores were higher among 77 patients living alone (18.9±9.2 vs. 14.2±9.0, $p=0.02$), among 23 patients with history of self-harm (23.0±7.9 vs. 16.3±9.1, $F=10.3$, $p=0.002$), 22 patients with history of suicide attempts (23.8±7.9 vs. 16.1±9.0, $p < 0.0005$) and 22 depressed (Hamilton >18) patients (23.6±8.9 vs. 16.0±8.9, $p=0.001$). Scores did not relate to gender, age (admission or current) and duration in treatment. Logistic regression for high perceived stressed (scored>18) found benzodiazepine abuse (OR= 4.1, 95%CI 1.4-12.0), history of self-harm (OR= 5.5, 95%CI 1.6-18.8) suicide attempts (OR= 3.8, 95%CI 1.1-13.2) and depressed (OR= 3.7, 95%CI 1.1-12.0) to characterize high perceived stressed patients. Perceived stress score was also related to number of current drug abuse and number of adverse events (Corrected mode $F=4.6$, $p < 0.0005$, Drug abuse $F(d.f=2)=7.5$, $p=0.001$; Adverse events $F(d.f=2)=4.3$, $p=0.02$). Specifically, the highest score was among patients with more than 2 adverse events and more than 2 drugs abuse and the lowest score was among those with no adverse events and no drug usage.

Conclusions: Half of the MMT patients presented high-perceived stress level which was related to their history of adverse events and current drug abuse. The patients' heterogeneity, which most likely precedes treatment admission, may explain the absence of relation between stress level and duration in treatment. A prospective study is needed in order to measure perceived stress changes (reduction) over treatment (parallel to HPA axis normalization).

Financial Support: Adelson Family Foundation

Abstract - ID: 11

Author(s):

Justin Strickland **(Presenter)**, University of Kentucky
Joshua Beckmann, University of Kentucky
Craig Rush, University of Kentucky
William Stoops, University of Kentucky

Title: Loss aversion in cocaine users: Role of risk and commodity type

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Behavior

Aims: Numerous studies in behavioral economics have demonstrated that individuals are more sensitive to the prospect of a loss than a gain (i.e., loss aversion). Although loss aversion has been well described in "healthy" populations, little research exists in individuals with substance use disorders. The purpose of this study was to comprehensively evaluate loss aversion in cocaine users.

Methods: Current cocaine users (N = 38; 42% female) participated in this within-subjects laboratory study. Participants completed a battery of tasks designed to assess loss aversion for drug and non-drug commodities under varying risk conditions. Loss aversion scores (?) were compared to normative values (i.e., ? = 2) by using 95% confidence intervals. Linear mixed-effects models were used to determine the influence of risk and commodity type. Cocaine demand was also determined using a cocaine purchase task and compared to loss aversion outcomes using linear regression.

Results: Compared to normative loss aversion coefficient values a large effect size decrease in loss aversion was observed in cocaine users (? ? 1). These values were consistent across drug and non-drug commodities as well as under certain and risky conditions. Hypothetical demand for cocaine was well explained by demand models and more intense (r = .38) and less elastic (r = -.45) cocaine demand was associated with greater loss aversion for cocaine. These outcomes did not differ between men and women.

Conclusions: These data represent a systematic study of loss aversion in a cocaine-using population and indicate that decreased loss aversion is associated with a history of cocaine use. Future studies should determine whether manipulation of loss aversion impacts drug use to evaluate how this phenomenon may contribute to intervention efforts.

Financial Support: NIDA R21DA035376 and NSF 1247392.

Abstract - ID: 12

Author(s):

Elizabeth Aston **(Presenter)**, Center for Alcohol and Addiction Studies, Brown University School of Public Health
Samantha Farris, Warren Alpert Medical School
James MacKillop, McMaster University, Peter Boris Centre for Addictions Research
Jane Metrik, Warren Alpert Medical School

Title: Latent factor structure of a behavioral economic marijuana demand curve

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Behavior

Aims: Drug demand, or relative value, can be assessed via analysis of behavioral economic purchase task performance. Five demand indices are typically obtained from drug purchase tasks. The goal of this research was to determine whether metrics of marijuana reinforcement from a marijuana purchase task (MPT) exhibit a latent factor structure that efficiently characterizes marijuana demand.

Methods: Participants (*n*=99; 37.4% female, 71.5% marijuana use days, 15.2% cannabis dependent) were regular marijuana users who completed study assessments, including the MPT, during a baseline session. Principal components analysis was used to examine the latent structure underlying MPT indices. Concurrent validity was assessed via examination of relationships between latent factors and marijuana use, past quit attempts, and marijuana expectancies.

Results: A two-factor solution was confirmed as the best fitting structure, accounting for 88.5% of the overall variance. Factor 1 (66.8% variance) reflected "Persistence", indicating sensitivity to escalating marijuana price, which comprised four MPT indices (elasticity, O_{max}, P_{max}, and breakpoint). Factor 2 (22.7% variance) reflected "Amplitude", indicating the amount consumed at unrestricted price (intensity). Persistence factor scores were associated with fewer past marijuana quit attempts and lower expectancies of negative use outcomes. Amplitude factor scores were associated with more frequent use, dependence symptoms, craving severity, and positive marijuana outcome expectancies.

Conclusions: Consistent with research on alcohol and cigarette purchase tasks, the MPT can be characterized with a latent two-factor structure. Thus, demand for marijuana appears to encompass distinct dimensions of price-sensitivity and volumetric consumption, with differential relations to other aspects of marijuana motivation.

Financial Support: Financial Support: K01DA039311 (Aston), T32HL076134 (Farris), R03DA27484 (Metrik, Knopik), Peter Boris Chair in Addictions Research (MacKillop)

Abstract - ID: 13

Author(s):

David Otiashvili **(Presenter)**, Addiction Research Center
Irma Kirtadze, Addiction Research Center
Dessa Bergen-Cico, Syracuse University, Department of Public Health

Title: Exploring the new phenomena of home-made extraction and injection of ephedra plant product in Georgia

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Behavior

Aims: Since the end of 2015 reports by service providers have indicated a new trend in kitchen (homemade) production of an injection drug prepared from an ephedrine-containing conifer bush that is indigenous to the region. The aim of this report is to describe an emerging new homemade psychoactive drug "conifer vint" synthesized from the ephedra plant, and the drug consumption methods associated with its' use in Eurasia; and the global implications for this emerging trend.

Methods: Qualitative and quantitative data were collected and analyzed from focus groups conducted with people (n=16) self-identified as injection drug users (IDU's) who reported at least one incidence of ephedra preparation injection during the previous 30-days.

Results: Participants were male, mean age of 43 and mean length of drug use of 22.2 years. Participants identified "conifer vint" as the most frequently injected drug during the 30-day period preceding the focus group. The source plant of the drug identified, as "conifer vint" is plant based ephedra extracted from a common conifer bush that grows wild and is pervasive in the region. The process of synthesis resembles the production of "vint" (conversion of ephedrine to methamphetamine by reduction) and involves several legal and widely available chemical precursors. The final product of the synthesis is a strong injectable CNS stimulant solution.

Conclusions: The production and use of raw ephedra from a pervasive indigenous plant reflect a new trend in psychoactive drug preparation and use that warrants international attention and has global implications for emerging trends in drug use.

Financial Support: None

Abstract - ID: 14

Author(s):

Sharon Walsh **(Presenter)**, University of Kentucky
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Title: Buprenorphine weekly depot provides rapid and sustained hydromorphone blockade in individuals with opioid use disorder: A phase II study

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: To evaluate the efficacy of a novel, weekly, subcutaneous buprenorphine depot, CAM2038 (q1w), to block the subjective effects of hydromorphone and suppress opioid withdrawal

Methods: Individuals (n=47) with moderate-to-severe opioid use disorder who were non-treatment seeking were randomized and completed this inpatient, double blind study. They were first stabilized on morphine (30 mg, p.o. qid,). Five 3-day test sessions evaluated the response to i.m. hydromorphone (0, 6 & 18 mg); subjective and physiological measures were collected. After the first session (i.e., qualification; Days -3 to -1), morphine was halted and participants were randomized to two consecutive doses of CAM2038 (Days 0 & 7) at 24 (n=22) or 32 mg (n=25). Four 3-day sessions were conducted after randomization on Days 1-3, 4-6, 8-10, and 11-13.

Results: Weekly CAM2038 24 and 32 mg doses produced robust blockade of hydromorphone effects and suppression of opioid withdrawal from initiation and across the two treatment weeks, meeting primary and secondary outcomes per the *a priori* specified criteria. Measured pharmacokinetics showed dose dependent sustained release with a half-life of 4-5 days. An accumulation of buprenorphine plasma concentrations was observed between weeks 1 and 2.

Conclusions: Initiation of treatment with weekly CAM2038 produced rapid and sustained opioid blockade and withdrawal suppression, and was safely tolerated. This sustained release formulation should obviate the risk of misuse and diversion of daily buprenorphine while retaining its therapeutic benefits.

Financial Support: This study was supported by research contracts awarded to SLW, SDC and BV from Braeburn Pharmaceuticals.

Abstract - ID: 15

Author(s):

Paul Harrell **(Presenter)**, Eastern Virginia Medical School
Gwen Quinn, Moffitt Cancer Center
Laurel Brockenberry, Eastern Virginia Medical School
Thomas Brandon, Moffitt Cancer Center

Title: E-cigarette expectancy measure development

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Prevention

Aims: The impact of electronic nicotine delivery systems ("ecigs") on population health is likely to depend on whether the harm reduction provided by smokers switching to ecigs is outweighed by the new harms from non-users beginning ecig use. Thus, it is vital to understand ecig use behavior. Some prior quantitative research using modified cigarette smoking expectancy measures found associations of ecig expectancies with behavior. However, it is unknown if cigarette expectancy measures are appropriate for ecig use. We conducted a series of focus groups and individual interviews to address these concerns.

Methods: Young adults were recruited via local advertising. Eligible participants were between 18 and 28 years old (M=20.8, SD=2.4) and met criteria for one of four groups (non-users, exclusive vapers, exclusive smokers, and dual users). Twelve focus groups and two individual interviews were conducted between November, 2015 and May, 2016 with a total of 49 participants. The sample was racially diverse (e.g., 44.9% White, 36.7% African-American). Sessions assessed beliefs about immediate, short-term, and long-term ecig effects, with additional prompts to ensure discussion of expectancies previously found relevant for cigarettes. Interviews were transcribed and analyzed using the constant comparative method.

Results: Three new themes (Convenience, Secondhand Effects, Influence on Others) were identified. Several themes previously identified as important for cigarettes also appeared important for ecigs, but with notable modifications. In regards to Stimulation and Weight Control, participants felt that ecigs led to substantially less of an effect than cigarette smoking. However, participants felt that Taste and Sensorimotor effects ("clouds", "O's") were more important with ecigs than with cigarette smoking. Finally, in some domains (e.g., Health Risks, Addiction), there was confusion or uncertainty about the effects of ecigs.

Conclusions: Young adults report some similar themes to cigarette smoking, but with some important distinctions. This information will be used in collaboration with an expert panel to devise an e-cigarette expectancy measure, which will be administered to a large sample of young adults. Preliminary survey results will be reported on at the meeting.

Financial Support: Research reported in this submission was supported by R03CA195124 (PI: Harrell) from National Cancer Institute and FDA Center for Tobacco Products (CTP). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug administration.

Abstract - ID: 16

Author(s):

Joseph Palamar **(Presenter)**, New York University School of Medicine
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Monica Barratt, National Drug and Alcohol Research Centre
Jason Ferris, University of Queensland
Katherine Keyes, Columbia University Mailman School of Public Health
Adam Winstock, Global Drug Survey Ltd.

Title: Trends in ecstasy use among nightclub attendees in the United States and United Kingdom, 2013-2015

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Club/Designer Drugs

Topic: Epidemiology

Aims: MDMA (ecstasy) has been one of the most prevalent drugs in the nightclub scene for decades. However, purity and form of the drug has been shifting and ecstasy-related poisonings and deaths have recently increased in the US and in the UK. Epidemiology studies are needed to examine trends in use, particularly since powder ecstasy (commonly referred to as Molly in the US) has gained popularity. We aimed to examine trends in ecstasy use in the US and in the UK.

Methods: We examined data from nightclub attendees in three annual self-selected samples of the Global Drug Survey (2013-2015) residing in the US (N=7,543) and in the UK (N=13,830). We compared self-reported prevalence of ecstasy use, form of the drug used, perceived quality and purity, and co-use of other drugs across years, and between the US and the UK.

Results: Self-reported past-year use increased between 2013 and 2015 in both the US (from 36% to 48%) and in the UK (from 60% to 74%), and prevalence of use of pills and powder increased. Among users, pill use increased in the US, and powder-only use decreased in the US and in the UK. Perception of high quality pills and powder increased, perception of high purity powder increased, and average number of pills used per session decreased. Co-use with alcohol and cocaine also increased across years.

Conclusions: It is important to track trends in ecstasy use as prevalence, drug form, and co-use of other drugs continues to shift, potentially placing users at risk. Results can inform prevention and harm reduction efforts.

Financial Support: This analysis was funded the National Institute on Drug Abuse (K01DA038800)

Abstract - ID: 17

Author(s):

Perrine Roux **(Presenter)**, INSERM
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Title: Acceptability of intravenous buprenorphine as a treatment for opioid dependence: Results from a community-based survey among people who inject drugs with high-risk behaviors in France

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Injectable opioids are an interesting option for people who inject drugs (PWID) who do not respond to oral Opioid Maintenance Treatment. To date, intravenous (IV) buprenorphine - a safer drug than full-opioid agonists in terms of overdose risk - has never been tested in a clinical trial for opioid dependence. This survey was designed to better understand the eligibility profile of PWID for IV buprenorphine, and their acceptability of it.

Methods: This survey consisted in a cross-sectional questionnaire completed either through face-to-face interviews or online. Among the 557 PWID enrolled, we selected respondents who were eligible for IV opioid treatment and studied both their socio-demographic and behavioral profile and their acceptability of IV buprenorphine treatment.

Results: Among the selected 371 participants, with respect to opioid use, 58% mainly injected buprenorphine, 15% heroin, 17% morphine sulfate and 10% other opioids. Seventy eight percent of the sample reported that they would be willing to receive IV buprenorphine. Multivariate analysis showed that those who reported having more than 5 injection-related complications and those who injected buprenorphine or heroin were more likely to accept IV buprenorphine.

Conclusions: PWID acceptability for IV buprenorphine as a treatment was high. The results of this preliminary study provide useful information for the development of a clinical trial for IV buprenorphine treatment. In addition, they show that buprenorphine may be unacceptable to some PWID, such as those injecting morphine sulfate, but acceptable to heroin injectors and to those with multiple injection-related complications.

Financial Support: Mildeca

Abstract - ID: 18

Author(s):

Qiana Brown **(Presenter)**, Columbia University Mailman School of Public Health
Aaron Sarvet, Columbia University
Deborah Hasin, Columbia University

Title: Prenatal marijuana use, psychiatric comorbidity, and vulnerable populations in the U.S.

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Epidemiology

Aims: Prenatal marijuana use is associated with poor birth outcomes. Psychiatric comorbidity and certain demographic characteristics may increase risk for use. Therefore, we examined psychiatric and demographic correlates of marijuana use among pregnant women.

Methods: Women age 18-44 (N=1,316) were sampled from the National Epidemiologic Survey on Alcohol and Related Conditions-III (2012-2013). Weighted logistic regressions were used to test the association between past year psychiatric comorbidity (DSM-5 mood, anxiety, personality disorders), demographic characteristics, and past year marijuana use. Models adjusted for race/ethnicity, marital status, age, poverty, and education.

Results: The prevalence of marijuana use among pregnant women was 9.84% (standard error=0.88). Axis 1 disorders (versus no disorder) were associated with significantly higher odds of marijuana use: Any anxiety disorder (odds ratio [OR] = 2.3, $p \leq 0.001$), any mood disorder (OR= 2.4, $p \leq 0.01$), antisocial personality disorder (OR= 3.4, $p \leq 0.01$), borderline personality disorder (OR= 5.3, $p \leq 0.0001$). Major Depressive Disorder was not significant (OR= 1.7, p=0.09). Additionally, the odds of marijuana use were higher among pregnant women who were not married (OR= 2.4, p=0.001), and lived below the federal poverty level versus 200% above it (OR= 1.8, $p < 0 .05$).

Conclusions: Psychiatric comorbidity, poverty, and marital status may present unique vulnerability to marijuana use among pregnant women. Given the American College of Obstetricians and Gynecologists recommendation that pregnant women (and women contemplating pregnancy) abstain from marijuana use, prevention efforts should be multi-tiered to include universal prevention as well as selective or indicated prevention focused on pregnant women with psychiatric comorbidity and those from vulnerable demographic groups.

Financial Support: NIDA grant T32DA031099 (PI, Hasin) and the New York State Psychiatric Institute.

Abstract - ID: 19

Author(s):

Steven Kurtz **(Presenter)**, Nova Southeastern University
Mance Buttram, Nova Southeastern University

Title: Systematic surveillance of illicitly manufactured fentanyl cases initiated by law enforcement

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: The epidemic of prescription opioid addiction and overdose in the U.S. has led to a range of controls over prescription opioid prescribing and distribution. As the drug needs of those suffering addiction have become more expensive, the epidemic has increasingly shifted to include heroin. Most recently, there have been sudden increases in overdose emergencies and deaths due to illicitly manufactured fentanyl (IMF) and fentanyl analogues. We analyzed data from the Drug Diversion Program of the Researched Abuse, Diversion and Addiction-Related Surveillance (RADARS®) System, which collects timely product- and geographically-specific data.

Methods: IMF case report data were drawn from a quarterly survey of prescription drug diversion completed by a US national sample of law enforcement and regulatory agencies that engage in drug diversion investigations, covering the period January 1, 2013 through September 30, 2016.

Results: The RADARS System Drug Diversion Program detected the first signal of IMF in Ohio in the 3d quarter of 2014. By the 3d quarter of 2016, IMF reports had been received from 29 states, primarily along the east and west coasts and the Canadian border. In many cases, these high potency synthetic products have been used as additives to heroin, cocaine and synthetic cannabis, frequently without the buyer's knowledge. IMF has also been discovered in counterfeit prescription medications, primarily opioids and benzodiazepines. As of the 3d quarter 2016, counterfeit opioid and benzodiazepine medications containing IMF had been reported in most Canadian provinces and in ten US states. Public health warnings were posted in Canada beginning in June 2013 and in the US in March 2015.

Conclusions: Law enforcement reports of prescription drug diversion and illicit drug seizures are an early warning system for public health risks related to drug trafficking, abuse, and health consequences. The systematic collection of these surveillance data in the U.S. signaled the entry of IMF into the US approximately six months before public health notices were issued. As prescription and illicit drug abuse patterns appear to be increasingly intertwined, systematic surveillance systems, drug control polices, prevention initiatives, and international cooperative efforts will need to adapt.

Financial Support: The Drug Diversion Program conducted by Nova Southeastern University's Center for Applied Research on Substance Use and Health Disparities (ARSH) is supported by the RADARS System, which in turn is supported by subscriptions from pharmaceutical manufacturers for surveillance, research and reporting services. RADARS System is the property of Denver Health and Hospital Authority, a political subdivision of the State of Colorado. Denver Health retains exclusive ownership of all data, databases and systems. Subscribers do not participate in data collection or analysis, nor do they have access to the raw data.

Abstract - ID: 20

Author(s):

Adam Carrico **(Presenter)**, University of Miami
Deborah Jones, University of Miami
Violeta Rodriguez, University of Miami
Mahendra Kumar, University of Miami

Title: Short circuit: Disaggregation of adrenocorticotropic hormone and cortisol levels in HIV-positive methamphetamine users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: AIDS/Immune

Aims: Methamphetamine (Meth) and HIV are associated with dysregulated hypothalamic-pituitary-adrenal (HPA) axis responses, but few studies have examined their combined effects.

Methods: This study examined whether 52 HIV-negative and 94 HIV-positive, meth-using men (Meth+HIV- and Meth+HIV+) displayed perturbations in the association between serum adrenocorticotropic hormone (ACTH) and cortisol relative to 94 HIV-negative, non-meth-using men (Meth-HIV-). Linear regression analyses adjusted for age, ethnicity, body mass index, and number of comorbid sydnemic conditions (i.e., depression, sleep disturbance, polysubstance use, and childhood physical or sexual abuse).

Results: There were no group differences in prevailing ACTH ($F(2, 239) = 0.52$, $p > .05$) or cortisol ($F(2, 239) = 2.06$, $p > .05$) levels. However, the association between ACTH and cortisol was moderated by Meth+HIV+ group (Beta = -0.22, $p < .05$). At one standard deviation lower ACTH, Meth+HIV+ participants displayed 39% higher cortisol levels than Meth-HIV- participants. The Meth+HIV- group did not moderate the association of ACTH with cortisol levels (Beta = -0.07, $p > .05$). Compared to Meth-HIV- participants ($M = 18.07$, $SD = 12.34$), insulin levels were significantly lower in the Meth+HIV+ ($M = 14.18$, $SD = 13.05$) and Meth+HIV- ($M = 12.31$, $SD = 13.83$) groups ($F(2, 345) = 5.28$, $p < .01$) with no concurrent group differences in glucose ($F(2, 346) = 0.32$, $p > .05$).

Conclusions: Disaggregation of the functional relationship between ACTH and cortisol in HIV-positive methamphetamine users does not appear to be attributable to poorer glycemic metabolic functioning. Other mechanisms could explain difficulties with downregulating cortisol production.

Financial Support: R01-DA031201 (Kumar, PI)

Abstract - ID: 21

Author(s):

Timothy Roehrs **(Presenter)**, Henry Ford Health System
Thomas Roth, Henry Ford Health System

Title: Markers for hypnotic abuse liability: Cortisol in insomnia?

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Sedative-Hypnotics

Topic: Dependence

Aims: It is hypothesized that stress increases vulnerability to drug abuse. Some insomniacs show hyperarousal by elevated sleep latency on the Multiple Sleep Latency Test (MSLT) and elevated diurnal NE concurrent with the MSLT elevation. Studies have reported cortisol elevation before sleep in insomnia vs controls. We sought to determine whether cortisol levels, both diurnal and pre-sleep, would vary as a function of MSLT and potentially serve as markers for hypnotic abuse liability.

Methods: DSM-IVR diagnosed insomniacs (N=110), aged 32-65 yrs, having no other sleep disorder, unstable medial or psychiatric diseases or drug dependency served. On a screening MSLT 26 had MSLTs $\leq$ 10 min (Lo) and 44 $\geq$15 min (Hi). Participants took 10mg zolpidem or placebo, double-blind, nightly for 12 months. In months 1, 4, 8 and 12, urine was collected over 24 hrs in 8 hr- aliquots and assayed for cortisol (Ward Laboratories, Ann Arbor, MI). Saliva samples were collected 35 min before bedtime and drug administration in month 1 and 8, analyzed for cortisol levels (Salimetrics, State College, PA), and compared to a control group (N=41).

Results: Pre-sleep salivary cortisol was higher in insomniacs than controls (2.23+/-2.12 vs 1.49+/-0.91 ug/L, p

Conclusions: Hyperarousal (MSLT) is associated with higher daytime urinary cortisol levels, but is not affected by zolpidem. In contrast, pre-sleep salivary cortisol does not vary as a function of MSLT, but is reduced by zolpidem. This suggests cortisol elevation has both a state and trait etiology and trait cortisol may be a potential hypnotic abuse marker.

Financial Support: NIDA, grant#: R01DA17355 awarded to Dr. Roehrs.

Abstract - ID: 22

Author(s):

Sara Weidberg **(Presenter)**, University of Oviedo
Alba González-Roz, University of Oviedo, Addictive Behaviors Group
Ángel García-Pérez, University of Oviedo
Irene Pericot, University of Vermont
Roberto Secades Villa, University of Oviedo

Title: Effects of smoking abstinence on delay discounting in smokers with depression

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: Previous research has shown that depressive symptoms and high delay discounting (DD) rates are associated with smoking. Few studies have assessed DD longitudinally as a function of changes in smoking status, but most of them have relied on follow-ups shorter than one month and no study to date has addressed this issue among smokers with depression. We present preliminary results on DD changes as a function of smoking status at the end-of-treatment and at 3-month follow-up among this population. Our hypothesis was that DD rates would decrease at medium-term (3-month follow-up).

Methods: 38 smokers with depression received cognitive behavioral treatment combined with behavioral activation. Depression was assessed with the SCID-I of the DSM-IV-TR and with the BDI-II. Participants completed a computerized version of a DD task at intake, end-of-treatment and at 3-month follow-up. Mixed between-within subjects ANOVAs explored the impact of smoking status on DD across two time periods (intake and end-of-treatment/3-month follow-up) while controlling BDI-II score.

Results: There was no significant effect of time [Wilks' Lambda = .978, F (1, 35) = 0.788, p = .381] and smoking status [F (1, 35) = 1.565, *p* = .219] from intake to end-of-treatment. There was a significant effect of time from intake to 3-month follow-up in the whole sample [Wilks' Lambda = .875, F (1, 35) = 5.019, *p* = .032, partial eta squared = .125]. Specifically, DD rates decreased from intake (*M =< /em> -2.0117, SD = 1.1337) to 3-month follow-up (M =< /em> -2.3914, SD = 1.0301). There was no effect of smoking status at 3-month follow-up [F (1, 35) = 0.017, p = .897]. **Conclusions:** The study makes a novel contribution to the DD literature by showing DD reductions following medium-term smoking abstinence among treatment seeking smokers with depression. This finding supports evidence of DD as a state-like construct. **Financial Support:** Spanish Ministry of Economy and Competitiveness (MINECO16-PSI2015-64371-P)/ Council for Economy and Work (GRUPIN14-047). Abstract - ID: 23 **Author(s):** Timothy Roehrs, Henry Ford Health System*
*Thomas Roth **(Presenter)**, Henry Ford Health System **Title:** Prophylactic sleep improvement reduces post-surgery pain and opiate use **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Dependence **Aims:** Suboptimal management of postoperative pain increases the risk of transition to chronic pain and opiate abuse. It is well recognized that pain is disruptive of sleep, but it is not fully appreciated that the sleep pain relation is bidirectional. We showed increased sleep in insufficient sleeping volunteers reduced pain sensitivity. Thus, we hypothesized that post-surgery pain and opiate use would be reduced in joint replacement patients with insufficient sleep who increased bedtime a week before surgery vs those remaining on their habitual sleep schedule. **Methods:** Eighteen patients scheduled for joint replacement (10 knee, 8 hip) reporting < 7 hrs nightly sleep were randomized to an increased time-in-bed (EXT) or maintenance of their habitual (HAB) sleep schedule during the week before surgery. Compliance was monitored by wrist actigraphy. Outcomes were the post-surgery daily dose of opiates (converted to morphine mg equivalents) and the daily pain ratings (collected 3-4 times across the day) on a 0-10 rating scale (0=no pain - 10= worst pain experienced) over the 3-4 day inpatient recovery.**Results:** On a diary before the pre-surgery sleep manipulation there were no significant differences in reported nightly sleep times between those randomized to the EXT group 6.0 (+/-0.78) hrs and the HAB group 6.5 (+/-0.50) hrs. During the one week pre-surgery sleep manipulation, compared to the HAB group, the EXT group spent significantly more time in bed nightly (8.0 vs 6.9 hrs, p**Conclusions:** A pre-surgery extended time-in-bed and associated increase of sleep time in short-sleeping patients undergoing joint replacement results in reduced post-surgery pain ratings and opiate use **Financial Support:** The Fund for Henry Ford Hospital awarded to Dr. Roehrs. Abstract - ID: 24 **Author(s):** Tess Kilwein **(Presenter)**, University of Wyoming*
*Alison Looby, University of Wyoming **Title:** Motives, consequences, and personality factors associated with nonmedical fentanyl use **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Epidemiology **Aims:** Fentanyl, a pain management analgesic, has been increasingly used for nonmedical purposes (i.e., without a prescription or in ways other than prescribed) and can result in a number of negative psychological and physical health consequences. This research examined factors associated with nonmedical Fentanyl use to better understand motives, consequences, and personality constructs associated with use.**Methods:** Individuals with (n=118) and without (n=316) lifetime history of nonmedical Fentanyl use were recruited to complete an online survey. Participants were 67% women from 34 different states ranging in age from 18 to 67 (M=24.24, SD=8.45). **Results:** The most common motivations for use included to relieve stress/relax (64.4%), feel high (63.6%**),** and enjoy the feeling **(**55.9%) while the most common consequences included increased tolerance (39.8%), withdrawal (36.4%), and dizziness (33.1%). Multivariate tests revealed differences in personality between user groups (F(1,395)=44.43, pPES)=.310), with users obtaining higher scores than nonusers on neuroticism (F(1,398)=28.27, p PES=.066) and psychoticism (F(1,398)=168.59, pPES=.298) on the Revised Eysenck Personality Questionnaire—Abbreviated Form. Users also obtained higher depressive symptom scores (*F*(1,400)=84.42, *p*PES=.174) than nonusers on the Center for Epidemiologic Studies Depression Scale, and higher levels of impulsivity on all UPPS+P Impulsive Behaviors Scale subscales (*F*(1,406)=29.50, *p*?2=.266). Finally, users were more likely to have engaged in a past 6-month aggressive act than nonusers (?2 =31.508, *p*< 001), with user groups differing in types of aggression (*F*(1,60)=11.50, *p*PES=.277). Specifically, users reported more impulsive (*F*(1,61)=5.53, *p*PES=.083) and premeditated aggression (*F*(1,61)= 2.39, *p*PES=.269) on the Impulsive/Premeditated Aggression Scale.

Conclusions: These results contribute to a better understanding of factors associated with nonmedical Fentanyl use, which can be used to identify at-risk individuals and develop specific intervention and prevention programs.

Financial Support: N/A

Abstract - ID: 25

Author(s):

Emytis Tavakoli **(Presenter)**, Wayne State University, Alborz University of Medical Sciences
Emily Deal, Kalamazoo College
Gary Rhodes, Wayne State University
Edward Mischel, Wayne State University
Carl Christensen, Wayne State University
Alireza Amirsadri, Wayne State University
Mark Greenwald, Wayne State University

Title: Retention and drug use among treatment-resistant patients transferred to a 'Second Chance' methadone maintenance treatment program

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Many MMT patients have difficulty achieving or maintaining abstinence from opioids, and many clinics discharge patients who fail to abstain. In collaboration with the City of Detroit's treatment authority, we designed a pilot 'Second Chance' (SC) program. Patients that would have been discharged from other local MMT clinics for failure to comply with policies were instead transferred to our clinic. This harm-reduction program enabled patients to be retained despite providing positive urine drug screens (UDS). The aim of this study is to determine whether SC patients' retention and opioid use is related to disability, mental health conditions, non-opioid substance use, or treatment features.

Methods: From Dec 2012 to Dec 2014, we enrolled 70 patients. Each was assessed for the above phenotypes at treatment entry and followed until June 2016 to evaluate outcomes.

Results: The sample was 96% African-American, 52% males, with mean age 55 yr and 33 yr using heroin; 50% were injection drug users. Patient with disability benefits (n=37) vs. non-disabled (n=33) had significantly (p65 mg predicted significantly longer retention and less opioid use, but these effects were not moderated by baseline characteristics.

Conclusions: Treatment-resistant MMT patients may benefit from retention-oriented harm reduction programs. Higher methadone doses may be needed to improve retention and outcomes due to higher rates of comorbidities. Further work is needed to identify predictors of outcomes in this complex population.

Financial Support: Joe Young Sr./Helene Lycaki Funds (State of Michigan), and Detroit Wayne Mental Health Authority

Abstract - ID: 26

Author(s):

James Cook **(Presenter)**, University of Mississippi Medical Center
Barak Gunter, Vanderbilt University Medical Center
Sally Huskinson, University of Mississippi Medical Center
Kevin Freeman, University of Mississippi Medical Center
James Rowlett, University of Mississippi Medical Center

Title: Cues and stressors but not primes produce reinstatement of midazolam-maintained behavior in rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Sedative-Hypnotics

Topic: Behavior

Aims: As with other drugs of abuse, relapse to benzodiazepine (BZ) abuse may be occasioned by acute re-exposure to the drug or stress. The purpose of this project was to evaluate whether the responding of rats maintained by the short-acting BZ midazolam (MDZ) could be reinstated by MDZ primes or the "pharmacological stressor" yohimbine (YOH) alone and in combination with MDZ-paired cues.

Methods: Food-restricted male Sprague-Dawley rats were implanted with chronic i.v. catheters and trained to self-administer MDZ (0.3 mg/kg, i.v.) on a fixed-ratio 2 schedule in 3-hr sessions. After training, responding was placed on extinction (cues removed, responding resulted in saline injections). Once responding was extinguished, rats were given injections of saline, MDZ (1.0-3.0 mg/kg, i.p.; n = 6), or YOH (0.3-1.8 mg/kg, i.p.; n = 5) before sessions that either did or did not produce MDZ-paired cues contingent on responding.

Results: According to a repeated-measures ANOVA with Bonferroni's multiple comparisons test, YOH alone and MDZ-paired cues in combination with MDZ and YOH did reinstate responding ($p < .05$), but MDZ alone did not consistently reinstate responding across subjects.

Conclusions: MDZ appeared to function as a weak reinforcer in rats and conditioning may have occurred primarily to the MDZ-paired cues and not to interoceptive stimuli produced by MDZ primes (i.e., overshadowing). YOH, as an anxiogenic, may have functioned to increase motivating operations associated with MDZ self-administration, producing a reinstatement effect. An interaction between environmental cues associated with BZ use and stress may induce BZ-seeking behavior.

Financial Support: Project supported by NIH grants DA011792 and DA033795.

Abstract - ID: 29

Author(s):

Gerald Cochran **(Presenter)**, University of Pittsburgh
Adam Gordon, Center for Health Equity Research and Promotion
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Evan Cole, University of Pittsburgh
Winfred Frazier, University of Pittsburgh
Ping Zheng, University of Pittsburgh
David Kelley, Pennsylvania Department of Human Services
Julie Donohue, University of Pittsburgh

Title: The influence of prior authorization policies on opioid medication abuse and overdose among members of a large medicaid program

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Policy

Aims: Formulary management tools commonly utilized by health insurance payers, specifically prior authorization policies (PA), have the potential to lower rates of opioid medication abuse and overdose for patients receiving opioid treatment. PA is a requirement by insurers on specific medications that requires confirmation of medications as medically necessary in order for patients to receive them. In this study, we hypothesized rates of opioid abuse and overdose among Medicaid patients starting opioid treatment would be lower for those enrolled in plans that employed PA policies compared to those did not.

Methods: We conducted a retrospective cohort study using Pennsylvania Medicaid data from 2010-2012. We fit two adjusted Poisson regression models with generalized estimating equations in this project. For Medicaid patients initiating opioid medication treatment, we assessed the relationship between those who subsequently experienced (a) abuse and (b) overdose events and membership in plans that employed High (required PA for 17-74 opioids) and Low (required PA for 1 opioid) PA policies compared to plans with No PA policies for opioid medications. Opioid abuse and overdose are previously validated claims-based indicators.

Results: Our study cohort identified 297,634 enrollees. In contrast to Medicaid plans with No PA policies imposed on opioid medications, patients in High PA (adjusted rate ratio [ARR]=0.89, 95% CI=0.86-0.93) and Low PA plans (ARR=0.93, 95%CI=0.87-0.99) developed abuse at lower rates. For patients in Medicaid plans with Low PA, these individuals experienced a lower overdose rate than those within No PA plans (ARR=0.75, 95% CI=0.59-0.95). High PA plan patients experienced a non-statistically significant lower rate of overdose (ARR=0.88, p=0.09).

Conclusions: Patients within Medicaid plans that employ PA policies experience lower rates of abuse and overdose after initiating opioid medication treatment.

Financial Support: Centers for Disease Control: U01CE002496

Abstract - ID: 30

Author(s):

Stephanie Reed **(Presenter)**, Columbia University
Margaret Haney, Columbia University Medical Center
Jeanne Manubay, Columbia University
Melissa Mahoney, Columbia University
Bianca Camagna, Columbia University
Suzette Evans, Columbia University and NYSPI

Title: Intransal oxytocin increases stress reactivity in recreational cannabis-using women

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Sex Differences

Aims: The hormone oxytocin (OXT) has been examined as a potential treatment for drug use disorders but few studies have directly examined the effects of OXT in cannabis users. This study examined the effects of intranasal (i.n.) OXT on stress-induced mood, craving and cannabis use in recreational cannabis-using men and women. We hypothesized that i.n. OXT would dampen stress-induced increases in negative mood effects, cannabis craving and cannabis self-administration to a greater extent in women than in men.

Methods: Recreational cannabis users (30 women; 31 men) participated in two study phases; in each phase, participants were administered either i.n. OXT (40 IU) or placebo prior to exposure to the Trier Social Stress Test (TSST) or a no-stress control condition. Immediately after, participants had the opportunity to self-administer cannabis (5.6% THC)*ad libitum* over a 3-hr period. Self-report questionnaires of cannabis craving and positive and negative mood effects were assessed at baseline and multiple times throughout each session.

Results: After i.n. OXT, OXT plasma levels were greater in women than men. In the OXT-TSST condition, women had (1) lower ratings of sociability, (2) higher ratings of stress and anger, and (3) a longer latency to smoke cannabis compared to the placebo condition and compared to men. Men self-administered more cannabis than women regardless of stress or medication condition. Cannabis craving did not differ as a function of sex, stress or medication condition.

Conclusions: These results suggest that greater OXT levels may lead to a greater negative response to stressful situations in recreational cannabis users, and that women may be most vulnerable to this effect. Though this did not translate to increases in cannabis craving or self-administration in the laboratory, caution should be used when examining the therapeutic potential of i.n. OXT, and sex differences should be carefully considered in future studies of medication development for cannabis use disorders. Supported by R01A035850.

Financial Support: Supported by R01A035850.

Abstract - ID: 31

Author(s):

Christopher Arger **(Presenter)**, University of Vermont
Taraneh Taghavi, University of Toronto
Sarah Heil, University of Vermont
Joan Skelly , University of Vermont
Rachel Tyndale , University of Toronto
Stephen Higgins, University of Vermont

Title: Influence of pregnancy on the nicotine metabolite ratio: Changes during antepartum and postpartum

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Perinatal

Aims: Pregnancy-induced increases in nicotine metabolism may contribute to difficulties in quitting smoking during pregnancy. However, the time course of changes in nicotine metabolism during early and late pregnancy are unclear. The present study investigated how pregnancy alters the nicotine metabolite ratio (NMR), a common biomarker of the rate of nicotine metabolism associated with numerous smoking phenotypes, including cessation outcomes.

Methods: Urinary NMR (3-hydroxycotinine (3HC)/cotinine (COT)) was assessed using total (free + glucuronide) and free compounds among pregnant smokers from a randomized controlled trial for smoking cessation. Women who reported smoking and provided a urine sample at each of three time points (approximately 10 and 28 weeks antepartum and 6 months postpartum) were included in the analysis (N=47). Urine samples were analyzed using LCMS/MS. NMR calculated as Total 3HC/Free COT was the primary biologically relevant ratio representing total metabolite/substrate. NMR calculated as Free 3HC/Free COT and Total 3HC/Total COT, which are widely used and less costly to measure, were also examined. NMR values were logarithmically transformed before analysis and pH was included as a covariate.

Results: NMR was significantly higher at 28 vs. 10 weeks antepartum and at 10 and 28 weeks antepartum vs. 6 months postpartum as measured by Total 3HC/Free COT (0.77, 0.89, 0.61 at 10 and 28 weeks antepartum and 6 months postpartum; all *p's* < .01) and Free 3HC/Free COT (0.68, 0.80, 0.52 at 10 and 28 weeks antepartum and 6 months postpartum; all *p's* < .02). Total 3HC/Total COT did not vary over time ($p = .81$).

Conclusions: Total 3HC/Free COT and Free 3HC/Free COT NMR increased in the first trimester and continued to increase throughout pregnancy, suggesting that C-oxidation of nicotine is induced by pregnancy and increases over gestation. Future analyses of NMR in relation to enzyme pathways and total nicotine equivalence, a biomarker of nicotine intake, are needed to understand how pregnancy impacts smoking.

Financial Support: This project was supported by the National Institute on Drug Abuse award R01DA014028 and Tobacco Centers of Regulatory Science (TCORS) award (P50DA036114) from the Food and Drug Administration to Stephen T. Higgins. We acknowledge the support of the Endowed Chair in Addictions for the Department of Psychiatry (R.F. Tyndale), CIHR grant TMH-109787 (R.F. Tyndale), the Campbell Family Mental Health Research Institute of CAMH, the CAMH Foundation, the Canadian Foundation for Innovation (#20289 and #16014 to R.F. Tyndale) and the Ontario Ministry of Research and Innovation.

Abstract - ID: 32

Author(s):

Fernando de Moura **(Presenter)**, McLean Hospital, Harvard Medical School
Lance McMahon, University of Texas Health Science Center

Title: Examining the capacity of nAChR antagonists to block the effects of nicotine in nicotine-tolerant C57BL/6J mice

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Nicotine/Tobacco

Topic: Behavior

Aims: The clinical effectiveness of some nAChR-based smoking cessation aids is proposed to be due to antagonism of the effects of nicotine. However, it is unclear whether nicotine antagonism varies as a function of repeated nicotine exposure. In this study, the capacity of the nAChR antagonists mecamylamine and dihydro-?-erythroidine (DH?E) to antagonize the rate-decreasing and hypothermic effects of nicotine before, during, and after discontinuation of chronic nicotine treatment were evaluated.

Methods: Male C57BL/6J (n=8) were trained under a fixed ratio 20 schedule of milk reinforcement. Rectal temperature was measured before and after operant sessions. A dose-response function was generated for nicotine, DH?E alone, DH?E in combination with nicotine, and mecamylamine alone were generated. After this, chronic nicotine treatment (1.78 mg/kg nicotine three times daily) commenced, and dose-response functions for nicotine alone, DH?E alone, mecamylamine alone, and the antagonists in combination with nicotine were generated. Following discontinuation of nicotine treatment, the nicotine dose-response function was generated either alone, or in the presence of the antagonists.

Results: Before daily nicotine treatment, nicotine decreased response rate and rectal temperature with ED_{50} values of 0.44 and 0.82 mg/kg, respectively. DH?E significantly antagonized the rate-decreasing and hypothermic effects of nicotine, evidenced by 2.9- and 3.2- fold rightward shifts of the nicotine dose-response functions, respectively. Daily nicotine treatment produced tolerance, as evidenced by 3.6- and 4.8-fold rightward shifts in the nicotine dose-response functions for rate-decreasing and hypothermic effects, respectively. During daily nicotine treatment, mecamylamine and DH?E no longer antagonized the rate-decreasing effects of nicotine, whereas both antagonists continued to block the hypothermic effects of nicotine. After discontinuation of daily nicotine treatment, there was a time-related loss of tolerance to nicotine; under these conditions, mecamylamine and DH?E retained their capacity to antagonize the rate-decreasing and hypothermic effects of nicotine.

Conclusions: hese data suggest that nicotine produces rate-decreasing and hypothermic effects through different receptor types, and further suggest that nicotine can act at non-nAChRs in nicotine-tolerant animals. A potential loss of nicotine antagonist activity in cigarette smokers could underscore a potential limitation in the effectiveness of some nAChR-based smoking cessation aids.

Financial Support: USPHS DA25267 Sponsored by: Jack Bergman, Ph.D. Harvard Medical School/McLean Hospital 115 Mill Street Belmont, MA 02478 jack_bergman@hms.harvard.edu

Abstract - ID: 33

Author(s):

Samuel Friedman **(Presenter)**, National Development and Research Institute, Inc.

Title: Research on determinants of service provision for people who use drugs

Abstract Category: Theoretical/Commentary

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Services for injecting drug users

Topic: Other

Aims: PWUD are heavily stigmatized and criminalized, which contributes to underfunding and stigmatization of services for them. Aim: To understand determinants of service availability and to help develop strategies to improve access.

Methods: We summarize 15+ years of research about metropolitan statistical area (MSA) characteristics associated with syringe exchange and drug treatment availability in 96 large US MSAs. We then identify research needs.

Results: Syringe exchanges (SEPs) were more likely to exist in 2000 in MSAs with ACTUP chapters in the early 1990s and higher population percentages with college education and/or higher proportions of men who have sex with men (MSM). SEPs covered more of the need for sterile syringes in MSAs with more MSM in their population, where SEPs were formed earlier, and where SEPs received government funding. Drug abuse treatment coverage for PWID in 1997 was higher in MSAs with supportive organizations, higher per capita education expenditures, lower government debt burden, lower percentages of PWUD in treatment who do not inject drugs and higher non-Hispanic white population percentage. Higher HIV prevalence and lower correction expenditures per capita in the early 1990s were associated with increases in drug treatment coverage (1993–2007) for PWID. Lower rates of employment in health sector occupations in the early 1990s and increases in unemployment rates and in the ratio of Black-to-White unemployment were associated with declines in coverage.

Conclusions: MSAs' budgetary and economic characteristics, racial/ethnic composition, and one measure of structural racism seem to be related to service provision—as do proxies for political pressure like ACTUP presence and population characteristics that suggest a propensity to support or oppose stigmatized programs. Future research should directly measure political struggles that can affect support and opposition to services for PWUD, including struggles around racial, budgetary, and economic issues that might not seem directly related to such services and struggles, but might affect which groups are stigmatized how badly in a metropolitan area.

Financial Support: We gratefully acknowledge support from National Institute on Drug Abuse Grants National Institute on Drug Abuse Grants R01-DA13336 (Community Vulnerability and Responses to Drug-User-Related HIV/AIDS), R01-DA037568 (Metropolitan Trajectories of HIV Epidemics, Drug Use, and Responses in US Key Populations), R01DA031597 (Developing measures to study how structural interventions may affect HIV risk), T32 DA 023356 (Program in Substance Use, HIV and Related Infections)and P30 DA11041 (Center for Drug Use and HIV Research). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or other funding agencies.

Abstract - ID: 34

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Title: Salivary cortisol levels and early inpatient discharge in Brazilian crack-cocaine users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: crack/cocaine

Topic: Neurobiology

Aims: To investigate the correlation between salivary cortisol levels and length of inpatient treatment stay in a sample of crack-cocaine users of an addiction psychiatry unit.

Methods: A total of 44 adult male crack users were recruited from an inpatient treatment unit in Porto Alegre, Brazil, from a 30-days voluntary rehabilitation program. Cortisol salivary samples were collected on the morning (9-10 am) of the second day after admission. Salivary levels of cortisol were measured using an electrochemiluminescence assay. Hospitalization length was obtained from patient records. Analyses were performed using Spearman correlation test and Mann-Whitney test.

Results: The median level of morning salivary cortisol was 0.57 [0.36 – 1.15] µg/dL, and 38.6% of the participants presented cortisol levels higher than the reference level of 0.69 µg/dL. Regarding the length of stay at the inpatient treatment, users stayed a median of 7 [3 – 14] days. We found an inverse correlation between morning salivary cortisol levels and days of inpatient adherence, where subjects with higher cortisol levels tended to ask for early discharge (r= -0,328, p=0,032).

Conclusions: Treatment adherence consists in one of the most important difficulties observed during crack users treatment. The intense craving during cocaine withdrawal may contribute to treatment discontinuation. Our hypothesis is that the association between high cortisol levels and inpatient treatment adherence might be explained by stress provoked by craving.

Financial Support: Fundo de Incentivo e Auxílio à Pesquisa from HCPA (GPPG– n°150234)

Abstract - ID: 35

Author(s):

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Title: Predictors of smoking behaviors among Latinos in substance abuse treatment

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Ethnic Differences

Aims: To examine predictors of smoking behaviors among Latinos in treatment for substance use disorders (SUD). Persons in SUD treatment smoke at rates 3 to 4 times that of the general population, and Latinos in the general population tend to be light and intermittent smokers, but little is known about smoking rates and behaviors of Latinos in SUD treatment.

Methods: We surveyed 1122 persons in SUD treatment, sampled from 24 clinics selected at random from the NIDA Clinical Trials Network (*n* of Latinos = 141). We then conducted univariate and multivariate analyses to identify predictors of smoking prevalence and behaviors between Latinos and non-Latinos (first all participants, then smokers only). Logistic regression analyses adjusted for age and education, time in treatment program, and primary drug of use, and controlled for the nesting of participants within clinics.

Results: Latino participants (smokers and non-smokers) were younger (*p*p=.045) than non-Latino participants (smokers and non-smokers). Latinos' smoking prevalence was not different from that of non-Latinos (78.7% vs. 76.4%, *p*=.422). In regression analyses, Latino smokers tended to smoke fewer cigarettes per day (CPD) as compared to non-Latino smokers (*LS Mean*=0.80, 95% CI=0.70, 0.92); were more often nondaily smokers (*OR*=2.05, 95% CI=1.01, 4.12); and more often reported a smoking quit attempt in the last year (*OR*=1.93, 95% CI=1.38, 2.71). Latino smokers were also more likely than non-Latino smokers to smoke menthol cigarettes (*OR*=1.96, 95% CI=1.42, 2.71). Among Latino smokers, those with less education and those for whom opiates were the primary drug of use reported significantly higher CPD (*p*=.028 and *p*=.041, respectively).

Conclusions: Latino participants in this study had similar smoking prevalence to non-Latino participants. However, Latino smokers in this drug treatment sample reported smoking behaviors similar to those of Latino smokers in the general population (i.e., light and intermittent smoking, use of menthol cigarettes, more quit attempts). These findings can inform future smoking cessation interventions provided to Latinos in SUD treatment.

Financial Support: NIDA and FDA Center for Tobacco Products R01DA036066

Abstract - ID: 36

Author(s):

Jan Klimas **(Presenter)**, UCD School of Medicine
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Title: Eligibility for heroin-assisted treatment among people who inject opioids and who live with HIV in a Canadian setting

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: AIDS/Immune

Aims: A growing body of high-quality evidence, including data from clinical trials, supports the effectiveness of diacetylmorphine (i.e., heroin) for the treatment of opioid use disorders. Despite this evidence, and the increasing toll of opioid-associated morbidity and mortality, it remains controversial in some settings. To investigate the possible contribution of HAT to HIV treatment-as-prevention-related outcomes, we sought to estimate the proportion and characteristics of HIV-positive people who inject opioids that might be eligible for heroin-assisted treatment (HAT) in Vancouver, Canada.

Methods: We derived data from a prospective cohort of people living with HIV who a history of illicit opioid use (PWUD) in Vancouver, Canada, recruited from community settings between December 1, 2005 and May 31, 2014. Using generalized estimating equations (GEE), we assessed the longitudinal relationship between eligibility for HAT, using criteria from previous clinical trials, and risk factors for HIV disease progression or viral transmission.

Results: In total, 478 participants were included in the analysis, contributing 1926.5 person--years. Of those, 134 (11.14%) were eligible for HAT ? 1 time (during 17 semi-annual study assessments). HAT eligibility was positively associated with unemployment, homelessness, high-intensity illicit drug use and drug dealing.

Conclusions: In our study of HIV-positive people with a history of opioid use, approximately 10% of participants were eligible for HAT at ? 1 follow-up period. Eligibility was linked to risk factors for sub-optimal HIV/AIDS treatment outcomes, such as unemployment and drug dealing, suggesting that scaling-up access to HAT might contribute to achieving optimal HIV treatment in this setting.

Financial Support: The authors thank the study participants for their contribution to the research, as well as current and past researchers and staff. The study was supported by the US National Institutes of Health (R25DA037756, R01DA021525, U01DA038886). This research was undertaken, in part, thanks to funding from the Canada Research Chairs program through a Tier 1 Canada Research Chair in Inner City Medicine that supports Dr. Evan Wood. Dr. Milloy is supported by the United Status National Institutes of Health (R01-DA021525). His institution has received unstructured funds from National Green Biomed, Ltd., to support his research. ELEVATE: Irish Research Council International Career Development Fellowship – co-funded by Marie Cure Actions (ELEVATEPD/2014/6); and European Commission (701698) – supported Dr. Jan Klimas.

Abstract - ID: 37

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Title: Is substance use associated with HIV cascade outcomes in Latin America?

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: AIDS/Immune

Aims: The HIV cascade among individuals in care has improved in Latin America, but data on the influence of noninjected substance use (SU) on cascade outcomes are lacking. We therefore estimated the association of SU with retention in care (RIC), loss to follow up (LTFU), and virologic failure (VF).

Methods: Individuals ?18 years attending routine HIV clinic visits and completing the Rapid Screening Tool (RST? evaluating SU and antiretroviral therapy [ART] adherence in a 7day recall period) during 2012-13 were followed prospectively up to 2015 at Caribbean, Central and South America network for HIV epidemiology (sites in Argentina, Brazil, Chile, Honduras, Mexico and Peru). RIC was ?2 visits, ?90 days apart, from May 2014 to May 2015. LTFU was >365 days since last contact. VF was two consecutive HIV RNA values >50 copies/mL or one HIV RNA >1000 copies/mL. Adjusted odds ratios (aOR) and 95% confidence intervals (CI) were calculated for the association of any alcohol consumption and any illicit drug use with RIC by logistic regression? adjusted hazard ratios (aHR) and CI were estimated for the association with LTFU and VF by stratified Cox regression. Models adjusted for age, sex, mode of HIV transmission, AIDS at enrollment, CD4 count (prior to ART and within 6 months of RST), and time on ART (at time of RST). The VF model was also adjusted for adherence (at RST). Interactions between alcohol and drug use were evaluated in all models

Results: Of 3604 individuals included, 26% reported only alcohol use, 2% reported only SU, and 3.5% reported alcohol and SU during the 7day recall period. Those with SU had a lower proportion of RIC for 1 year, while a higher proportion were LTFU, vs. those with no SU ($p < 0$ .01). There were 1901 (53%) HIV RNA results, and there was little difference in VF proportions between users and nonusers. Neither alcohol use (aOR=1.1, CI=0.91.4? aHR=1.0, CI=0.81.3) nor SU (aOR=1.3, CI=0.9-1.8; aHR=1.4, CI=0.9-2.1) were significantly associated with RIC or VF, respectively. However, both alcohol use (aHR=1.2, CI=1.0-1.4) and SU (aHR=1.3, CI=1.0-1.8) were associated with increased LTFU.

Conclusions: Reporting any alcohol use and any SU in a 7day recall period increased the risk of being LTFU. This highlights the need of routine SU screening and indicates that targeted interventions are needed to keep this population in care and on ART.

Financial Support: This work was supported by the NIH-funded Caribbean, Central and South America network for HIV epidemiology (CCASAnet), a member cohort of the International Epidemiologic Databases to Evaluate AIDS (IeDEA) (U01AI069923). This award is funded by the following institutes: Eunice Kennedy Shriver National Institute Of Child Health & Human Development (NICHD), Office Of The Director, National Institutes Of Health (OD), National Institute Of Allergy And Infectious Diseases (NIAID), and National Cancer Institute (NCI).

Abstract - ID: 38

Author(s):

Vicki Osborne **(Presenter)**, University of Florida
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Title: Non-medical prescription opioid use and age at first use: Examination of gender differences in youth

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: Adolescents and young adults are known to have a higher prevalence of non-medical prescription (Rx) opioid use than other age groups in the US. However, little is known about gender differences in factors such as age at first use. We aimed to determine gender differences in age at first use of Rx opioids among youth and subsequent non-medical use.

Methods: The National Monitoring of Adolescent Prescription Stimulants Study (N-MAPSS) was conducted in 4 waves from 2008 to 2011, with a final sample size of 11,048 youth. Participants 10 to 18 years of age were recruited from entertainment venues in rural, urban and suburban areas of 10 cities across the US. Youth completed a survey including questions on past 30 day use of Rx opioids, source of opioids and route of administration. Non-medical use was defined as non-licensed route of administration or use of someone else's Rx. Age at first use of Rx opioids was collected, along with current age and gender. Summary descriptive statistics were calculated using SAS 9.4.

Results: In total, 525 youth (4.8%) reported using Rx opioids in the past 30 days (50.9% male and 49.1% female), of which 345 (65.7%) reported non-medical use and 180 (34.3%) reported medical use only. A higher proportion of males reported past 30 day non-medical use than females (55.7% vs 44.4%; p=0.003). Mean age at first use of Rx opioids among 520 youth was 14.8 years (SD 2.2 years; range= 5-18 years). A similar age at first use was found for males and females (14.9 vs 14.7 years; p=0.34). Non-medical users had a younger age at first use than medical users only (14.5 vs 15.4 years; p < 0 .0001). Stratification of non-medical users by gender did not reveal gender differences in age at first use (p=0.08).

Conclusions: Gender differences in non-medical use of Rx opioids exist—a higher proportion of non-medical users among youth are males. However, gender differences in age at first use were not found. Non-medical users had a younger age at first use than medical users only, but this did not differ by gender. Future research should examine gender differences and other risk factors for non-medical use of Rx opioids among youth.

Financial Support: The N-MAPSS study was implemented by Washington University in St Louis and University of Florida under contract from Pinney Associates, Inc., with funding provided by Shire Development LLC and Noven Therapeutics.

Abstract - ID: 40

Author(s):

Shannon Mitchell **(Presenter)**, Friends Research Institute
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Title: Using timeline methodology to visualize qualitative treatment trajectories of youth enrolled in an RCT of extended-release naltrexone

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: To better understand the treatment trajectories of youth with opioid use disorders participating in an ongoing RCT of extended release naltrexone (XR-NTX) *v*. treatment as usual and summarize longitudinal qualitative data representing different stakeholders' perspectives.

Methods: A total of 30 youth/caregiver dyads were purposively selected from the larger study sample for inclusion in a qualitative sub-study. Youths, ages 15 to 21 years, and their caregivers were interviewed at study entry and at 3 and 6 months post-inpatient discharge. Nearly 180 interviews, representing thousands of pages of data, were conducted. During each interview, the interviewer collaborated with the participant to construct a visual timeline that noted key treatment, social, and familial events that occurred since the previous interview. After the interview was completed, researchers overlaid the youth and caregiver timelines to construct a concise, visual representation of each youth's treatment trajectory that presented the co-occurrence of treatment, social, and familial events from both the youth's and caregiver's perspectives.

Results: The resulting timelines condensed copious data into a summary format while still preserving the longitudinal nature of the interviews and the differing stakeholder perspectives. Unlike with narrative summary information, these timelines lend themselves to easy comparisons of the antecedents of relapse, contrast differing perspectives on these antecedents, and represent the chaos and complexity of the lives of these youth. Visual scans permit the emergence of commonalities across the treatment trajectories and recovery stories of youth that, on the surface, many not appear to have much in common, lending to the development of coding schemes for more traditional qualitative analyses.

Conclusions: Timeline methodology is a useful tool for summarizing extensive and complex qualitative data sets. Constructing such timelines permits a unique, multidimensional understanding of the data and facilitates the emergence of patterns, even before all transcription has been completed.

Financial Support: NIDA 5R01DA033391-04

Abstract - ID: 41

Author(s):

Casey Guillot **(Presenter)**, University of North Texas
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Title: Longitudinal associations between anxiety sensitivity and substance use in adolescents: Mediation by depressive affect

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: cigarettes, alcohol, e-cigarettes, marijuana, depressant pills, stimulant pills

Topic: Adolescent

Aims: Aims: Anxiety sensitivity (AS)—fear of anxiety-related experiences—has been associated with substance use primarily in adults. Theoretically, AS heightens negative affect (e.g., anxiety and depressive affect) over time, consequently increasing substance use for negative reinforcement. However, no prior study has tested if depressive affect mediates the association between AS and later substance use in adolescents.

Methods: Methods: We administered self-report measures of AS, depressive affect, and substance use to students from 10 different high schools in the Los Angeles area (N = 2944) at three consecutive waves of assessment (6 months apart). Regression and mediation models controlled for gender, age, race/ethnicity, school, parental education, and baseline depressive affect and respective substance use category (when applicable).

Results: Results: AS was prospectively associated with depressive affect (b = .11, p < .001) and greater likelihood of endorsing past 6-month use of cigarettes (b = .17, p = .031), alcohol (b = .14, p = .007), marijuana (b = .13, p = .034), and depressant pills (b = .25, p = .004) but was not significantly associated with e-cig and stimulant pill use. Depressive affect mediated AS relations with use of cigarettes (b [95% CI] = .034 [.015 - .058]), alcohol (b [95% CI] = .018 [.006 - .034]), marijuana (b [95% CI] = .015 [.001 - .033]), and depressant pills (b [95% CI] = .039 [.018 - .064]). Depressive affect also mediated the association between AS and e-cig use (b [95% CI] = .026 [.012 - .045]), whereas the remaining direct effect of AS on e-cig use was a nearly significant negative association (b = -.12, p = .08).

Conclusions: Conclusions: Results suggest that adolescents high in AS tend to experience depressive affect, which in turn increases risk of later substance use. Interventions targeting AS or depression may help prevent adolescent substance use.

Financial Support: Financial Support: NIDA Grants R01-DA033296 and K01- DA040043

Abstract - ID: 42

Author(s):

Cynthia Arfken **(Presenter)**, Wayne State University
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Title: Fentanyl in methadone-maintained treatment clients

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: Deaths attributed to fentanyl have increased in the United States. However, little is known about fentanyl use among substance abuse treatment clients. To fill this gap, we assessed prevalence of fentanyl exposure, characteristics of clients who test positive for fentanyl, other substances detected with fentanyl, and clients' perception of how many people are actively seeking to use fentanyl.

Methods: A retrospective chart review was conducted of all clients at one methadone maintenance treatment clinic between January 2015 and May 2016 in Wayne County, Michigan, a county with increasing number of fentanyl-related deaths. Urine drug screens (UDS) including fentanyl added to the panel January 2015 were conducted clinically. To obtain additional data, 113 clients in the clinic subsequently completed an anonymous survey.

Results: Of the 368 unique clients, 38.0% had at least one and 26.1% had $\geq$ 2 fentanyl-positive UDS results. None had a fentanyl prescription. Clients ever testing positive for fentanyl were more likely to abuse cocaine ($p = .034$), have shorter stays in treatment ($p < .001$), and have multiple treatment admissions to the clinic ($p = .012$). Fentanyl-positive UDS results coincided most commonly with cocaine- and heroin-positive UDS results. Of the anonymously surveyed clients, most (67.3%) reported they did not know anyone seeking fentanyl, a proportion significantly higher than heroin, cocaine, alprazolam, hydrocodone and morphine.

Conclusions: Fentanyl was commonly detected during this period with some clients having multiple positive UDS. Although most clients did not know anyone seeking to obtain it, the characteristics of the clients with fentanyl-positive UDS suggest that clinics need to address this high-risk group.

Financial Support: Financial support: a research grant (Joe Young, Sr./Helene Lycaki Funds) from the State of Michigan and clinical funds from the Detroit Wayne Mental Health Authority and Behavioral Health Professionals, Inc. (BHPI)

Abstract - ID: 43

Author(s):

Shelly Greenfield **(Presenter)**, McLean Hospital
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Title: Perceived stress and depression in substance use disorder treatment

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Treatment

Aims: Depression is highly prevalent among those with substance use disorders, and is negatively associated with treatment outcome. Studies have found evidence for the reduction of depressive symptoms during substance use disorder treatment; however, it is unclear whether factors other than reductions in substance use affect this change. The aim of this study was to examine whether reductions in perceived stress were associated with changes in depression over the course of substance use treatment, above and beyond the effect of substance use.

Methods: This is a secondary analysis of a randomized clinical trial (N=138) testing two group therapies for substance use disorders: the Women's Recovery Group and Group Drug Counseling. Participants completed self-report measures of stress and depressive symptoms at 4 assessment points, each 3 months apart. We conducted a linear mixed model examining whether perceived stress predicted depressive symptoms at the next assessment, controlling for depressive symptoms at the prior assessment, and concurrent days of substance use. This lagged model also controlled for demographic variables, treatment condition, and major depression.

Results: Preliminary analyses found that both perceived stress and depression significantly decreased over the course of treatment. The results of the lagged mixed model found that perceived stress was associated with later depressive symptoms, even when controlling for previous depressive symptoms and days of substance use (Est.=0.58, SE=0.05, t=2.58, p = .01).

Conclusions: These results support the observation that depressive symptoms decline significantly in substance use disorder treatment. In this study, perceived stress was significantly associated with subsequent depressive symptoms, even controlling for substance use. These results may reflect a shared mechanism for the reduction of stress and depressive symptoms, or could reflect that reductions in stress yield reductions in depressive symptoms. Further understanding of these changes will help to refine treatments to target co-occurring depression.

Financial Support: NIDA R01DA015434 and K24 DA019855; NIDA K23 DA035297

Abstract - ID: 44

Author(s):

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Title: Social determinants of recovery from substance abuse among justice-involved community members

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Other

Aims: To explore barriers and facilitators that impact justice-involved individuals' ability to recover from substance abuse and avoid recidivism.

Methods: Depth interviews were conducted with 20 justice-involved individuals enrolled in a transitional care management program that adapts the Critical Time Intervention (CTI) model to link clients to addiction treatment, behavioral healthcare, housing and benefits. Qualitative analysis entailed an inductive thematic content approach incorporating ATLAS.ti. The Recovery Capital model was used to interpret and categorize findings.

Results: Most participants (18/20) had been incarcerated at least once for drug-related charges or crimes provoked by drug use. Four themes were identified corresponding to Recovery Capital: 1) *Social Capital (relationships)*: Initiating or maintaining sobriety and staying out of jail often required terminating or modifying relationships. Poverty limited participants' ability to avoid family/friends using drugs or involved in crime.2) *Physical capital (economic resources)*: Limited financial resources and need for social services were principal concerns. Adherence to multiple appointments (court appearances, addiction treatment, self-help) hindered their ability to seek and maintain employment. 3) *Human Capital (individual attributes):* Participants described complex chronic health conditions and mental illnesses in addition to substance abuse. Their educational attainment was low and vocational aspirations modest.4) Cultural Capital *(values/dispositions)*: Participants spoke of chaotic and disorganized lives, and relied on CTI staff to guide them on how to "follow the rules" to improve their opportunities in mainstream society.

Conclusions: Adherence to addiction treatment competed with other issues, including justice system requirements and obtaining social services. The fragmentation of services posed additional challenges. This study speaks to the need for an integrated approach to promote recovery from substance abuse and reduce recidivism in the justice-involved population.

Financial Support: This research was supported by the University at Buffalo Institute for Person Centered Care and by the Erie County Department of Mental Health.

Abstract - ID: 45

Author(s):

Alessandra Matzeu **(Presenter)**, Scripps Research Institute
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Title: Activation of orexin neurons following orexin-A administration in the paraventricular nucleus of the thalamus in animals with a history of cocaine dependence

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Neurobiology

Aims: Orexin (Orx) projections from the lateral hypothalamus (LH) to the paraventricular nucleus of the thalamus (PVT) are implicated in drug addiction. We previously reported that intra-PVT administration of Orx-A induced strong level of reinstatement in rats with a history of cocaine dependence *vs.* nondependent rats. This suggests that cocaine dependence leads to neuroadaptive changes at the level of the PVT, resulting in an increased sensitivity to the behavioral effects of Orx-A. Knowing that the PVT sends projections back to the hypothalamus, the present study examined the neural activation pattern of the LH, dorsomedial hypothalamus (DMH), and perifornical area (PFA), following intra-PVT Orx-A administration.

Methods: Fifty male Wistar rats were trained to self-administer cocaine short-access (ShA, 2h/day), cocaine long-access (LgA, 6h/day), or sweetened condensed milk (SCM, 30 min/day) for 21 days. Then, the animals underwent extinction training (2 h/day) for 14-21 days, during which the reinforcers were withheld. Once the animals' behavior was extinguished, they received intra-PVT microinjections of Orx-A (0.5 µg) and then were placed into operant chambers under extinction conditions. At the end of the behavioral assays, the brains were prepared for Fos and Orx immunolabeling.

Results: The results (analyzed with one-way ANOVA) showed that Orx-A reinstated reward-seeking behavior in all the groups. However, only in rats that were self-administering cocaine LgA, Orx-A produced a strong neuronal activation (i.e., Fos expression) of the LH, DMH, and PFA; and a significant increased recruitment of Orx+ cells.

Conclusions: These data indicate that the PVT«LH/DMH/PFA connections are strongly recruited in animals with a history of cocaine dependence (i.e., LgA) and are suggestive of a neuronal circuit mediating cocaine-seeking behavior.

Financial Support: NIH/NIDA DA08467 (FW) and DA033344 (RMF).

Abstract - ID: 46

Author(s):

Remi Martin-Fardon **(Presenter)**, Scripps Research Institute
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Title: Dynorphin counteracts the effects of orexin in the paraventricular nucleus of the thalamus

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Neurobiology

Aims: A recent study showed that orexin (Orx) and dynorphin (Dyn) play opposing roles in reward and motivation in the ventral tegmental area. Knowing that Orx neurons contain Dyn and that Orx projections from the lateral hypothalamus (LH) to the paraventricular nucleus of the thalamus (PVT) are implicated in drug addiction, this study investigated whether there is a functional interaction between Orx and Dyn in the PVT.

Methods: Neurons (n = 10) were recorded from PVT slices from naive male Wistar rats. To investigate if a Orx/Dyn interaction can be behaviorally measured in animals with a history of cocaine dependence, male Wistar rats (n = 44) were trained to self-administer long-access cocaine for 21 days and then underwent extinction for 14-21 days. After extinction animals received intra-PVT microinjections of Orx-A, Dyn-A, or a combination of both and then were placed into operant chambers under extinction conditions.

Results: Exposure of PVT neurons to Orx-A increased the frequency of spontaneous excitatory postsynaptic currents (sEPSCs), indicating an increase in glutamate release. Addition of Dyn-A in the continued presence of Orx-A completely reversed the effect of Orx-A. The amplitude of sEPSCs was unaffected by Orx-A or Dyn-A, indicating a presynaptic effect of Dyn-A and Orx-A on glutamate release (one-way ANOVA). Behaviorally, Dyn-A blocked the reinstating effects of Orx-A, whereas Dyn-A alone had no effect (one-way ANOVA).

Conclusions: These data suggest that Dyn-A in the PVT prevents cocaine seeking through an inhibition of Orx-A-dependent increase in glutamate release. As observed by others in the VTA, Orx and Dyn play opposite roles in the PVT, identifying a novel therapeutic target to prevent drug relapse.

Financial Support: NIH/NIDA DA08467 (FW), AA020608 (OG) DA033344 (RMF)

Abstract - ID: 47

Author(s):

Seong Shoon Yoon **(Presenter)**, Korea Institute of Toxicology
Mee Jung Choi, Korea Institute of Toxicology

Title: Potent rewarding and reinforcing properties of the amphetamine-type stimulant 3-fluoromethamphetamine in rodents

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Club/Designer Drugs

Topic: Dependence

Aims: 3-fluoromethamphetamine (3-FMA) is an amphetamine-type stimulant drug that has been sold as a designer drug online. Here, we investigated the abuse potential of 3-FMA using self-administration and conditioned place preference (CPP) procedures in rodents.

Methods: In the first experiment, we evaluated the rewarding effects of 3-FMA using the CPP paradigm. Male C57BL/6J (B6) mice were conditioned with saline or 3-FMA (3, 10 and 30 mg/kg, i.p.) for 45 min on alternating days for 8 consecutive days. In the second experiment, male Sprague-Dawley rats were trained to self-administer saline or 3-FMA (0.1, 0.3 and 1 mg/kg per infusion, i.v.) in daily 2-hr sessions under a fixed ratio (FR) 1 for 7 consecutive days. On day 8 of the self-administration experiment, the reinforcement of schedule was changed from FR1 to FR2. On day 11, rats received a single progressive ratio (PR) test for a 6-hr session. In a separate experiment, to examine the cross reinstatement effect between 3-FMA and other psychostimulants, rats were initially trained to press a lever for 3-FMA (0.1 mg/kg per infusion, i.v.) under an FR1 schedule. After stable responding was established, rats underwent extinction training. Once responding was extinguished, an i.v. priming injection with cocaine (2.0 mg/kg), methamphetamine (0.2 mg/kg), or 3-FMA (0.4 mg/kg) was given immediately before reinstatement testing.

Results: In the CPP study, 3-FMA produced significant place preference in a dose-dependent manner. 3-FMA produced an inverted U-shaped dose-effect curve and there appeared to be a positive relationship between 3-FMA dose and breakpoint under a PR test. In the reinstatement study, a priming injection of methamphetamine, cocaine, or 3-FMA significantly reinstated 3-FMA-seeking behavior.

Conclusions: Our results indicate that 3-FMA has rewarding/reinforcing effects. Additionally, stimulants (cocaine and methamphetamine) can produce drug-seeking for 3-FMA in rats.

Financial Support: 14182MFDS979

Abstract - ID: 48

Author(s):

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Title: Evaluation of two screening devices for cocaine detection in oral fluid

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Technology Issues

Aims: To evaluate the reliability of two drug screening devices for the detection of cocaine in oral fluid samples.

Methods: One hundred ten cocaine users were recruited in inpatient and outpatient treatment centers in the city of Porto Alegre, southern Brazil. Subjects were screened for cocaine detection with the two following devices: 1) the DDS2™ (cut-off = 30 ng/mL) and 2) the Multi-Drugs Multi-Line – Twist Screen Test Device™ (MDML) (cut-off = 20ng/mL), which stores part of the oral fluid for further confirmatory analysis. Results of the screening tests were compared with a single system Liquid Chromatography- Mass Spectrometry (LC-MS) assay.

Results: Sensitivity, specificity, and accuracy of DDS2™ were 100%, 77.77%, and 80% when compared with LC-MS with a cut-off of 30 ng/mL, and 88.89%, 89.15% and 89.09% with a cut-off of 10 ng/mL. The MDML™ device achieved sensitivity, specificity and accuracy of 100%, 65.6% and 70.9% when compared with LC/MS with a cut-off of 20 ng/mL, and 92.6%, 71.1% and 76.6% with a cut-off of 10 ng/mL.

Conclusions: When compared with a 10 ng/mL cut-off, the DDS2™ achieved reliability parameters higher than 80%. On the other hand, the MDML™ device did not achieve the minimal recommendation of 80% for all parameters at the same time. Also, because of the high prevalence of false positive samples, the use of these screening devices seems to be suitable for cocaine detection in forensic tests only if all positive specimens are further confirmed by a validated method.

Financial Support: Secretaria Nacional de Políticas sobre Drogas (SENAD) and Fundo de Incentivo a Pesquisa – Hospital de Clínicas de Porto Alegre (FIPE-HCPA).

Abstract - ID: 49

Author(s):

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Title: Synthetic cannabinoid augments methamphetamine-induced conditioned place preference in C57BL/6J mice

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Marijuana/Cannabinoids

Topic: Dependence

Aims: Abuse of new psychoactive substances (NPS) is recently an emerging social problem. However, the psychological adverse effects of synthetic cannabinoids are not evaluated extensively yet. In present study, we are aim to clarify the molecular target underlying impulsive behavior and biochemical abnormality induced by synthetic cannabinoids.

Methods: A synthetic cannabinoids, JWH-210 (0.1 mg/kg, 5 days) was administered to C57BL/6J mice. Twenty-four hrs later, cliff avoidance test was performed for measurment of jumping behavior (imupulsivity). We employed the conditioned place preference (CPP) paradigm to investigate the effect of JWH-210 pretreatment on methamphetamine (0.3 mg/kg, 3 days)-induced the place-conditioned response. The effect of JWH-210 pretreatment on methamphetamine-induced dopamine release was also studied. In addtition, we manipulate the expression of CB 1 receptors in primary cultured neurons to clarify the role of CB1 receptors.

Results: A synthetic cannabinoids, JWH-210 increased jumping events in cliff avoidance test and methamphetamine-induced CPP in comparison with vehicle treated mice, while, the pre-treatment of JWH-210 had no effects on methamphetamine, cocaine, or morphine-induced locomotor activity. However, KCl and methamphetamine-evoked dopamine release of acute brain slice was increased in JWH-210 treated mice. We also showed that the expression levels of cannabinoid receptor 1 (CB1) and GAD67 were significantly decreased by JWH-210 treatment in the striatum and primary cultured neurons. Interestingly, we observed that overexpression of CB1 rescued the GAD67 reduction in JWH-210 treated primary cultured neurons.

Conclusions: Taken together, JWH-210 may induce a psychological behavior and dopamine release in striatum via CB1and GABAergic dysfunction.

Financial Support: 16181MFDS413

Abstract - ID: 50

Author(s):

Hans-Jürgen Stahlberg **(Presenter)**, The Grünenthal Group
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Eric Galia, The Grünenthal Group

Title: INTAC® – a technology platform for extended release, immediate release and fixed-dose combination opioids with abuse deterrent characteristics

Abstract Category: Program Descriptions

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Many solid, extended release (ER), immediate release (IR) and fixed dose combinations (FDC) dosage forms containing opioids can be abused by snorting of crushed product or preparation of solutions for subsequent injection. Abuse deterrent formulations (ADF) aim to impede intentional abuse e.g. by pulverization and dissolving.

Methods: GRT INTAC® formulations (Test, T) were investigated in open, randomized, cross-over, relative bioavailability trials against the Reference (R), marketed opioid formulations. Single and multiple oral doses were administered to healthy male subjects under fasted and fed conditions. Serum drug concentrations were determined by validated LC-MS/MS methods. Non-compartmental PK analyses were performed and the usual 80.00 to 125.00% confidence interval (CI) acceptance criteria for bioequivalence were used for comparing Test to the Reference.

Results: The data demonstrate that INTAC® formulations have comparable in-vivo performance to standard immediate and extended release formulations for single entity as well as for combination products.

ADF IR: The 90% confidence intervals for C_{max}, AUC_{0-t}, and $AUC_{0-?}$ of the Test formulation was within the range usually accepted for confirmation of bioequivalence. The similarity of T and R formulations is further demonstrated by the point estimate being close to 100%.
ADF ER: In a set of eight randomized, open label, single and multiple dose, fasted and fed BE trials, 6 different dose strengths of an opioid were investigated. Bioequivalence to the conventional ER formulations was confirmed for all formulations tested.
ADF FDC (ER monolithical dosage form with two APIs): The 90% CIs calculated for the T/R ratios of the mean pharmacokinetic parameters (AUC_{0-t} and C_{max}) in both the fasted and fed states were within the range commonly accepted for demonstrating bioequivalence (80.00 to 125.00%).

Conclusions: Abuse deterrent formulations comprising INTAC® technology may enable physicians to switch patients from conventional to reformulated ADF products.

Financial Support: The studies were sponsored by Grünenthal GmbH.

Abstract - ID: 51

Author(s):

David White **(Presenter)**, Medications Discovery and Toxicology Branch
Jane Acri, NIDA

Title: NIDA addiction treatment discovery program: Evaluation of potential pharmacotherapies for substance use disorders

Abstract Category: Program Descriptions

Abstract Detail: Animal Study

Drug Category: Polydrug

Topic: Other

Aims: To evaluate potential pharmacotherapies as treatments for the medical management of substance use disorders (SUDs) through preclinical testing.

Methods: The goal of the ATDP is the discovery of compounds with efficacy for relapse prevention and/or reduced drug taking by evaluating them in established preclinical models using standard protocols developed through academic laboratories and contract research organizations under contract to NIDA. In addition to its discovery efforts, the ATDP offers predictive safety and toxicology profiling to researchers for the purpose of lead selection from a chemical series. It also replicates published preclinical findings for compounds of interest prior to the initiation of a clinical trial by the Pharmacotherapies Development Program. Submitted or acquired compounds are evaluated by the ATDP in specific *in vitro* and *in vivo* assays geared to demonstrate efficacy according to their individual mechanisms of action.

Results: Compound submitters from academia and pharma retain all of the rights to their compounds and Program does not release data without express permission. Targets and related compounds of interest would include, but are not limited to, those that selectively reduce cocaine self-administration, modulate stress-related and drug cue-induced reinstatement of drug seeking, and ameliorate cannabis withdrawal and self-administration. NIDA is primarily interested in advancing "late stage" development compounds for selected targets but is open to collaboration with both academic and pharma partners to identify new targets and evaluate novel compounds.

Conclusions: The ATDP encourages companies and researchers to contact us to discuss submission of compounds selective for the targets listed and/or to suggest novel targets/compounds for which theoretical rationale can be developed or for which there is supporting preclinical data.

Financial Support: NIDA/DTMC

Abstract - ID: 52

Author(s):

Jacob Borodovsky **(Presenter)**, Geisel School of Medicine at Dartmouth
Alan Budney, Geisel School of Medicine at Dartmouth

Title: Home cultivation and dispensary provisions of cannabis laws and use of cannabis edibles

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Policy

Aims: U.S. states' medical and recreational cannabis laws (CL) have heterogeneous legal structures. Provisions within CLs that dictate legal mechanisms of access to cannabis may impact public health by influencing use of diverse cannabis products. Policymakers often debate whether or not to permit two CL provisions - home cultivation (HC) and dispensaries. This study examined relationships among HC and dispensary provisions, cannabis cultivation practices, and use of edible cannabis products (i.e., "edibles").

Methods: Data from 1813 cannabis-using adults were collected using an online cannabis use survey distributed via Facebook advertising. Each U.S. state was coded for the presence or absence of HC and dispensary provisions. Analyses were conducted using adjusted logistic regression.

Results: Compared to individuals in Non-CL states, individuals in CL states that permit HC and in CL states that permit dispensaries were more likely to report past month edible use (OR: 3.1, 95% CI: 2.4, 4.0; OR: 3.2, 95% CI: 2.4, 4.4, respectively). Compared to individuals in Non-CL states, individuals in CL states that permit HC were more likely to report currently growing cannabis (OR: 5.4, 95% CI: 3.8, 7.6) and making edibles with (rather than smoking) the leftover parts of the plants (OR: 2.3, 95% CI: 1.7, 3.1). Individuals in CL states that permit HC were more likely to have made edibles in the past month (OR: 2.3, 95% CI: 1.6, 3.4), while individuals in CL states that permit dispensaries were more likely to have purchased edibles in the past month (OR: 2.8, 95% CI: 1.9, 4.1).

Conclusions: Findings illustrate that specific legal provisions may have both different and overlapping impacts on population-level patterns of cannabis use. Home cultivation is a CL provision that is uniquely related to edible cannabis use as individuals who grow cannabis, use the leftover parts of the plant to make edibles. Policymakers concerned about edible cannabis products that lack standardized labeling and dosing might consider these findings when deciding how to regulate home cultivation.

Financial Support: T32DA037202

Abstract - ID: 53

Author(s):

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Title: A dynamic causal modeling study of the working memory system in marijuana users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Imaging

Aims: Understanding how chronic marijuana use regulates working memory circuits may have important implications in the treatment of cannabis use disorder (CUD). Findings in previous studies suggest that CUD is associated with altered cortical-striatal circuits within the working memory system. In the present study, we directly tested this hypothesis using dynamic causal modeling (DCM), which measures effective (directional) connectivity among brain regions.

Methods: The DCM analysis was conducted based on the functional magnetic resonance imaging (fMRI) data acquired from 23 CUD subjects and 22 matched controls while performing a n-back working memory task with interleaving 2-back and 0-back periods. The fMRI data were downloaded from the Human Connectome Project. The 'all back' contrast was used as a single input to the DCM, and the 2-back – 0-back contrast was used as a modulator of effective connectivity. All changes caused by the modulator were relative to the endogenous connectivity, which is independent of modulation effect of the modulator.

Results: The two groups did not show difference in behavioral performance. Significant between-group differences in effective connectivity were found. In the CUD subjects, the modulator (2-back – 0-back) caused a decrease of the left (L) dorsolateral prefrontal cortex (DLPFC) to right (R) caudate effective connectivity, and an increase of the L ventrolateral prefrontal cortex (VLPFC) to R caudate effective connectivity. In the controls, the modulator did not cause any change in these two connectivities. Greater increase of the L VLPFC to R caudate effective connectivity was associated with better 2-back performance (relative to 0-back).

Conclusions: These DCM findings confirmed altered cortical-striatal working memory circuits in CUD, which could be potential therapeutic targets for CUD. In the CUD subjects, the increased L VLPFC to R caudate effective connectivity could be compensatory to the decreased L DLPFC to R caudate effective connectivity.

Financial Support: NIDA Grants # R01 DA034131 (LM), U54 DA038999 (FGM/JLS)

Abstract - ID: 54

Author(s):

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Title: Predicting opioid binding affinity using molecular docking

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Chemistry

Aims: Opioids represent a class of drugs commonly used to treat moderate to severe pain. However, the therapeutic utility of opioids may be limited due to the development of tolerance and dependence and their potential for abuse. The large influx of new synthetic opioids permeating the street-drug market has generated the need for a fast and effective method to evaluate the risk of a substance to public safety.

Methods: A molecular docking procedure was developed to predict the binding affinity of uncharacterized drugs to the three main opioid receptor subtypes (mu, delta, and kappa). The model was validated by correlating the docking score of structurally diverse opioids with experimentally determined binding affinities to the three receptors.

Results: The binding concentration regime of the fentanyl derivatives was accurately predicted, and the binding score was strongly correlated to the experimental binding affinity (r=0.9). Fentanyl derivatives with sub-nanomolar binding affinity (e.g. carfentanil and sufentanil) have significantly lower binding scores (dG < -10 kcal/mol), while less potent fentanyl derivatives have increased binding scores (dG > -8 kcal/mol).

Conclusions: The strong correlation between the predicted binding scores and the experimental binding affinities suggests that this approach can be used to accurately predict the binding strength of opioid substances in the absence of *in vitro* data.

Financial Support: I am going to apply for the CPDD travel award for early career investigators for financial support.

Abstract - ID: 55

Author(s):

Brian Kangas, ADARC - McLean Hospital
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Title: Putamen MRS changes induced by stimulus discrimination and reversal learning in nonhuman primates

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Imaging

Aims: Extended cocaine exposure in nonhuman primates is associated with striatal glutamate (Glu) abnormalities and abnormalities in various cognitive functions, including stimulus discrimination and reversal learning. Such deficits may promote behavioral inflexibility and, in humans attempting to abstain from cocaine use, increase relapse vulnerability. As a prelude to studying effects of chronic cocaine self-administration on the relationship between Glu and cognition in squirrel monkeys, this study was conducted to determine effects of training in stimulus discrimination and reversal learning tasks on brain Glu levels.

Methods: We used 9.4 Tesla proton magnetic resonance spectroscopy (MRS) to quantify Glu and other metabolites in putamen (Put) and dorsal anterior cingulate cortex (ACC), before and after male subjects (N=8) were trained to stability on touchscreen-based stimulus discrimination and reversal learning tasks (Kangas & Bergman, 2014, PMC3844073). MRS metabolites and water were measured with a STEAM sequence, quantified with LCModel, and expressed as metabolite/water ratios (Liu et al., 2011, PMC3169716).

Results: Subjects' behavioral performance was comparable to that observed previously in squirrel monkeys (Kangas & Bergman, 2014, PMC3844073), and there was an association between discrimination and reversal learning competency (R^2=0.82, P < 0 .005). Learning increased Put Glu (Wilcoxon 2-tailed P < 0 .04) and N-acetylaspartate (NAA) levels (Wilcoxon 2-tailed P < 0 .008) but did not alter ACC metabolite levels.

Conclusions: Training in stimulus discrimination and reversal learning tasks selectively increased Put Glu and NAA levels, which could reflect increased Put neuroplasticity and/or metabolism. These findings are consistent with prior studies reporting that Put supports motor skill development and concept learning. The findings also suggest that MRS measures of Glu and NAA may help clarify mechanisms underlying cocaine's impairment of cognition-related behavior.

Financial Support: Supported in part by NIH grants R21DA039301, K01DA035974, and S10RR019356, and by the Counter-Drug Technology Assessment Center, an office within the Office of National Drug Control Policy, via contract number DBK39-03-C-0075, awarded by the Army Contracting Agency. The content of the information does not necessarily reflect the position or the policy of the Government and no official endorsement should be inferred.

Abstract - ID: 56

Author(s):

Masahiko Funada **(Presenter)**, NIMH, NCNP

Title: Identification of new psychoactive substances: Opioid receptor agonist in CHO cells expressing the cloned human mu opioid receptor

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Opiates/Opioids

Topic: Dependence

Aims: We investigated the adaptive changes in the expression of the human mu-opioid receptor in CHO-K1 cells in order to assess the usefulness of Chinese hamster ovary cells (CHO-Mu) as cellular models to clarify the acute and chronic effects of opioid agonists. Functional assays measuring the changes in the intracellular calcium levels have commonly been used to screen for compounds that modulate the activities of target receptors or ion channels.

Methods: In the present study, we performed a calcium flux assay with the Fluo-4 calcium indicator to measure changes in intracellular calcium levels and investigate the agonist activities of the mu opioid receptor.

Results: Acute treatment with mu-opioid receptor selective agonist DAMGO or morphine stimulated intracellular calcium mobilization in a concentration-dependent manner. New psychoactive substances U-47700 or butyrfentanyl also stimulated intracellular calcium mobilization. These effects were significantly blocked by pretreatment with the mu opioid receptor antagonist cyprodime. These findings highlight the importance of assays that measure changes in intracellular calcium levels for drug discovery of selective mu receptor agonists. Opioid receptor antagonist naloxone robustly stimulated intracellular calcium mobilization in CHO-Mu cells after subchronic treatment with morphine for 6 hours, which is a phenomenon similar to that seen in physical dependence and withdrawal.

Conclusions: These results suggest that CHO-Mu cells could be useful models of opioid dependence in relation to the functional adaptation of the mu-opioid receptor.

Financial Support: This research was supported by a Research Grant for Regulatory Science of Pharmaceuticals and Medical Devices, Health and Labour Sciences Research Grants from the Ministry of Health, Labour and Welfare of Japan (to M.F.).

Abstract - ID: 57

Author(s):

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Title: Examining patterns of tobacco product use among pregnant women

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Epidemiology

Aims: Monitoring use of tobacco and nicotine delivery products among pregnant women is a public health priority due to the serious potential adverse impacts on maternal and infant health. Yet little research in nationally representative samples has reported on this topic. Thus we examined prevalence of using tobacco cigarettes, e-cigarettes, and other tobacco/nicotine delivery products in a nationally representative sample of pregnant women, as well as the prevalence of using these products alone versus in combination.

Methods: Data were obtained from all pregnant women in the first wave of the Population Assessment of Health and Tobacco (PATH, 2016) study (*N* = 387). Prevalence of use of specific products was examined for the population overall and by tobacco cigarette smoking status. We also examined the overall prevalence of single versus dual tobacco product use, and explored some common products and product combinations used within these two groups.

Results: Overall prevalence was highest for tobacco cigarettes (13.8%) and e-cigarettes (4.9%). Use of all other products was generally highest among current smokers, then former smokers, and last never-smokers. Regarding patterns of use, single product users comprised 9.5% of the sample, with most using tobacco cigarettes (86%), e-cigs (8.1%) or hookah (4.6%) alone. Dual users comprised 3.8% of the sample, with the majority using cigarettes plus e-cigs (67%) or cigarettes plus hookah (14%).

Conclusions: Prevalence estimates for tobacco/nicotine delivery product use during pregnancy suggest a need for more intensive or targeted tobacco control and regulatory strategies targeting pregnant women, particularly current cigarette smokers as most dual use involved cigarettes plus an additional product. Never smokers, by contrast, reported zero use of almost all products examined except hookah, indicating a need for research on reasons for use and perceptions of risk surrounding hookah use during pregnancy.

Financial Support: This research was supported by National Institute of General Medical Sciences Centers of Biomedical Research Excellence Center Award P20GM103644 and National Institute on Drug Abuse Institutional Training Award T32DA007242.

Abstract - ID: 58

Author(s):

Sabriya Linton **(Presenter)**, Emory University
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Zev Ross, ZevRoss Spatial Analysis
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Title: Social causation and neighborhood selection processes underlie associations among neighborhoods, social networks and illicit drug use among adults relocating from public housing

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Behavior

Aims: Theories of social causation and social influence, which posit that neighborhood and social network characteristics are distal causes of substance misuse, are frequently used to interpret associations among neighborhoods, social networks, and illicit drug use. These associations are also hypothesized to result from *selection* processes, in which substance misuse determines the places where people live and influences with whom people interact. This study investigates the extent to which these competing mechanisms co-occur- a topic that remains underexplored among adults.

Methods: This longitudinal study utilizes structural equation modeling to determine the paths that relate census tract characteristics (i.e., economic deprivation, alcohol outlet density, violent crime), social network characteristics (i.e., having at least 1 substance-using social network member) and illicit drug use among 172 African American adults relocated from public housing in Atlanta, Georgia. The cohort was followed every 6-9 months from 2009 to 2014. Self-reported individual and egocentric network-level characteristics were captured via survey. Administrative data sources were analyzed to describe the census tracts where participants lived. Waves 1 (pre-relocation), 2 (1st wave post- relocation), and 7 (the final wave of data collection) were analyzed.

Results: When controlling for individual-level age, gender, and income at wave 1, residing in census tracts with more economic disadvantage at wave 1 was significantly associated with illicit drug use at wave 1, and residing in census tracts with higher alcohol outlet density at wave 2 was associated having at least 1 substance-using social network member at wave 2. Additionally, illicit drug use at wave 1 was associated with living in an economically-disadvantaged census tract at wave 2.

Conclusions: This study provides empirical support for both social causation theory and neighborhood selection processes. Policies that improve local economic conditions and limit the establishment of alcohol outlets may discourage substance use. Future studies should further identify the barriers that prevent substance users from obtaining housing in less disadvantaged neighborhoods.

Financial Support: NIDA; Emory Center for AIDS Research

Abstract - ID: 59

Author(s):

Cynthia Price **(Presenter)**, University of Washington
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Chieh Cheng, University of Washington
Elaine Thompson, University of Washington

Title: Interoceptive awareness, emotion regulation and relapse among women in SUD treatment

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Treatment

Aims: This NIDA-funded RCT tests the efficacy of Mindful Awareness in Body-oriented Therapy (MABT) as an adjunct to intensive outpatient treatment (IOP) for women. With MABT individuals explicitly learn interoceptive awareness skills for emotion regulation. Brain imaging studies suggest the importance of interoception for regulation to support relapse prevention among substance users; this is the first clinical study to address these relationships. This NIDA-funded RCT tests the efficacy of Mindful Awareness in Body-oriented Therapy (MABT) as an adjunct to intensive outpatient treatment (IOP) for women. With MABT individuals explicitly learn interoceptive awareness skills for emotion regulation. Brain imaging studies suggest the importance of interoception for regulation to support relapse prevention among substance users; this is the first clinical study to address these relationships.

Methods: Women in IOP were recruited from three community clinics; 219 enrolled and were randomly assigned in conjunction with their intensive outpatient treatment (treatment as usual or TAU) to one of 3 study conditions: MABT, Women's Health Education (WHE) or TAU only. Four assessments conducted across one year include respiratory sinus arrhythmia (RSA), a psychophysiology indicator of regulation, the Multidimensional Assessment of Interoceptive Awareness (MAIA), and the Time Line Follow Back interview to assess relapse events. In the final year of data collection, 150 women have completed the post-intervention (3 month) assessment. Analyses include RM ANOVA and regression analyses.

Results: Participant ages ranged from 20-61, 87% had public health insurance and 50% reported no monthly income. Primary drugs used were stimulants, (45%), alcohol (40%), and narcotics (25%); 22% used multiple substances. At baseline, 65% screened positive for PTSD, 34% for an eating disorder, and 44% for moderate to severe depression.

The MABT group, compared to WHE and TAU, showed significant (p =. 001) pre-post improvements in interoceptive awareness. In addition, at post-test, the MABT group showed greater increases in RSA in response to a body awareness task, and this effect was fully mediated by increases in MAIA scores. Relapse events varied by group: 25% MABT, 32% WHE and 34% TAU.

Conclusions: Results demonstrate that MABT increases interoceptive awareness and lessens risk of relapse for women in early SUD treatment. Thezs preliminary findings point to the influence of interoceptive awareness on regulation, yielding new and important clinical implications for research and treatment.

Financial Support: National Institute on Drug Abuse at the National Institutes of Health: NIDA R01DA033324

Abstract - ID: 60

Author(s):

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William Stoops **(Presenter)**, University of Kentucky

Title: Bupropion-naltrexone combinations as a pharmacotherapy for cocaine-use disorder

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Behavior

Aims: Cocaine-use disorder (CUD) and obesity share common neurobiological substrates. The weak dopamine reuptake inhibitor bupropion (BUP) and the opioid antagonist naltrexone (NTX) are effective anorectics that that also modestly attenuate the abuse-related effects of cocaine (COC). The FDA approved a BUP-NTX combination (Contrave®), but the efficacy of BUP-NTX for CUD disorder has not been determined.

Methods: In this mixed-model study, we determined whether BUP-NTX combinations reduce COC self-administration in humans. Separate cohorts of non-treatment seeking, CUD participants (n=12/group) were randomized to different maintenance conditions of NTX (0 or 50 mg/day). Participants in each NTX cohort were maintained concurrently on increasing doses of BUP (0, 100, 200, and 400 mg/day). After participants in each BUP cohort were maintained for at least 4 days on each of the BUP doses, the reinforcing effects of intranasal COC (0, 40, and 80 mg) were determined using a progressive-ratio choice procedure.

Results: COC increased responding on the progressive-ratio procedure during placebo-placebo maintenance. BUP alone (i.e., combined with 0 mg NTX) or NTX alone (i.e., combined with 0 mg BUP) did not affect responding for COC. Combining BUP and NTX significantly reduced COC self-administration. Combining 400 mg/day BUP and 50 mg/day NTX produced a large (i.e., 3.8 choices) and statistically significant reduction in the reinforcing effects of 40 mg COC. The BUP-NTX combinations were well tolerated alone and when combined with COC.

Conclusions: A BUP-NTX combination (i.e., 400 and 50 mg, respectively) decreased COC self-administration by approximately 50%, which is one of the largest reductions observed in a human laboratory study. Efficacy of this BUP-NTX combination for CUD should be assessed in a clinical trial.

Financial Support: Supported by NIDA grant R01 DA 032254 awarded to CRR.

Abstract - ID: 61

Author(s):

Miriam Adelson **(Presenter)**, Adelson Clinic, Tel Aviv Medical Center
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Title: Successful of non-scheduled urine drug tests among all students in a private high school in Las Vegas

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Adolescent

Aims: Adolescents is the most vulnerable period to develop addiction when exposed to psychoactive substances. Despite a substantial experience of psychoactive usage prevention programs (including education and even random urine tests) their success was limited. To deter and give students a reason to resist peer pressure to take drugs, to identify students who have started using drugs to counseling and to identify those who already have drug problems, to be referred for treatment, a urine test program was initiated.

Methods: Over six years (2008 to 2014) in a private high school, urines for substance abuse (cannabinoids, cocaine, heroin, morphine, oxycontin, methadone, benzodiazepine, amphetamines, ethanol) were collected and tested among all grades (9-12 th) and staff. The tests were done every few months in a random manner, to everyone. Positive tests were re-checked and were defined as positive if no medical prescriptions were presented.

Results: During this period we performed 19 tests (about three per year) among all available students each time (N=280, ranged 37-137). Of all the 19 test times during the six years, only four students defined positive for cannabinoids (two of them only once, and two more than once), and 14 for opioids and 15 for amphetamines, which were all with prescriptions (i.e.: ADHD, cough).

Conclusions: The program present minimum substance usage among adolescent children. Our finding is limited to a private high school with selective population group, where all students and stuff agreed to participate in the program when registering for school or upon employment. Based on our observational non-controlled study, future programs including controlled studies are recommended.

Financial Support: Adelson Family Foundation

Abstract - ID: 62

Author(s):

Matthew Gullo **(Presenter)**, University of Queensland
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Jason Connor, University of Queensland

Title: A comprehensive laboratory model of adolescent impulsivity and alcohol use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Adolescent

Aims: Impulsivity is a robust predictor of alcohol use in adolescence. There is little evidence on the causal mechanisms through which it influences drinking or how they are affected by key social factors (peer influence) and genes affecting the dopamine neurotransmitter system (*RASGRF2*, *DRD4 variable-number-of-tandem-repeats* polymorphism). This study reports the development of the first comprehensive laboratory model of adolescent impulsivity and alcohol use.

Methods: 120 adolescents (50% female) of legal drinking age (18-21) provided saliva for genetic analysis before exposure to 1 of 3 experimental manipulations to increase impulsivity (reward cue exposure, mood induction, ego depletion). Changes in disinhibition (stop-signal task) and reward-seeking (BAS-Fun Seeking) were measured before participants completed a laboratory drinking task alone or with a heavy-drinking confederate. It was hypothesized that only reward cue exposure and ego depletion would increase alcohol consumption, mediated by increased reward-seeking and disinhibition, respectively. Effects would be strengthened by a heavy-drinking peer and at-risk genotypes on *RASGRF2* and *DRD4*.

Results: Impulsivity induced by reward cues increased alcohol consumption, with the effect mediated by increased reward-seeking. Negative mood induction increased disinhibition but decreased reward-seeking, resulting in no overall effect on drinking. *RASGRF2* TT genotype carriers were more susceptible to experimental manipulations and consequently drank more alcohol. Peer influence increased drinking independent of experimental manipulations.

Conclusions: Findings provide causal evidence that extends survey-based research on impulsivity, and suggest a unique role for *RASGRF2* in impulsive drinking. The new laboratory model can provide novel insights that could be used to help identify new targets for intervention.

Financial Support: National Health and Medical Research Council (NHMRC) of Australia. CPDD Sponsor: Prof Jan Copeland CPDD Sponsor Email: j.copeland@unsw.edu.au

Abstract - ID: 63

Author(s):

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Title: What predicts underage drinking? Investigating patterns of attachment, saying 'no', and alcohol expectancies

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Adolescent

Aims: Early engagement in drinking is a strong predictor of alcohol-related problems in adulthood. Prevention programs aimed at reducing early adolescent alcohol use have the potential to make significant improvements to public health. Attachment theory and research suggest an important role of attachment styles (patterns of relating, thinking, and behaving). However, there is no existing theory linking attachment to early alcohol use through specific cognitive mechanisms. Due to the social nature of early adolescent drinking, proximal predictors include social refusal self-efficacy (confidence in refusing alcohol under social pressure), and social expectancies (beliefs of social enhancement from drinking). Therefore, a new theoretical model was developed and tested, specifying attachment anxiety (fear of abandonment, sense of unworthiness) leads to greater problematic drinking cognitions (lower refusal self-efficacy, and higher social expectancies), which in turn predict alcohol misuse.

Methods: The current study tests this model with Structural Equation Modelling (SEM), using self-report measures from a non-clinical sample of 429 adolescents (age 13-17 years).

Results: Results support the new model. Refusal self-efficacy fully mediated the relationship between attachment anxiety and alcohol use, and partially mediated the relationship between social expectancies and alcohol use. Contrary to predictions, social expectancies did not mediate the relationship between attachment anxiety and alcohol use.

Conclusions: These findings advance our understanding of the role of attachment quality and cognitive mediating mechanisms which can inform prevention efforts.

Financial Support: None. CPDD Sponsor: Prof Jan Copeland CPDD Sponsor Email: j.copeland@unsw.edu.au

Abstract - ID: 64

Author(s):

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Title: Novel antiaddiction target and ligand: Illudalic acid derivatives inhibit recombinant PTPRD phosphatase and are tolerated in vivo

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Mechanisms of Action

Aims: PTPRD is a receptor type protein tyrosine phosphatase whose gene displays variants associated with vulnerability to addiction, abilities to quit smoking, levels of PTPRD mRNA expression in postmortem human brain and individual differences in rewarding human responses to amphetamine ($10^{-2} > p > 10^{-8}$). Each of these features increases interest in drugs that could modify PTPRD activities to provide a novel antiaddition medications development strategy.

Methods: Cocaine Conditioned Place Preference (CPP): Was assessed in a two-compartment Plexiglas chamber with a 20 min pre-test, cocaine conditioning was conducted over a 2-day period with two 20-min sessions per day and a 20 min post test. Human D1 phosphatase domain fusion protein and assay: PTPRD D1 phosphatase domain sequences were amplified using human cDNA . Recombinant PTPRD D1 phosphatase domain fusion protein purified from amplified sequences in pET-43.1 Ek/LIC (Snapgene) converts p-nitrophenyl phosphate into paranitrophenolate whose absorbance at 405 nM provides a useful assay.

Results: There are robust differences in levels of PTPRD mRNA expression in brain samples from individuals with different PTPRD haplotypes. Heterozygous PTPRD knockout mice displayed altered cocaine conditioned place preference. Homozygous mice also displayed reduced cocaine CPP, though deficits in mnemonic tasks (Morris water maze) provide cautions in interpretation.

A 7butoxyilludalic acid analog (chosen based on activity at related phosphatases) was active in inhibiting recombinant PTPRD phosphatase *in vitro*. IC_{50} values were ca 3 uM. Activity increased with preincubations up to 18 min, consistent with the pseudoirreversible inhibition. Neither ip administration of ascending doses of the 7 butoxy illudalic acid compound to 62 mg/kg solubility limit during one day nor repeated ip injections over a two weeks provided drug related toxicities.

Conclusions: 1. Human association and mouse model data identify PTPRD as a novel target for addiction therapeutics. 2. Recombinant PTPRD D1 phosphatase domain protein can be expressed as an enzymatically active fusion protein when purified from expressing E Coli. 3. A 7 butoxy illudalic acid derivative displays good potency in inhibiting PTPRD phosphatase and fails to display any drug-related behavioral or histopathologic toxicity from short term exposures. 4. Analogs of this illudalic acid analog are likely to provide lead compounds for development of novel PTPRD-directed antiaddiction therapeutics

Financial Support: Biomedical Research Foundation of New Mexico, NIDA IRP

Abstract - ID: 65

Author(s):

Lais Berro **(Presenter)**, Emory University
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Cydney Eisenberg, Emory University
Melis Odabas-Geldiay, Emory University
Leonard Howell, Emory University

Title: Effects of GABAA receptor positive allosteric modulators on the behavioral and neurochemical effects of methamphetamine in rhesus monkeys

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Behavior

Aims: The aim of the present study was to evaluate the effects of temazepam and eszopiclone, two $GABA_A$ -receptor positive allosteric modulators, on the behavioral neuropharmacology of methamphetamine in adult rhesus macaques.

Methods: Sleep-like measures and general daytime activity were evaluated with Actiwatch monitors. Methamphetamine self-administration was evaluated during morning behavioral sessions. Methamphetamine-induced dopamine overflow was assessed through *in vivo* microdialysis targeting the nucleus accumbens.

Results: Nighttime treatment with either temazepam or eszopiclone was ineffective in improving sleep-like measures disrupted by methamphetamine self-administration. Pretreatment with a low dose of temazepam 30min before self-administration sessions increased methamphetamine self-administration without affecting normal daytime home-cage activity. At a high dose, temazepam pretreatment decreased methamphetamine self-administration and attenuated methamphetamine-induced increases in dopamine in the nucleus accumbens, without decreasing general daytime activity. Eszopiclone exerted no effects on methamphetamine intake or drug-induced increases in dopamine.

Conclusions: Our study suggests that treatments based on $GABA_A$ receptor allosteric modulators are not effective for the treatment of sleep disruption in the context of psychostimulant use. In addition, distinct $GABA_A$ -receptor positive allosteric modulators differentially modulated the abuse-related effects of methamphetamine. These findings further elucidate the role of $GABA_A$ receptors-mediated neurotransmission on methamphetamine-induced sleep disruption and self-administration and the role of dopaminergic mechanisms on these phenomena.

Financial Support: USPHS grants DA010344, DA031246, and ODP51OD11132, AFIP, FAPESP grant #2015/25482-3.

Abstract - ID: 66

Author(s):

Bronwyn Myers **(Presenter)**, South African Medical Research Council
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Title: A pilot test of a brief intervention for hazardous/harmful alcohol use and depression among chronic disease patients in the Western Cape, South Africa

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Treatment

Aims: Brief interventions for hazardous/harmful alcohol use and depression are largely absent from primary health care services in South Africa due to limited information on feasibility, acceptability and utility. To address this gap, we present findings from a pilot test of a three-session blended motivational interviewing-problem solving therapy intervention for reducing alcohol use and depression among chronic disease patients.

Methods: We delivered a brief intervention for alcohol and depression at four primary care clinics (2 urban and 2 rural) in the Western Cape. Forty patients who screened positive for depression or hazardous/harmful alcohol use and who were obtaining treatment for HIV or diabetes were recruited to be part of the pilot (10 per facility). Participants who enrolled in the study completed a baseline behavioural assessment before receiving a lay counsellor-delivered intervention. One month after completing the intervention, they completed a follow up assessment. We conducted t- tests to examine changes in alcohol, depression and psychological distress from baseline to the one month follow-up endpoint. Qualitiave interviews were also conducted to obtain indepth feedback on participants' experiences of the intervention.

Results: Most participants completed all three of their counselling sessions (88%), with another 10% completing two out of the three sessions. In this pilot study, a 90% follow up rate was obtained. Findings demonstrate that after receiving the intervention, participants who were drinking at hazardous/harmful levels at the start of the study (AUDIT scores >8) were able to signficantly reduce their alcohol problems ($p < 0.01$). Participants also reported signficant reductions in their depression severity ($p < 0.0001$) and psychological distress ($p < 0.0001$) at one month follow-up. qualitative interviews revealed that the participants valued the counselling they received and reported that it helped them make positive changes to their lives. They specifically mentioned greater use of problem-focused and adaptive emotion-focused coping strategies for dealing with life problems and the stressors of living with a chronic disease.

Conclusions: Findings suggest that this brief intervention is feasible to implement in busy, low resourced health care sttings, acceptable to chronic disease patients and appears to have utility for improving alcohol and other mental health outcomes. Randomised controlled trials are needed to provide more rigourous evidence of its effectiveness for improving alcohol and mental health outcomes as well as its potential to facilitate better chronic disease outcomes.

Financial Support: This work was supported by the joint funded initiatives of the British Medical Research Council, Wellcome Trust and DFID (MR/M014290/1). Sponsor: Wendee M. Wechsberg wmw@rti.org

Abstract - ID: 68

Author(s):

Victoria Votaw **(Presenter)**, McLean Hospital
Olivera Bogunovic, McLean Hospital, Harvard Medical School
R. Kathryn McHugh, McLean Hospital

Title: Nonmedical prescription tranquilizer use among individuals with opioid use disorder in a nationally representative sample

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Epidemiology

Aims: Among those with opioid use disorder (OUD), nonmedical prescription tranquilizer (e.g., benzodiazepine) use is associated with poor prognosis and heightened overdose risk. However, few population-based studies have examined nonmedical prescription tranquilizer (NMPT) use among those with OUD. Identifying correlates of NMPT use in this population can inform efforts to prevent the initiation and maintenance of NMPT use, thus potentially improving OUD outcomes. We aimed to examine the prevalence and correlates of NMPT use and tranquilizer use disorder (TUD) among individuals with OUD in a nationally-representative sample.

Methods: This analysis utilized data from the 2002-2014 National Survey on Drug Use and Health and included respondents that met DSM-IV criteria for a past-year OUD (N=8415). A linear regression model was utilized to identify characteristics (e.g., demographics, substance use, psychiatric distress) associated with days of past-year NMPT use. Logistic regression was utilized to identify correlates of past-year TUD (based on DSM-IV criteria).

Results: Approximately 46% of participants reported past-year NMPT use; of those, 30% met criteria for TUD in the past year. Results of the linear model found that other drug use (i.e, past-year marijuana, stimulant, and sedative use; presence of nicotine dependence) and psychiatric distress were significantly associated with days of NMPT use (all ps

Conclusions: Findings from this cross-sectional, population-based analysis found that nearly half of respondents with OUD reported past-year NMPT use, nearly a third of whom met DSM-IV criteria for TUD. Polydrug use and significant psychiatric distress were associated with NMPT use and TUD, consistent with findings among those in treatment for OUD.

Financial Support: K23 DA035297

Abstract - ID: 69

Author(s):

Walter Roberts **(Presenter)**, Yale School of Medicine
Sherry McKee, Yale School of Medicine

Title: Doxazosin improves inhibitory control and reduces withdrawal symptoms in smokers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: Noradrenergic pathways in the prefrontal cortex play a critical role in higher order cognitive functioning. Preclinical research suggests that ?1 adrenergic antagonists may improve cognitive performance. Such drugs may be useful for blocking withdrawal-induced cognitive deficits in smokers who are attempting to quit. This human laboratory study examined the effects of doxazosin, an ?1 adrenergic receptor antagonist, on cognitive functioning, withdrawal symptoms, and smoking behavior in a group of nicotine-deprived smokers.

Methods: Non-treatment seeking dependent cigarette smokers (*n* = 34) were randomly assigned to receive placebo, 4/mg day, or 8 mg/day doxazosin. Cognitive performance was assessed using a continuous performance task (CPT). Cognitive functioning and withdrawal symptoms were assessed in the laboratory at baseline and twice following a seven-day titration period: once in a nicotine-deprived state and again in non-nicotine deprived state. A smoking lapse task assessed participants' ability to delay smoking.

Results: When deprived of nicotine, participants receiving placebo showed impaired cognitive performance on the CPT. Participants receiving 8 mg/day doxazosin, however, made fewer commission errors on the CPT compared to their pre-drug performance during both the nicotine deprivation and non-deprivation assessments. Participants receiving either dose of active doxazosin reported fewer withdrawal symptoms when nicotine deprived than those on placebo. Those that showed the greatest improvement on the CPT under doxazosin had increased ability to resist smoking (i.e., latency to smoke) during the smoking lapse task. Self-reported withdrawal symptoms also were negatively associated with time to smoking.

Conclusions: Doxazosin reduced symptoms of nicotine withdrawal according to self-report and cognitive assessment. Eight mg/day doxazosin improved inhibitory control above pre-drug levels. Doxazosin may be useful as a smoking cessation aid.

Financial Support: Research supported by NIH grants R21DA033597, P50DA033945, R01AA017976, UL1TR001863, and T32DA007238.

Abstract - ID: 70

Author(s):

Megan Moerke **(Presenter)**, Virginia Commonwealth University
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S. Stevens Negus, Virginia Commonwealth University

Title: Role of mu opioid receptors in mediating the effects of amphetamine on cocaine- vs. -food choice in rhesus monkeys

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Other Drug Category: Stimulants and Opioids

Topic: Treatment

Aims: Amphetamine maintenance reduces cocaine use in both preclinical and clinical assays. Although the mechanism responsible is unknown, amphetamine promotes the release of endogenous opioids and opioid receptor activation contributes to some effects of amphetamine. The current study examined the contribution of mu opioid receptor activation in mediating effects of amphetamine in an assay of cocaine vs. food choice in rhesus monkeys.

Methods: Adult male rhesus monkeys (n=5) with indwelling double-lumen catheters were trained to respond for concurrently available cocaine infusions (FR10) and food pellets (FR100) during daily sessions comprised of five cycles across which the unit cocaine dose increased by half-log increments (0, 0.0032-0.1 mg/kg/injection). Cocaine choice was evaluated during treatment with amphetamine, morphine (mu opioid receptor agonist), naltrexone (mu opioid receptor antagonist), and combinations of naltrexone with either morphine or amphetamine. Drug treatments were administered as hourly intravenous infusions over a 7-day period.

Results: Amphetamine ($F_{2,44}$=4.87, p=0.012) and morphine ($F_{3,41}$=12.71, p < 0 .0001) both decreased rate of responding; however, unlike amphetamine, morphine increased cocaine choice ($F_{3,36}$=14.67, p < 0 .0001). Naltrexone antagonized the rate-decreasing effects of morphine ($F_{4,57}$=4.76, p=0.0022) and amphetamine ($F_{2,44}$=3.70, p=0.033) at naltrexone doses that had no effect on rate when administered alone ($F_{2,29.9}$=0.074, p=0.93). Additionally, the combination of amphetamine plus naltrexone increased the number of choices made for food ($F_{2,8}$=5.64, p=0.03) while simultaneously decreasing the number of choices made for cocaine ($F_{2,8}$=7.14, p=0.017).

Conclusions: Collectively, these results suggest that mu opioid receptor activation contributes to rate-decreasing effects of amphetamine maintenance, but opposes amphetamine-induced decreases in cocaine choice. Thus, combination of amphetamine with naltrexone may be superior to amphetamine alone, increasing the reallocation of behavior from drug to non-drug alternatives with lower abuse liability.

Financial Support: R01DA026946 and T32DA007027

Abstract - ID: 71

Author(s):

Michele Staton **(Presenter)**, University of Kentucky College of Medicine
Justin Strickland, University of Kentucky
Jennifer Havens, University of Kentucky College of Medicine
Matt Webster, University of Kentucky

Title: Correlates of hepatitis c seropositivity among high-risk rural women: Opportunities for treatment and services in the criminal justice system

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: *Background/Aims*: Health consequences associated with drug use can be serious, including hepatitis C (HCV). The association between drug use and HCV among women is often exacerbated by injection drug use and sharing injection drug use equipment with partners who engage in these risk behaviors. Despite these risks, and the subsequent health care costs, research is limited on non-traditional, real world settings to identify and outreach to high-risk drug users, particularly those in rural areas. This study examines the relationship between high-risk drug use (injection practices) and related criminal justice consequences associated with HCV among rural women from local jails in Appalachia.

Methods: *Methods*: This study consisted of 400 women that were randomly selected, screened, and consented from three rural jails in the Appalachian region of Kentucky. Women were offered antibody testing for HCV by trained research staff. Analyses primarily focused on the relationship between criminal justice involvement and HCV seropositivity among rural women injectors (n=277) while controlling for age.

Results: *Results*: The majority of women opiate injectors tested HCV+ (70%). Seropositivity was significantly associated with risky injection drug use (e.g., dirty needle use) and IV heroin use. HCV seropositivity was also associated with previous prison incarceration (23% vs 10%), being arrested at an earlier age (21.7 vs 23.3), and having a longer incarceration history (22 vs 12 months). Participants also endorsed numerous barriers to seeking medical care.

Conclusions: *Conclusion:* As expected, injection and high-risk sharing practices were significantly associated with HCV seropositivity. While women endorsed a number of health service utilization barriers, more criminal justice system contact was significantly associated with HCV+ status. Implications for future research include a focus on opportunities for linkages to HCV treatment both during incarceration and during community re-entry, particularly for high-risk rural women.

Financial Support: NIDA R01DA033866

Abstract - ID: 72

Author(s):

Tetiana Nickelsen **(Presenter)**, University of Michigan
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Robert Zucker, University of Michigan
Victor Burlaka, University of Mississippi
Maureen Walton, University of Michigan-Addiction Research Center

Title: Screening youth in the Ukraine for cigarette and marijuana use: Prevalence and correlates

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Adolescent

Aims: Few studies have surveyed children in the Ukraine for substance use. This study survey youth ages (8-17) for cigarette and marijuana use in order to inform future prevention efforts.

Methods: Youth presenting to primary care clinics for annual exams were surveyed anonymously (n=1002). Youth were sampled by age (8-17), gender, and region (rural/urban). Multinomial logistic regression analyses were used to examine correlates of no use, cigarette use only, and marijuana use.

Results: Overall, 74.8% (n=748) reported no cigarette or marijuana use, 19.1% (n=191) ever used cigarettes (but did not use marijuana), and 6.1% (n=61) ever used marijuana (96.7% also used cigarettes). In bivariate analyses, age, Russian nationality (vs. Ukrainian or other), and education were positively associated with cigarette use and marijuana use; marijuana use was also more likely to reported by males and those with less income. Also, cigarette use and marijuana use were associated with: greater alcohol consumption; positive screen for substance misuse (CRAFFT$\geq$2), anxiety (GAD-2$\geq$3) and depression (PHQ-2$\geq$3); and friends' substance use (alcohol, cigarettes, marijuana) (p's>2; p< 0.001) and depression; age, gender, nationality, cigarette use, friends' alcohol, friends' cigarette use, anxiety, and depression were not significant.

Conclusions: Routine screening for substance use should be integrated into annual physicals for youth in the Ukraine. Future research is needed to develop evidenced-based interventions for youth who screen positive for substance use that can be easily delivered with fidelity in these settings.

Financial Support: Fogarty grant #D43 TW009310

Abstract - ID: 73

Author(s):

Karen Hartwell **(Presenter)**, Medical University of South Carolina

Title: Smart capsules are a promising tool to improve medication adherence in clinical trials

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Medication Compliance

Topic: Technology Issues

Aims: Adherence to pharmacotherapy in clinical trials for substance use disorders is poor. Commonly used methods to determine compliance are frequently inaccurate. The ID-Cap® (etectRx, Orlando, FL) is a medication capsule with an ingestible embedded wireless sensor that emits a signal sent to an external reader and subsequently a computerized database with an automatic reminder if not ingested in a timely fashion.

Methods: Healthy volunteers were randomized into one of three groups for the 28 day study: riboflavin 50mg every day in a standard capsule, in an ID-Cap alone, or in an ID-Cap in combination with reminders. Adherence was measured at the twice weekly visits by self-report, urine riboflavin level, and data from the external reader. Baseline demographics were compared using normal Chi-square for categorical characteristics and Wilcoxon Rank-Sum for continuous. The percentages in agreement and kappa coefficients were calculated between the ID-Cap results and the other compliance measures.

Results: Fifty-nine participants completed the study. There were no significant differences in baseline demographics across groups. Similar rates of adverse events were reported between the ID-Cap and standard capsule groups (p=0.10). The ID-Caps groups were significantly more adherent than the riboflavin group as measured by self-report, 90.6% vs. 76.3%, respectively (p=0.03) and by pill count 89.4% vs. 69.7%, respectively (p=0.005). In contrast, riboflavin levels were unable to detect differences between the two groups (p=0.85). Overall there was good agreement and kappa (?) statistics between the self-report/ID-cap (88%, ?=0.76) and pill count/ID-Cap (87.3%, ?=0.75). In contrast there was less agreement (69.7%, ?=0.40) between riboflavin/ID-cap.

Conclusions: Overall ID-Cap self-administration improved compliance measured by self-report and pill count. Urinary riboflavin had poor concordance with other measures of adherence. Taken together the use of smart capsules can more directly measure adherence in pharmacotherapy research.

Financial Support: Funding: NIH/NIDA R44DA036277

Abstract - ID: 74

Author(s):

Claire Benny **(Presenter)**, University of Northern British Columbia
Jodi Gatley, University of Northern British Columbia
Marcos Sanches, Centre for Addiction and Mental Health
Russell Callaghan, Northern Medical Program

Title: Assessing the impacts of minimum legal drinking age laws on police-reported criminal victimization in Canada from 2009-2013

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Policy

Aims: Alcohol-related victimization is highly prevalent among young adults in Canada. Given the recent debate on the impact of minimum legal drinking age (MLDA) legislation in Canada and the United States, the current study aims to assess the potential impacts of MLDA on criminal victimization – a neglected area in the field.

Methods: A regression-discontinuity (RD) approach was applied to data from the Uniform Crime Reporting (UCR) Survey, a national repository of all police-reported crime victimizations in Canada from 2009-2013. The current study includes all police-reported victimization of young adults between 15-23 years of age.

Results: In comparison to females slightly younger than the drinking age, young adults just older than the MLDA had significant, immediate increases in police-reported violent victimizations (e.g., homicide, assault, and robbery) (13.5%; CI = 7.9%-19.2%, $p < 0.001$) and total victimization events (10.4%; CI = 4.9%-15.8%, $p > 0.001$). In males, there were significant and abrupt increases immediately following the MLDA in police-reported violent victimizations (11.7%; CI = 6.4%-17.1%, $p < 0.001$) and total victimizations (12.6%; CI = 7.9%-17.1%, $p < 0.001$) following the MLDA.

Conclusions: This evidence suggests that release from MLDA laws in Canada appears to be associated with an increase in police-reported victimization. This information is pertinent to international debate and informs policy makers of the potential impacts of increasing MLDA in Canada. Increasing the MLDA may attenuate patterns of criminal victimization in newly restricted age groups.

Financial Support: Canadian Institutes of Health Research (CIHR) grant.

Abstract - ID: 75

Author(s):

Russell Callaghan **(Presenter)**, Northern Medical Program
Jodi Gatley, University of Northern British Columbia
Marcos Sanches, Centre for Addiction and Mental Health
Claire Benny, University of Northern British Columbia

Title: Impacts of minimum age of tobacco sales laws on youth smoking in Canada, 2000-2014

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Policy

Aims: Recently, experts from the United States and Canada concluded that raising the minimum age for tobacco sales (MATS) from 18-19 years to 21 years of age would have a substantial impact on reducing smoking among young people. Currently, MATS laws are 18 years of age in Alberta, Saskatchewan, Manitoba, Québec, the Yukon and Northwest Territories, and 19 years of age in the rest of the country. Research on MATS laws is lacking. The current proposal used a regression-discontinuity approach to assess the impacts of current Canadian MATS laws on youth smoking behavior. It was expected that immediately following the release from MATS restrictions, there would be significant and abrupt increases in self-reported current-smoker status in the youth population.

Methods: The project relied on smoking-related data from 7 merged cycles of the 2000-2014 Canadian Community Health Survey (CCHS), national population-based health survey of Canadians aged 12+ years.

Results: In comparison to youth slightly younger than Canadian MATS laws, those just older had significant and abrupt increases of approximately 5 percentage points in current-smoker prevalence—from approximately 20% to 25% ($p < 0.001$)—immediately following the MATS age. There was no evidence showing significant impacts of the MATS laws on number of cigarettes smoked or days smoked among current smokers ($p > 0.05$).

Conclusions: Release from MATS restrictions was associated with significant and immediate increases in population-level current-smoker prevalence among young people. As a result, it seems reasonable to suggest that higher MATS laws might have tremendous potential to reduce youth smoking initiation and subsequent long-term general-population prevalence of smoking in Canada.

Financial Support: Internal funding through University of Northern British Columbia.

Abstract - ID: 76

Author(s):

Noah Gubner **(Presenter)**, UCSF
Anna Pagano, Prevention Research Center
Barbara Tajima, UCSF
Joseph Guydish, UCSF

Title: Daily vs. weekly electronic cigarette users in drug treatment: A comparison of tobacco use, device type, and flavor characteristics

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Behavior

Aims: The goal of this research was to better understand electronic cigarette (e-cigarette) use by individuals in treatment for substance abuse, a population known to have high prevalence of tobacco use and poor smoking cessation outcomes.

Methods: We surveyed 1127 individuals from 24 substance abuse treatment centers across the United States. Overall prevalence of use was determined for the full sample. Among regular e-cigarette users, bivariate analyses and multivariate logistic regression were used to examine factors associated with daily (N=87) versus weekly (N=81) e-cigarette use.

Results: Among the full sample, 59.8% reported lifetime use of e-cigarettes, with 23.6% reporting past 30-day use. There were a number of differences in the device and use characteristics of daily versus weekly e-cigarette users in substance abuse treatment. Daily e-cigarette users were: (a) more likely to have used tank-type (versus 1st generation cig-a-like) e-cigarette devices; (b) used more flavors overall; and (c) were more likely to have used their e-cigarette continuously throughout the day. A multivariate model controlling for significant factors identified with bivariate analyses (clinic type and days with poor mental health) found that daily e-cigarette users were significantly more likely than weekly e-cigarette users to be former smokers (AOR=5.39, $p < 0.005$).

Conclusions: Daily versus weekly e-cigarette users in substance abuse treatment were more likely to be former tobacco cigarette smokers, consistent with reports of higher quit rates among daily e-cigarette users in the general population. However, the majority of daily e-cigarette users were current tobacco cigarette smokers (73.6%), suggesting that most e-cigarette users had not quit. Substance abuse treatment programs should evaluate potential benefits versus potential harms when developing e-cigarette use policies.

Financial Support: NIDA & FDA CTP R01DA036066. NIDA (F32 DA-042554, T32 DA-007250).

Abstract - ID: 77

Author(s):

Ronald Thompson **(Presenter)**, Columbia University
Deborah Hasin, Columbia University

Title: Short-term effects of a smartphone application plus BMI in reducing substance use and sexual risk among homeless young adults: Results from a randomized controlled trial

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: ALCOHOL AND MARIJUANA

Topic: Treatment

Aims: This study evaluated the feasibility and preliminary effectiveness of a smartphone application to self-monitor substance use and sexual risk behaviors plus a brief motivational intervention (BMI) in reducing substance use and sexual risk behaviors among homeless young adults.

Methods: A randomized pilot trial (N=60) compared the smartphone application plus BMI to treatment as usual (TAU) at an inner-city crisis shelter for homeless young adults (18 to 21 years). Participants were assessed at baseline, 2 weeks, 4 weeks, and 6 weeks after baseline to evaluate alcohol consumption, marijuana use, sexual risk behaviors, and other relevant variables. Kruskal-Wallis tests, which account for the non-normal distribution of data, were performed to determine differences between baseline and post-intervention assessments for the entire sample and by condition.

Results: Participants in the smartphone application plus BMI condition significantly reduced their past two-week number of drinks ($p=.023$), times used marijuana ($p=.046$), times engaged in unprotected sex ($p=.012$), and times used drugs before sexual activity ($p=.019$) between baseline and post-intervention. No reductions of substance use or sexual risk behaviors were found among participants in the TAU condition (all $ps>.05$). Findings from participant evaluations, collected at post-assessment, revealed that participants were highly satisfied with the overall quality, approach, and content of the smartphone application plus BMI.

Conclusions: Findings, though from a small sample, suggest that the smartphone application plus BMI is feasible and effective in reducing participant past two-week substance use and sexual risk behaviors. Even if the smartphone application plus BMI proves to be somewhat less effective in terms of long-term behavior change than lengthy, more intensive approaches, the increased coverage from ease of dissemination, particularly with high risk individuals who are difficult to locate and retain, may eventually result in a larger overall public health effect.

Financial Support: K23DA032323.

Abstract - ID: 78

Author(s):

Kristen Morie **(Presenter)**, Yale University
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Zu Wei Zhai, Yale University
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Title: White-matter crossing-fiber microstructure in adolescents prenatally exposed to cocaine

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Adolescent

Aims: Prenatal cocaine exposure (PCE) is associated with risk-taking behaviors, including increased initiation of substance use in adolescence. The neurobiological underpinnings of these behaviors in adolescents with PCE are not well understood. The goal of this study was to compare diffusion-weighted imaging data between adolescents with and without PCE using crossing-fiber models, which may provide more comprehensive estimates of white-matter microstructure within regions of multiple (e.g., primary and secondary) fiber orientations.

Methods: Thirty-nine PCE individuals and 17 comparably aged non-prenatally drug-exposed youths (NDE) were recruited from a longitudinal cohort followed since birth. White matter was examined using tensor-derived and crossing-fiber models. Whole-brain investigations were performed, as were analyses on seven white-matter regions, which included the splenium, body and genu of the corpus callosum, bilateral cingulum, and the right and left superior longitudinal fasciculus (SLF).

Results: ROI analyses for anisotropy estimates derived from the crossing-fiber model revealed significant group differences for secondary fibers, with reduced anisotropy among PCE adolescents compared to prenatally non-exposed youth in the right cingulum and the left SLF, and increased anisotropy in the genu.

Conclusions: Our findings suggest that white-matter differences in PCE adolescents are subtle and localized primarily within secondary fiber orientations, perhaps arising from altered white-matter development.

Financial Support: Funding for this work included National Institute of Health grants, P50 DA09241, P50-DA016556, UL1-DE19586, RL1 AA017539, R01 DA006025, R01 DA017863, K05 DA020091; T32 DA007238. KPM receives support from T32 DA022975 and MH018268-31, SWY receives support from 1K01DA039299, and MNP and SWY receive support from the National Center on Addictions and Substance Abuse.

Abstract - ID: 79

Author(s):

Elizabeth Zadzielski **(Presenter)**, Christiana Care Health System
Yukiko Washio, Christiana Care Health Services/University of Delaware
Michelle Drew, Christiana Care Health System
Gina Scott, Christiana Care Health System

Title: Group prenatal care in a community-based substance abuse treatment center

Abstract Category: Program Descriptions

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Perinatal

Aims: To provide group prenatal care on site at the substance abuse treatment facility where women present every day for methadone maintenance, thereby removing the barriers of compliance with prenatal and post partum care.

Methods: 1) Develop a specialized curriculum to deliver group prenatal care for women engaged in substance abuse treatment

2) Pilot a group prenatal care model with women on site at their substance abuse facility

3) Improve education and access to family planning, including Long Acting Reversible Contraception (LARC) in the post partum period.

Results: The program was implemented in January, 2016. The following observations are noted among participants in the group prenatal care program when compared to pregnant women in methadone treatment who did not participate in group prenatal care

1) Entered prenatal care earlier

2) Greater number of total prenatal visits

3) Higher acceptance of LARC post partum

4) More likely to breastfeed at discharge

Conclusions: Access to prenatal care is critical for this vulnerable population. The outcomes of increased LARC acceptance as well as higher breast feedin rates are encouraging. Further analysis of length of stay for neonates is being conducted. Efforts are currently underway to implement this model of care in all Delaware substance abuse treatment centers.

Financial Support: Chairs Leadership Discretionary Fund, Christiana Care Health System

Abstract - ID: 80

Author(s):

Myles Finlay **(Presenter)**, Washington State University College of Nursing
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Title: Pain and affective symptoms in chronic pain patients in opioid addiction treatment recruited to test an online pain self-management program

Abstract Category: Program Descriptions

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: The Centers for Disease Control (CDC) has recognized overdose from opioids as an epidemic. An Eyler (2013) article reviews the recent literature on acute and chronic pain among patients receiving MMT for opioid addiction and found 55-61% of patients reporting current chronic pain conditions and 80-88% reported experiencing pain in the last week. Self-management is an effective and well-studied behavioral treatment for increasing one's ability to manage chronic conditions. Our team has been exploring internet-based pain curricula as a way to deliver cost-effective treatment. This study investigated symptom burden in a population of participants enrolled in a medically supervised methadone maintenance program and who were recruited to test an online pain self-management program.

Methods: Sixty individuals submitted symptom measurements using The Brief Pain Inventory (BPI), Generalized Anxiety Score (GAD), The Patient Health Questionnaire (PHQ), as well as self-report data on previous substance use to control pain.

Results: Average pain interference score on the BPI was 5.22(1.49) and pain severity was 6.28 (1.92). GAD and PHQ measures averaged 12.13(5.63) and 13.61(5.19) respectively, indicating levels of moderate anxiety and depression. Participants reported using multiple substances to control pain, including heroin (66.7 %), other opioids (81.4), nicotine (67.8%), cannabis (57.1%), cocaine (19%), and methamphetamines (25.9%).

Conclusions: The studied participants have a high burden of undertreated pain, anxiety, and depression despite being under supervised medical care for opioid addiction. This may, in part, explain the high amount of substances they report using in an attempt to control pain symptoms. Understanding of the complex characteristics of this population might provide for enhanced pain and addiction treatment.

Financial Support: Washington State University Alcohol and Drug Addiction Research Program

Abstract - ID: 81

Author(s):

Sally Huskinson **(Presenter)**, University of Mississippi Medical Center
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James Rowlett, University of Mississippi Medical Center

Title: Self-administration of benzodiazepine and cocaine combinations by monkeys in a choice procedure: Role of GABA-A receptor subtypes

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Sedative-Hypnotics

Topic: Behavior

Aims: Benzodiazepine-type compounds lacking efficacy at the a1 subunit-containing $GABA_A$ receptor ($a1GABA_A$ receptor) have less abuse potential than those with efficacy at the $a1GABA_A$ receptor. Based on previous self-administration results with monkeys and the neural circuitry hypothesis proposed by Tan and colleagues (2011) for the reinforcing effects of benzodiazepines, we hypothesized that compounds lacking efficacy at the $a1GABA_A$ receptor would punish cocaine choice, and those with efficacy at the $a1GABA_A$ receptor would function as reinforcers of cocaine choice.

Methods: One female and two male rhesus monkeys chose between cocaine alone (0.1 mg/kg/injection) vs. mixtures of cocaine and midazolam (nonselective benzodiazepine; 0.01-0.1 mg/kg/injection), cocaine and zolpidem (selective affinity at $a1GABA_A$ receptors; 0.01-0.1 mg/kg/injection), or cocaine and L-838-417 (no efficacy at $a1GABA_A$ receptors, selective efficacy for $a2,3,5GABA_A$ receptors; 0.01-0.1 mg/kg/injection).

Results: Consistent with our hypothesis, midazolam and zolpidem functioned as reinforcers of cocaine choice (i.e., subjects chose the mixture over the cocaine-alone option with at least one dose). However, L-838-417 did not function as a punisher of cocaine choice, instead having no effect or acting as a reinforcer.

Conclusions: Benzodiazepine-type compounds that lack efficacy at the $a1GABA_A$ subunit containing-receptor may have low abuse potential but do not appear to have punishing properties in cocaine-experienced monkeys. These findings raise the possibility that a1-sparing compounds might be developed as effective anxiolytics with relatively lower abuse potential than classical benzodiazepines.

Financial Support: R01 DA033795 and R01 DA011792 to J.K.R. and F32 DA037619 to S.L.H.

Abstract - ID: 82

Author(s):

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Title: A randomized controlled analog trial for alcohol and tobacco smoking co-addiction using contingency management

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Behavior

Aims: Contingency management (CM) has been shown be associated with decreases in 'off-target' drug or alcohol use during primary target treatment. The hypothesis for this trial was that targeting alcohol use and tobacco smoking will yield the highest abstinence rates for use of both compared to using CM for either drug individually.

Methods: We used a 2 (CM for alcohol versus control) x 2 (CM for smoking tobacco versus control) factorial design, with alcohol (via ethylglucuronide) and tobacco smoking (via cotinine) as co-primary outcomes across 3 visits per week for 4 weeks. Thirty-five heavy drinking smokers were randomized into 1 of 4 groups wherein they received contingency management (or equivalent, non-contingent reinforcement) for: neither drug, alcohol abstinence, smoking abstinence, or both. Generalized estimating equations were used to analyze these outcomes longitudinally.

Results: The 3 remaining groups (the CM for smoking and alcohol use group only had 2 participants) did not differ across baseline demographics or addiction severity indices ($p < 0$ .05). Compared to the control group, both the CM for smoking only group (OR=12.03; 95%CI: 1.50-96.31) and the CM for alcohol only group (OR=37.55; 95%CI: 4.86-290.17) submitted significantly more smoking abstinent urinalyses. Similarly, compared to the control group, both the CM for smoking group (OR= 2.57; 95%CI: 1.00-6.60) and the CM for alcohol group (OR= 3.96; 95%CI: 1.47-10.62) submitted significantly more alcohol abstinent urinalyses.

Conclusions: Data from our trial support the hypothesis that there are cross-over effects of CM on indirect treatment targets. This is an important finding in a relatively small sample size that could be significantly leveraged in future treatment development. Future studies may consider high magnitude CM or other adapted approaches in order to optimize these potential off-target effects.

Financial Support: Alcohol and Drug Abuse Research Program award (PI: McPherson), National Drug Abuse Treatment Clinical Trials Network Pacific Northwest Node (PI: Donovan; U10DA013714).

Abstract - ID: 83

Author(s):

Hedy Kober **(Presenter)**, Yale School of Medicine
Rebecca Boswell, Yale University

Title: Craving predicts drug use: A quantitative meta-analysis

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Alcohol AND nicotine/tobacco AND marijuana AND opiates AND stimulants

Topic: Behavior

Aims: Craving – defined as "a strong desire" – has been a focus of both Eastern and Western philosophies for centuries. Presently, craving is studied as a new DSM5 diagnostic criterion for Substance Use Disorders (SUDs), which are the most prevalent, costly, and deadly form of psychopathology. Nevertheless, the exact role of craving in drug taking has been hotly debated, especially the role of *cue-induced craving* in response to drug-related cues (e.g., others drinking/smoking, paraphernalia). To resolve this, we conducted a meta-analysis assessing the prospective predictive effects of drug cue exposure and craving on drug use and relapse. This follows our prior meta-analysis, which showed that food cue reactivity and food craving significantly predict eating, as well as long-term weight gain (Boswell & Kober, 2016).

Methods: We followed methods from the "Preferred Reporting Items for Systematic Reviews and Meta-Analyses" and our prior work (Boswell & Kober, 2016). Briefly, this included extensive literature searches (across alcohol, nicotine/tobacco, marijuana, opiates, cocaine, and methamphetamines) followed by extraction of relevant statistics from included studies. Studies were included if they: a) presented drug cues, measured cue reactivity, measured cue-induced craving, or measured craving via questionnaires at Time 1, b) measured drug use or relapse at Time 2, and c) reported statistics that described a prospective relationship between measures at Time 1 and Time 2.

Results: Across >350 statistics, from >120 studies, representing >16,500 drug users, we found that drug craving, cue reactivity, and cue-induced craving significantly predicted drug use and relapse with a medium effect size. Subsequent analyses revealed that cue-induced craving predicted drug use measured immediately, as well as relapse up to 1 year later. Effects held for both treatment-seeking and non-treatment-seeking drug users, and were comparable across drug types. Interestingly, preliminary analyses suggest that the effects may be stronger for males than for females; however, only a few studies provided separate statistics by gender. Conservative publication-bias analysis suggests that over 320,000 studies with null results would need to be published to render the overall meta-analytic results null.

Conclusions: Methodologically, this work highlights an important role for meta-analyses in addressing issues of replicability across entire fields of study, and specifically in assessing the role of predictive variables on drug use behavior. Theoretically, results suggest a strong motivational and causal role for cue reactivity, cue-induced craving, and craving more generally in drug taking behavior. Clinically, this work has significant implications for the treatment of SUDs, encouraging a focus on the regulation of craving and cue reactivity.

Financial Support: K12 DA00167 and P50 DA09241

Abstract - ID: 84

Author(s):

Steven Simmons **(Presenter)**, Lewis Katz School of Medicine at Temple University
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Title: Suvorexant, a clinically available hypocretin/orexin receptor antagonist, attenuates positive affect and drug seeking associated with psychostimulant self-administration in rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Club/Designer Drugs

Topic: Behavior

Aims: Treatment for addiction to psychostimulants, including cocaine and amphetamine-like synthetic cathinones, remains unaided by adjunct pharmacotherapies and continues to be a significant public health concern. Much pre-clinical evidence points to hypothalamic hypocretin/orexin transmission as an attractive therapeutic target. Hypocretin/orexin peptides are known to augment motivated behaviors including drug-seeking via innervation of monoamine-producing nuclei in midbrain structures such as the ventral tegmental area. The present study measured the influence of suvorexant, the first-in-class clinically-available hypocretin/orexin receptor antagonist, on positive affect and drug-seeking associated with self-administration of 3,4-methylenedioxypyrovalerone (MDPV).

Methods: Rats were trained to self-administer MDPV (~0.03 mg/kg/inf) on a fixed-ratio 1 schedule of reinforcement during 2-hour sessions for 14 days. As an analog measure of positive affect, 50-kHz ultrasonic vocalizations (USVs) were recorded during context-associated anticipation (-30 to 0 min) and self-administration of MDPV (0 to 120 min) following pre-treatment with suvorexant (0, 3, 10, 30 mg/kg).

Results: Data thus far indicate that suvorexant significantly reduces both context- and MDPV-elicited 50-kHz USVs as well as drug-seeking behavior. This study corroborates others from our laboratory and to our knowledge constitutes the first evidence supporting use of a hypocretin/orexin antagonist approved by the Food and Drug Administration to aide treatment of substance use disorders.

Conclusions: We hypothesize suvorexant may accomplish this by normalizing otherwise dysregulated reward processing and motivated responding. Ongoing anatomical and behavioral studies are being conducted to more comprehensively describe functional innervation by which hypocretin/orexin transmission produces these effects.

Financial Support: SJS/TAG: T32 DA007237, NIDA SMR: R01 DA039139, NIDA JWM: R00 DA031767, NIDA

Abstract - ID: 85

Author(s):

Yanan Zhang **(Presenter)**, RTI International
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Title: Diarylurea-based allosteric modulators of the cannabinoid CB1 receptor

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Marijuana/Cannabinoids

Topic: Chemistry

Aims: A number of CB1 receptor allosteric modulators have recently been reported displaying pharmacological characteristics that are distinct from those of orthosteric agonists and antagonists and may offer a much needed alternative strategy to modulate CB1 signaling for therapeutic benefits. We recently reported the first structure-activity relationship studies on one such modulator PSNCBAM-1. Here we will describe a series of diarylureas with excellent CB1 modulatory activities and their effects in attenuating the reinstatement of cocaine seeking behavior.

Methods: All target compounds were synthesized and characterized by MS, NMR and HPLC. They were evaluated in calcium-mobilization, radioligand binding and GTP-?-S binding assays. Select compounds were investigated in a reinstatement of extinguished cocaine-seeking behavior rat model. The stability of the compounds was assessed in rat liver microsomes.

Results: These modulators reduced the Emax of the orthosteric CB1 receptor agonist CP55940, as expected with negative allosteric modulators (NAMs). Most compounds possessed low nanomolar IC_{50} values at CB1 receptor without any significant activities at the CB2 receptor. They increased the binding affinity of [^{3}H]CP55940, consistent with PSNCBAM-1 and other CB1 allosteric modulators such as Org27569. Their potencies in antagonizing CP55940-induced GTP-?-[^{35}S] binding were consistent with calcium mobilization. One of the compounds attenuated prime induced reinstatement of cocaine seeking behavior with greater potency than PSNCBAM-1. The tested compound demonstrated high stability in rat liver microsomes.

Conclusions: These results will facilitate the development of potent and selective CB1 receptor modulators as potential medications for the treatment of drug addiction and related conditions.

Financial Support: NIH grants DA040693 and DA032837

Abstract - ID: 86

Author(s):

Kelly Paton **(Presenter)**, Victoria University of Wellington
Samuel Williamson, University of Kansas, Department of Medicinal Chemistry
Thomas Prisinzano, University of Kansas School of Pharmacy
Bronwyn Kivell, Victoria University of Wellington

Title: Analgesic effects of kappa opioid receptor agonist 16-ethynyl salvinorin A in mice

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Opiates/Opioids

Topic: Other

Aims: Current pain medications are highly addictive. As an alternative, kappa opioid receptor (KOR) agonists have proven analgesic effects without rewarding properties. 16-ethynyl Salvinorin A (Ethynyl SalA) is a potent analogue of Salvinorin A (SalA) and has been shown to attenuate cocaine-prime induced drug seeking behaviour in rats without causing sedative, anxiogenic, aversive or pro-depressive side effects. Here, we investigated the ability of Ethynyl SalA to modulate pain behaviours in preclinical models of nociceptive, inflammatory and neuropathic pain.

Methods: The analgesic effects were evaluated in C57BL/6 mice using the 2% intradermal formalin and warm-water tail-withdrawal assays. The paclitaxel-induced neuropathic pain model was used to assess the cumulative dose response effects of Ethynyl SalA, morphine and traditional KOR agonist U50,488, on mechanical and cold allodynia (n=6-8 per group).

Results: Ethynyl SalA (2 mg/kg i.p.) showed a significant analgesic effect in the tail-withdrawal assay and a longer duration of action in than SalA (60 min vs. 30 min for SalA). At 2 mg/kg (i.p.) Ethynyl SalA significantly reduced phase one nociceptive ($p < 0.0001$) and phase two inflammatory ($p < 0.0001$) pain in the formalin assay and reduced the accompanying paw oedema ($p=0.0011$), which was reversed with the KOR antagonist nor-binaltorphimine (10 mg/kg). Paclitaxel-induced neuropathy was evaluated at baseline and every second consecutive day, with dose response effects evaluated on day 15. Non-linear regression analysis revealed that Ethynyl SalA was more potent at reversing paclitaxel-induced mechanical and cold allodynia than either SalA, U50,488 or morphine.

Conclusions: Ethynyl SalA is a potent kappa opioid receptor agonist with proven anti-addiction effects. Ethynyl SalA significantly reduces nociceptive, inflammatory and neuropathic pain without the risk of abuse.

Financial Support: Victoria University of Wellington Research Fund

Abstract - ID: 87

Author(s):

Crystal Smith **(Presenter)**, Washington State University, Program of Excellence in Addictions Research
Michael Orr, Washington State University College of Nursing
John Roll, Washington State University College of Nursing
Sterling McPherson, Washington State University, College of Medicine

Title: Baseline urinalysis as a mediator between education level and treatment outcomes in two contingency management stimulant use clinical trials

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Treatment

Aims: To examine whether baseline urinalysis is a mediator between education and total negative urine samples (-UAs). Hypotheses: *H1*: Higher levels of education will be associated with an increase in number of -UAs. *H2*: Higher levels of education will be associated with an increase in the likelihood of providing a –UA at baseline. *H3*: Education level will have an indirect effect on total -UAs, through its effect on the likelihood of providing a –UA at baseline.

Methods: Data are from two multi-site randomized clinical trials of contingency management, targeting stimulant use (n=836). Predictor variables included education, race, sex, age and Addiction Severity Index (ASI) composite measures. Total -UAs provided during treatment was the outcome variable. Education was coded as less than high school (LHS), high school (HS), and greater than high school (GHS). We utilized path regression analysis in Mplus 7.2 for our statistical analysis

Results: *H1* was not supported, however *H2* and *H3* were. Education had a significant effect on -UA at baseline (GHS=Reference; LHS B= -0.53, HS B= -0.43, p < 0 .05), and a relationship between -UA at baseline and total -UAs (B= 6.69, p < 0 .01). Higher ASI Alcohol and ASI Psychiatric composite score was associated with increased odds of submitting a -UA at baseline (*?*= 1.54, p < 0 .01; B= 1.16, p < 0 .01, respectively). Higher ASI Drug composite score was associated with a decreased likelihood of -UA at baseline (B= -8.31, p < 0 .01).

Conclusions: This investigation provides preliminary data suggesting that baseline UA status is an important, full mediator, between education level and treatment outcomes while controlling for several other important covariates. Education and baseline UA status could be important considerations when designing and optimizing patient-centered intervention and prevention strategies.

Financial Support: Life Sciences Discovery Fund (PI: Roll), National Drug Abuse Treatment Clinical Trials Network Pacific Northwest Node (PI: Donovan; U10DA013714).

Abstract - ID: 88

Author(s):

Kiri Patton **(Presenter)**, University of Queensland
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Gary Chan, Centre for Youth Substance Abuse Research
Adrian Kelly, Centre for Youth Substance Abuse Research
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Title: Cognitive-behavioral mediators and moderators of the relationship between impulsivity traits and adolescent alcohol use: Identifying unique targets for prevention

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Adolescent

Aims: Impulsivity is an important predictor of adolescent alcohol use. We prospectively evaluate the cognitive mechanisms outlined in two-factor models (alcohol expectancies, refusal self-efficacy) and the protective role of coping skills.

Methods: Participants were two cohorts of adolescents followed annually for 3 years (younger cohort: N = 908, aged 10-12 years at Time 1; Older cohort: N = 943, aged 12-15 years at Time 1). Measures included impulsivity (Reward Drive, Rash Impulsiveness), positive social alcohol expectancies (PSAE), drinking-refusal self-efficacy (DRSE), problem-based coping skills, family and community risk factors, and alcohol use including the Alcohol Use Disorders Identification Test (AUDIT).

Results: Data were analysed using Structural Equation Modelling controlling for family and community risk factors, testing mediation and moderation. Impulsivity traits predicted cognitive mechanisms and these in turn predicted alcohol use in both cohorts, $?^2$ = 1,139.79, df = 249, p < .001, CFI = .92, SRMR = .06, RMSEA = .04. DRSE and PSAE mediated the effects of rash impulsiveness and reward drive, respectively, on alcohol use. Problem-based coping moderated several pathways to drinking within each cohort; being protective even when adolescents have low DRSE and buffering the impact of PSAE on alcohol use.

Conclusions: The current study details the prospective interactive influences of impulsivity and cognitive risk factors on adolescent alcohol use. The findings have direct implications for prevention and treatment programs, providing information about possible high-impact targets for intervention.

Financial Support: Continued collection of the IYDS has been supported by grant funding, including the National Institute on Drug Abuse (R01-DA012140-05), the National Institute on Alcoholism and Alcohol Abuse (R01AA017188-01), the Australian National Health and Medical Research Council (project number 594793), and the Australian Research Council Discovery Projects (DPO663371, DPO877359 and DP1095744). Dr Gullo is supported by a National Health and Medical Research Council (NHMRC) of Australia Early Career Fellowship (1036365). Professor Connor is supported by a NHMRC Australia Career Development Fellowship (1031909). The content does not necessarily represent the view of the funders and the funders played no role in study design, collection, analysis, or interpretation of data.

Abstract - ID: 89

Author(s):

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Jan Copeland, University of South Wales

Title: User characteristics and effect profiles of butane hash oil: An extremely high-potency cannabis concentrate

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Epidemiology

Aims: Cannabis potency is usually defined by delta-9-tetrahydrocannabinol content. Recent reports suggest an increase in use of Butane Hash Oil (BHO), an extremely potent cannabis concentrate, in the US and the UK. The aims of this study were to examine the characteristics of BHO users and the effect profiles of BHO. **Hypotheses:** (1) It is hypothesized that males, sexual minorities, and participants with comorbid mental health problems will be more likely to use BHO. (2) Users will have more negative experiences with BHO, compared to high potency herbal cannabis (HPHC).

Methods: Procedure: The Global Drug Survey, an anonymous online survey, was administered in over 20 countries in 2014 and 2015. Participants aged 16 years or older were recruited through onward promotion and online social networks. The overall sample size was 181,870.

Measurements: Participants reported their use of 7 types of cannabis in the past 12 months, demographic characteristics, use of other illegal substances, and lifetime diagnosis for depression, anxiety and psychosis. Participants were asked to rate subjective effects of BHO and HPHC (e.g. urges to use cannabis, memory impairment, anxiety) on a 20-item scale.

Results: Results from multinomial logistic regression showed that compared to users of HPHC, participants who were older, OR = 1.01, $p < .001$, male, OR = 1.48, $p < .001$, bisexual, OR = 1.22, $p < .001$, had lifetime diagnosis of depression, OR = 1.15, $p = .003$ and anxiety, OR = 1.72, $p < .001$, and used a larger number of substances were more likely to use BHO. Higher level of education was associated with lower likelihood of BHO use, $p < .001$. BHO users also reported stronger negative effects and less positive effects when using BHO compared to HPHC ($p < .001$).

Conclusions: Mental health problems and other illicit drug use are associated with use of BHO, an extremely potent cannabis concentrate. BHO is reported to have stronger negative and weaker positive effects than HPHC.

Financial Support: Gary Chan was supported by a Research Fellowship from the University of Queensland. The content does not necessarily represent the view of the funder and the funder played no role in study design, collection, analysis, or interpretation of data.

Abstract - ID: 90

Author(s):

Janna Ataiants **(Presenter)**, Drexel University
Stephen Lankenau, Drexel University Dornsife School of Public Health

Title: Violence and overdose among female users of harm reduction services

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Sex Differences

Aims: Research on gender-specific overdose risks is scarce, and limited evidence is available on the social context of drug overdose. While women drug users experience overdose at rates compatible to men, women face elevated levels of interpersonal violence and a higher risk of intentional overdose. We examined associations between violence and women's personal overdose.

Methods: Venue-based sampling was used to recruit adult female participants (N=200) from a Philadelphia-based harm reduction program in 2016. Multinomial logistic regression estimated associations between lifetime sexual or severe physical violence and a three-category overdose outcome: never, low (1-3), and high (>3) frequency of lifetime overdoses. Binomial logistic regression estimated associations between violence and intentional overdose. Both models were adjusted for age and mental health conditions.

Results: Participants were predominantly White (64%) and in their mid-30s (median age=36.5). In the past 30 days, 44% reported survival sex, 55% were unstably housed, and 65% injected heroin. The lifetime prevalence of sexual and severe physical violence was 60% and 79% respectively. Overall, 69% reported a lifetime personal overdose (median=3), of whom 31% had at least 1 intentional overdose. Women who experienced lifetime sexual violence had increased odds of having a high number of overdoses (OR=4.5, 95%CI=1.9, 10.7) compared to never having an overdose. Sexual violence was also significantly associated with at least one intentional overdose (OR=4.6, 95%CI=1.4, 14.9). Lifetime severe physical violence was not significantly associated with the number of overdoses or a history of intentional overdose.

Conclusions: Sexual trauma may increase women's risks of repeated personal overdose. Findings underscore the need for integration of overdose prevention training into existing violence support services provided for drug-using women.

Financial Support: NIDA T32DA007233-33

Abstract - ID: 91

Author(s):

Jessica Coker **(Presenter)**, University of Arkansas for Medical Sciences
Diana Escalona-Vargas, University of Arkansas for Medical Sciences
Shona Ray-Griffith, University of Arkansas for Medical Sciences
Curtis Lowery, University of Arkansas for Medical Sciences
Hari Eswaran, University of Arkansas for Medical Sciences
Zachary Stowe, University of Arkansas for Medical Sciences

Title: Fetal assessment measured with multi-sensor abdominal array in buprenorphine-maintained women compared to controls

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Perinatal

Aims: Sponsored by Dr. Clinton Kilts, Regular Member, cdkilts@uams.edu

Antenatal opioid exposure, including methadone and buprenorphine (BUP), has been shown to impact fetal responses including heart rate variability and motor activity [2,3,4]. Preliminary work suggests BUP is superior to methadone when comparing fetal and neonatal effects; however, no previous study has compared BUP to a non-opioid exposed population and used multi-sensor array measurements. This study aimed to extend and expand previous research by comparing the impact of BUP on fetal assessments of cardiac and motor activity to non-exposed fetuses.

Methods: Biomagnetic signals were recorded for 20 minutes at a sampling rate of 312.5 Hz by using a non-invasive 151-channel SARA (SQUID Array for Reproductive Assessment) system from 8 opioid-dependent pregnant women maintained on buprenorphine between 29 to 37 weeks gestation (GA). Prior to the recording, an ultrasound examination was performed to measure the general fetal position, head and heart localization. A control group of 17 non-opioid exposed pregnant women in the same range of GA were obtained from an existing SARA database. . Advanced signal processing techniques were applied to attenuate interferences and extract metrics from the fetal magnetocardiogram (fMCG). Parameters measured included fetal heart rate (FHR), fetal body movement (FM), heart rate accelerations (AC), metrics of fetal heart rate variability (FHRV), Poincare analysis of FHR, and coupling of FHR-FM [1,3]. Data collection sessions were grouped into three GA intervals: 29-31, 32-34, and 35-37. If a participant was monitored two times in the same interval (e.g., at 29 and 30 weeks), we selected one assessment for the analysis. Wilcoxon rank sum test was used to evaluate group differences.

Results: Fetal metrics were successfully obtained in 16 sessions from the 8 opioid-dependent pregnant women. Two datasets of the same subject were not included due to having multiple sessions in the same interval. No significant associations were detected with cardiac measures between BUP group in comparison with the control group in any GA intervals analyzed, a finding in agreement with studies using a transabdominal Doppler transducer [3,4].

Conclusions: Cardiac activity in BUP-exposed fetuses is not significantly different in comparison with non-exposed fetuses. Future work will expand to include comparisons of fetal state and brain analysis.

Financial Support: Dr. Coker was previously supported by the University of Arkansas for Medical Sciences T32 program, grant UL1TR000039 through the National Institute on Drug Abuse (NIDA). The content is solely the responsibility of the authors and does not necessarily represent the official views of NIDA. Dr. Ray-Griffith is supported by the University of Arkansas for Medical Sciences Translational Research Institute, grants UL1TR000039 and KL2TR000063 through the NIH National Center for Research Resources and the National Center for Advancing Translational Sciences. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

Abstract - ID: 92

Author(s):

Marc Rosen **(Presenter)**, VA Connecticut Healthcare System
Anne Black, Yale University
Janitza Montalvo-Ortiz, Yale University
Ifat Levy, Yale University
Thomas McMahon, Yale University

Title: An androgen receptor polymorphism (cag repeats) and risk-taking in veterans

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Genetics

Aims: Higher testosterone activity in men has been associated with risk-taking, sexual activity and substance use. Based on these associations, we hypothesized that a previously-described, functional polymorphism in the androgen receptor representing the number of CAG repeats at q11-12 in Exon 1 of the Androgen Receptor, *AR*CAG-n,* would be inversely associated with these propensities.

Methods: Participants were 84 male veterans of post-9/11 conflicts who completed a battery of behavioral tasks and self-reported assessments. Numerical differences between veterans in the lowest and highest quartiles of *AR*CAG-n* were the focus of these preliminary analyses.

Results: Veterans in the lowest *AR*CAG-n* quartile were more prone to respond indiscriminately and with false-positive identifications on the Immediate and Delayed Memory Tasks. They had had more sexual partners, and lifetime months of condomless sex. Being in the lowest *AR*CAG-n* quartile was associated with more of some measures of alcohol use, but contrary to hypotheses, was associated with fewer years of lifetime cannabis use.

Conclusions: In summary, low *AR*CAG-n* was associated with risk-taking in a laboratory paradigm assessing rash impulsivity, and in some lifetime behaviors, most consistently those relating to sexual risk. These preliminary results expand on prior studies relating androgen system function to risk-taking in the laboratory and in life.

Financial Support: Supported by the VISN 1 Mental Illness Research Education and Clinical Center (MIRECC), IHX000693A (MIR), R34AT008318 (MIR) and R21 DA039038 (ACB).

Abstract - ID: 93

Author(s):

Jordan Braciszewski **(Presenter)**, Henry Ford Health System
Golfo Tzilos, University of Michigan
Roland Moore, Pacific Institute for Research and Evaluation
Robert Stout, Pacific Institute for Research and Evaluation

Title: A pilot randomized controlled trial of a technology-based substance use intervention for youth exiting foster care

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Prevention

Aims: Youth exiting foster care at are elevated risk of developing substance use disorders (e.g., within a year of exit, a 13% increase in drug abuse diagnoses). Yet, as youth leave the foster care system, their access to substance use services decreases, creating a large health disparity for this vulnerable group of young people. Technology-based interventions, however, are capable of providing evidence-based intervention content to reduce such disparities.

Methods: To address these issues, we developed iHeLP, a computerized screening and brief intervention (SBI), enhanced by six months of tailored text messaging based on participants' SBI results and subsequent readiness to change. The overall goal of this study is to obtain data on acceptability, feasibility, and efficacy. We will present findings from the final stage of this project, a small, randomized trial ($n = 34$) of iHeLP versus a contact control. Participants received intervention (or control) content for 6 months and were assessed every 3 months for 1 year.

Results: Recruitment and retention for the study was feasible, with retention rates ranging from 78% at 9 months to 94% at 6 months. After accounting for pre-baseline substance use, iHeLP participants reported significantly greater percent days abstinent from their drug of choice (all marijuana) when compared to controls, 6 months post-intervention (84% vs 56%, $t = 2.33$, $p = 0.032$). Exit interviews demonstrated strong acceptability of iHeLP, with many participants expressing the desire for the intervention to last longer than 6 months.

Conclusions: Despite major innovations in the fields of drug and alcohol prevention and treatment, such approaches may not be applicable to some subpopulations. Adolescents in foster care, specifically, are commonly reluctant to engage with healthcare providers. Initial results indicate that iHeLP is acceptable and feasible to implement, while preliminary evidence indicates clinical as well as statistical efficacy. Together, these encouraging results provide a solid foundation for future mitigation of foster youth substance use.

Financial Support: Project funding was provided by grant R34DA034822 from the National Institute on Drug Abuse.

Abstract - ID: 94

Author(s):

Bridgette Peteet **(Presenter)**, University of Cincinnati
Brittany Miller-Roenigk, University of Cincinnati
Caravella McCuistian, University of Cincinnati
Cami Mosley, University of Cincinnati

Title: Sociocultural considerations of prescription drug misuse among racial/ethnic minorities: A systematic review

Abstract Category: Literature Review

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Prescription Drugs

Topic: Ethnic Differences

Aims: Prescription drug misuse (PDM) is the leading cause of accidental death in the U.S. Most Americans are on at least one prescription drug and 20% report at least one lifetime incident of PDM. Although PDM has been studied extensively, there is limited inclusion of racial/ethnic minorities in study samples, which has been rationalized by reports of lower rates of PDM. However, health disparate groups face harsher consequences of substance abuse including behavioral, social, and medical/mental health (e.g., injury, HIV/AIDS, incarceration, educational attainment, and comorbidity). Failing to characterize risk factors for and consequences of PDM in racial/ethnic minorities may mask the disproportionate negative impact of this epidemic. **Aim:** This systematic review examines the psychosocial risks and cultural factors associated with PDM among racial/ethnic minorities.

Methods: Searches of three research indexes revealed 28 peer-reviewed studies published on PDM in racial/ethnic minorities in the past decade.

Results: Findings highlight prevalence discrepancies and unique cultural considerations. For African Americans, targeted populations (e.g., veterans) reported up to eight times more PDM than same-race individuals in the general population. Latinos report non-traditional diversion of drugs including unregulated pharmacies and international mail. Studies of Asian Americans and American Indian/Alaska Natives suggested distinctive cultural considerations (e.g., discrimination) in PDM.

Conclusions: Sociocultural factors appear to shape PDM patterns and amplify the impact in racial/ethnic minorities. Future research should broaden samples and examine the cultural factors, prevalence in subpopulations, and risk and resiliency factors associated with PDM to better inform evidence-based prevention and intervention efforts and reduce substance abuse health disparities.

Financial Support: Dr. Bridgette Peteet's time is partially supported by a grant from the National Institute on Drug Abuse (R01DA033866-04S1 Peteet, PI).

Abstract - ID: 95

Author(s):

Brian Sherman **(Presenter)**, Medical University of South Carolina
Nathaniel Baker, Medical University of South Carolina
Aimee McRae-Clark, Medical University of South Carolina

Title: The effect of approach bias modification on cue-reactivity in individuals with cannabis use disorder

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Treatment

Aims: Evidence suggests that biases in cognitive processing of drug-related stimuli are central to the maintenance of addiction. The action tendency to move towards, rather than away from drug cues reflects an *approach bias*, which predicts increased cannabis use and problem severity. The current study examines the effect of ABM on approach bias and cannabis cue-reactivity and seeks to advance novel interventions for CUD.

1) Evaluate the efficacy of ABM in reducing cannabis approach bias and cue-reactivity.

2) Explore whether gender moderates the effect of ABM on approach bias and cue-reactivity.

Methods: A randomized, double-blind, sham-controlled pilot study investigated the effect of a 6-session computerized ABM paradigm on cue reactivity (N=33) in non-treatment seeking adults with CUD. ABM procedures utilized a cannabis adaptation of the Alcohol Approach-Avoidance Task, which requires subjects to push or pull a joystick in response to a non-content related stimulus feature (i.e. border color) and uses a zoom feature to simulate approach (zoom in) or avoidance (zoom out) behavior. Through manipulation of response contingencies ABM retrains individuals to avoid rather than approach drug cues.

Results: Participants receiving ABM showed a trend for blunted cannabis cue-induced craving at the end of treatment compared to controls ($p = 0.065$), though not at follow-up ($p = 0.896$). A gender effect was noted as well; men receiving ABM reported fewer sessions per day at the end of treatment compared to women ($p = 0.022$), while there were no differences in the control group. Approach bias did not differ between groups at end of treatment or follow-up.

Conclusions: This pilot data indicates that ABM may be efficacious in reducing cue-reactivity and improving cannabis use outcomes, and that gender may moderate this effect. The efficacy of ABM as an adjunct to psychosocial interventions warrants investigation in larger clinical trials in treatment-seeking adults with CUD.

Financial Support: NIDA Grants T32DA007288 (PI McGinty) K24DA038240 (PI McRae-Clark) P50DA016511-15 (Co-PIs Brady, McRae-Clark)

Abstract - ID: 96

Author(s):

Chunyang Jin **(Presenter)**, RTI International
Ann Decker, RTI International
Tiffany Langston, RTI International

Title: 4-Hydroxyphenylglycine derivatives as agonists for the orphan receptor GPR88, a potential target for drug abuse

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Alcohol

Topic: Chemistry

Aims: The goal of this project is to develop potent and selective agonists of the orphan receptor GPR88 for in vivo studies related to alcohol use disorders. GPR88 is highly expressed in the CNS, with particularly robust expression in the striatum throughout the dorsal and ventral areas. Genetic knockout and gene expression studies have suggested that GPR88 plays an important role in the regulation of dopaminergic system and is implicated in the behavior related to alcohol drinking.

Methods: We have previously reported that 2-PCCA activates GPR88 through a Ga¡-coupled pathway. Recently, another chemotype of GPR88 agonist, represented by 2-AMPP, has also been discovered. In this study, we designed and synthesized a new series of 2-AMPP structually related 4-hydroxyphenylglycine derivatives, which were evaluated for their agonist activity in the GPR88 cAMP assay.

Results: The structure-activity relationship (SAR) study of 2-AMPP suggested that the amine group in 2-AMPP could be replaced by azide, hydroxyl, ester and amide groups, resulting in analogues with good to moderate potency, whereas the phenyl group on the amide cap was essential for activity and had limited size, shape and electronic tolerance.

Conclusions: SAR study led to 4-hydroxyphenylglycine derivatives as the GPR88 agonists with improved potency and favorable brain-penetration. Promising compounds will be tested in the alcohol drinking/relapse animal models.

Financial Support: NIMH/NIH Grant MH103708

Abstract - ID: 97

Author(s):

Christian Hopfer **(Presenter)**, University of Colorado School of Medicine
Laura Saba, University of Colorado
Kristen Raymond, University of Colorado
Jost Klawitter, University of Colorado
Uwe Christians, University of Colorado

Title: Biomarker discovery for marijuana use utilizing modified aptamer and metabolomic panels

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: GeneArray/Proteomics

Aims: Peripheral biomarker discovery of marijuana use.

Methods: Eight Discordant and four concordant marijuana using twin pairs were queried about their marijuana use. Participants completed a blood draw, urine toxicology testing, as well as questions about past 30 day substance use. 1310 modified aptamers (SomaScan) and 258 metabolomic markers were examined for association with marijuana use.

Results: The 24 subjects were all non-Hispanic whites. 66% were female. Median age was 30. Marijuana using subjects reported using marijuana 23.4 out of the past 30 days; mean urine THC level were 688ng/ml. Subjects who did not endorse regular marijuana use reported 0.125 days of use in the past 30 days and had undetectable THC levels.

For the somascan analysis, we used a linear mixed model that accounted for differences in relatedness between monozygotic and dizygotic twins to identify proteins with quantitative levels that differed between marijuana users and non-users. The most significant protein, Neurexin-1-beta (NRX1B; $p < 0.001$), was more abundant in marijuana users than non-users. Neurexin 1 has been implicated in several neurological disorders including addiction. Using functional enrichment, we identified several KEGG pathways associated with marijuana use including pathways related to the proteasome, cell adhesion molecules, olfactory/taste transduction, and morphine addiction. Metabolomic analyses utilized partial least squares – discriminant analysis (PLS-DA) showed a clear clustering of controls versus THC groups. The major contributing compounds were maleic acid and D-gluconate and other compounds. A correlation analysis revealed that, 4-aminobutyrate (GABA) and glutathione showed the highest correlation (Pearson) with THC levels.

Conclusions: This pilot study demonstrated the feasibility of utilizing joint proteomic and metabolomics analysis for marijuana biomarker discovery and identified biomarkers that distinguished marijuana users from non-users.

Financial Support: K24DA032555; DA035804, AG046938 Acknowledgements: Sally Wadsworth PhD, Chandra Reynolds PhD

Abstract - ID: 98

Author(s):

Theresa Winhusen **(Presenter)**, University of Cincinnati
Daniel Feaster, University of Miami Miller School of Medicine
Rui Duan, University of Miami
Jennifer Brown, University of Cincinnati
Lisa Metsch, Columbia University

Title: The association between cigarette smoking and virologic suppression in HIV-infected substance users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: AIDS/Immune

Aims: Cigarette smoking has an estimated prevalence of 40 - 60% in people living with HIV/AIDS, a rate two to three times higher than the general population. Research suggests that cigarette smoking can increase reactive oxygen species, which in turn can increase HIV replication. This study evaluated whether cigarette smoking is associated with virologic suppression (? 200 copies/mL) in HIV-infected substance users.

Methods: Secondary analysis of a trial evaluating the efficacy of a 6-month patient navigation intervention with or without financial incentives in 801 hospitalized HIV-infected individuals who had reported opioid, illicit stimulant, or heavy alcohol use within the prior 12 months (CTN-0049). Viral suppression was assessed by a local laboratory at 6- and 12-month follow-up. Cigarette smoking was assessed with the Fagerström test for nicotine dependence. The present analysis compared participants who self-reported no cigarette smoking (n=237) to those scoring in the medium-to-high range on the Heaviness of Smoking Index (n=386) calculated from the baseline Fagerström.

Results: At baseline, smokers, relative to non-smoking participants, were more likely to use illicit stimulants. Controlling for this, other baseline differences, and adherence to antiretroviral therapy, generalized estimating equation models revealed a significant effect for smoking on viral suppression for the 12-month follow-up period ($X^2(1) = 5.14$, p

Conclusions: These results suggest that cigarette smoking may be an important consideration for improving viral suppression in HIV-infected substance users.

Financial Support: National Drug Abuse Treatment Clinical Trials Network (NIDA CTN)

Abstract - ID: 99

Author(s):

Taylor Ochalek **(Presenter)**, University of Vermont
Stacey Sigmon, University of Vermont
Maria Parker, University of Vermont
Stephen Higgins, University of Vermont

Title: Undetected illicit fentanyl use among patients receiving opioid agonist treatment

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Illicit use of the potent opioid agonist fentanyl has increased dramatically in recent years, as have fentanyl-related overdoses. Despite these serious public health consequences, the methods typically used in clinical settings do not readily detect fentanyl use, resulting in a probability of false-negative results among patients receiving opioid treatment. We examined the extent of fentanyl use among a clinical sample of opioid-dependent patients receiving methadone or buprenorphine maintenance in an outpatient, community opioid treatment program.

Methods: 500 urine specimens were collected under same-sex staff observation and tested on-site using three methods: (1) a DRI enzyme immunoassay assay with a 2 ng/ml fentanyl cutpoint (Microgenics, Fremont, CA), (2) an All Tests dipstick with a 100 ng/ml fentanyl cutpoint (All Tests, Gilbert, AZ), and (3) enzyme multiplied immunoassay assays for other opioids (e.g., methadone, buprenorphine, oxycodone, hydrocodone, hydromorphone, opiates (e.g., heroin, morphine)(Microgenics, Fremont, CA).

Results: 3.2% of specimens tested positive for fentanyl. Of the fentanyl-positive specimens, 81.3% were also positive for other illicit opioids and 92.3% of these were positive for opiates (heroin or morphine).

Conclusions: Among opioid-dependent patients receiving methadone or buprenorphine maintenance, we observed a relatively low level of fentanyl-positive specimens. However, considering the potentially lethal consequences associated with fentanyl use, it seems prudent for clinics to adopt the methodology necessary to detect fentanyl use among patients. The majority of fentanyl-positive specimens also tested positive for illicit opiates, suggesting that much of the fentanyl ingested by patients may stem from use of fentanyl-containing heroin. Given the unprecedented recent increases in fentanyl use and related overdose deaths, efforts to improve detection and clinical management of fentanyl use among patients are critical.

Financial Support: Funding: NIDA R34 DA3730385-01, NIGMS P20 GM103644, and NIDA T32 DA007242 grants.

Abstract - ID: 100

Author(s):

Alexa Lopez **(Presenter)**, University of Vermont
Robin Toblin, Walter Reed Army Institute of Research
Lyndon Riviere, Walter Reed Army Institute of Research
James Lee, Walter Reed Army Institute of Research
Amy Adler, Walter Reed Army Institute of Research

Title: Heavy smoking among U.S. soldiers returning from combat

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Epidemiology

Aims: Smoking rates are higher in US soldiers than their civilian counterparts. While the literature has identified mental health indicators correlated with heavy smoking in civilian samples, the extent to which these indicators link to smoking in soldiers remains unclear although posttraumatic stress disorder (PTSD) has been identified as a potential risk factor. Studies have found soldiers with a history of combat are particularly at risk for heavy smoking (≥ 20 cig/day), increasing their risk for morbidity and mortality. Thus, the present study examined correlates of heavy smoking among soldiers with a history of combat deployment.

Methods: Cross-sectional, confidential survey data were collected from 2,885 soldiers 6 months after their return from Iraq in 2008-2009. Measures included demographics, adverse childhood experiences (ACEs), combat exposure, behavioral health indicators (PTSD, depression, anxiety, alcohol use, functional impairment, sleep, aggression), unit climate (general leadership, unit cohesion, perceived organizational support). $?^2$ and ANOVAs were used to examine bivariate associations, with significant variables entered in a multivariate logistic regression.

Results: 1,412 soldiers (49%) reported smoking, with 509 (18%) reporting heavy smoking. When adjusting for all significant bivariate associations, having less than a high school education, being enlisted, reporting more combat experiences, reporting any ACEs, sleeping ≤6 hours per night, and engaging in more aggression were each significantly and independently associated with heavy smoking ($?^2$s>4.4, ps

Conclusions: Of soldiers recently returned from combat deployment, 18% smoke at least a pack of cigarettes a day, 9-times greater than the general civilian population (~2%). While PTSD is associated with smoking, a host of other demographic, behavioral health, and organizational variables also appear to be associated with heavy smoking in this unique population. Follow-on research needs to clarify the directionality between risk factors and heavy smoking in order to inform what strategies can be employed to reduce/eliminate heavy smoking in this at-risk population.

Disclaimer: The views expressed in this article are those of the authors and do not necessarily represent the official policy or position of the U.S. Department of the Army or Department of Defense.

Financial Support: This study was funded as part of the US Army's Military Operational Medicine Research Program.

Abstract - ID: 101

Author(s):

Ling Chen **(Presenter)**, U.S. Food and Drug Administration

Title: A comparison between a second generation AD product and an approved AD product

Abstract Category: Theoretical/Commentary

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Other

Aims: In April 2015 FDA issued the final guidance to assist pharmaceutical companies in developing opioid products with abuse-deterrent (AD) properties. Since 2010, several opioids with AD formulation technology have been approved by the FDA, and more are in development. The question has been raised regarding how to compare a second generation AD product (a test product) to an approved AD version of the same opioid product (an approved AD product) in a clinical abuse potential study. There have been proposals not to include an immediate release (IR) or Non-AD extended release (ER) opioid product as a positive control in such a clinical abuse potential study, and to compare a test product to an approved AD product using a non-inferiority test.

This presentation discusses the reasons why an IR or Non-AD ER opioid product should be included in such a study as a positive control, and why when a second generation AD product is proposed, one should not compare it to an approved AD product using a non-inferiority test, and then proposes a gatekeeping testing procedure for the comparison.

Methods: N/A

Results: N/A

Conclusions: When a second generation AD product is proposed, one should not compare it to an approved AD product using a non-inferiority test. The primary assessment of the product should be based on the comparison between the proposed AD product and IR or Non-AD ER opioid product using a superiority test. If the comparison between the proposed AD product and an approved AD product is also one of the primary interests, one may use the gatekeeping testing procedure proposed in this poster, and power the study accordingly.

Whether a proposed AD product has better AD properties than an approved AD product is based on totality of data from all studies on this product and clinical judgment.

Financial Support: None.

Abstract - ID: 102

Author(s):

Felipe Ornell **(Presenter)**, Center for Drug and Alcohol Research, Federal University of Rio Grande do Sul
Juliana Scherer, Center for Drug and Alcohol Research, Federal University of Rio Grande do Sul
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Lisia von Diemen, Center for Drug and Alcohol Research, Federal University of Rio Grande do Sul
Felix Kessler, Center for Drug and Alcohol Research, Federal University of Rio Grande do Sul

Title: High rates of incarceration due to drug trafficking in the last decade in Brazil

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Sex Differences

Aims: To identify the growth of Incarcerated population in the state of Rio Grande do Sul (RS), Brazil, in the last ten years, with special emphasis on the percentage of incarcerations for drug trafficking, as well as gender differences.

Methods: Cross-sectional study based on secondary data provided by the Ministry of Justice and the Superintendence of Penitentiary Services of RS.

Results: In 2006 the overall rate of incarcerations was 221/100,000 inhabitants/year, with an increase of 27% until 2015 (281/100,000 inhabitants/year). Incarcerations among men increased 25% (from 435 to 545/100,000 inhabitants/year), whereas women incarcerations have grown 83% (from 16 to 30/100,000 inhabitants/year). Considering imprisonment for drug trafficking, there was a 427% growth (from 23 to 126/100,000 inhabitants/year) increment in total, with a correspondent growth of 415% (from 44 to 229/100,000 inhabitants/year) among men, and 723% (from 3 to 28/100,000 inhabitants/year) among women. Moreover, in 2006 incarcerations for drug trafficking accounted for 11% of all arrests, while in 2015 this reached 45%, corresponding to an increase of 34%, respectively 36% among men and 71% among women.

Conclusions: Our results show an impressive increase in the rates of incarceration in the state of RS in the last decade, especially regarding drug trafficking as the cause. Even after the changes established by a law that implemented the National System of Public Policies on Drugs and suggested different sanctions for users and traffickers, drug trafficking is still the first cause of incarceration in RS. Moreover, it is important to consider the high rates of incarcerated women due to drug-related crimes. Our results point to the importance of this topic as an emerging issue in public health, human rights and public safety policies, and the need for gender-specific health and public actions.

Financial Support: Federal University of Rio Grande do Sul Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES)

Abstract - ID: 103

Author(s):

Sean McCabe **(Presenter)**, University of Michigan
Brady West, University of Michigan
Vita McCabe, St. Joseph Mercy Hospital

Title: Does early onset of e-cigarette use predict cigarette smoking and other drug use among adolescents in the United States?

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Epidemiology

Aims: This study examines the associations among early onset of e-cigarette use, cigarette smoking and other drug use in U.S. adolescents.

Methods: Data were collected via self-administered questionnaires from a national sample of 2,299 high school seniors as part of the 2015 Monitoring the Future study.

Results: A higher percentage of early onset e-cigarette users reported lifetime and current cigarette smoking and other drug use versus those who initiated e-cigarettes later or those who never used e-cigarettes. Current cigarette smoking was more prevalent among adolescents who began using e-cigarettes in 9th grade or earlier (41.5%) relative to those who began using e-cigarettes in 11th grade (19.5%) or those who never used e-cigarettes (4.0%), $p < 0.001$. Multivariate logistic regression analyses indicated that the adjusted odds of any cigarette smoking, marijuana use, nonmedical prescription drug use, and other illicit drug use among early onset e-cigarette users were significantly greater than those who never used e-cigarettes, after controlling for relevant covariates (AORs ranged from 9.5 to 16.4). The odds of these substance use behaviors among early onset e-cigarette users were also significantly greater than later onset e-cigarette users, after controlling for relevant covariates (AORs ranged from 2.8 to 4.1). The temporal order of e-cigarette onset and other substance onset varied greatly across drug type (e.g., cigarette smoking, nonmedical prescription drugs, marijuana, and other illicit drugs).

Conclusions: The results of this study indicate that early onset of e-cigarette use was significantly associated with increased odds of cigarette smoking, nonmedical prescription drug use, marijuana use, and other illicit drug use among U.S. adolescents. These findings suggest the need for more long-term prospective studies and reinforce the importance of developing early prevention efforts in late elementary and early secondary school to reduce e-cigarette use, cigarette smoking and other drug use.

Financial Support: Supported by research grants R01CA203809, R01DA036541, and R01DA031160.

Abstract - ID: 104

Author(s):

Angela Henricks **(Presenter)**, Dartmouth College
Nicholas Deveau, Dartmouth College
Lucas Dwiel, Dartmouth College
Amanda Simon, Dartmouth College
Alan Green, Dartmouth College
Wilder Doucette, Dartmouth College

Title: Variable response to nucleus accumbens deep brain stimulation in a rat model of alcohol drinking

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Alcohol

Topic: Treatment

Aims: In the United States, an estimated 16.6 million people suffer from an alcohol use disorder (AUD) and excessive alcohol consumption is the 3rd leading cause of preventable death. Unfortunately, however, current pharmacotherapies for treating AUDs are effective in only a subset of people with alcoholism, making it important to understand the factors contributing to the variability in response, and to develop better therapeutic options. Deep brain stimulation (DBS) has been proposed as a treatment for AUDs, but clinical studies have reported significant variations in individual response. While preclinical animal studies, which could shed light on the source of the response variability, have reported that DBS reduces alcohol drinking, they have reported only population data, not individual variability in treatment response. Thus, this preclinical pilot study, which employed a rat model of limited access alcohol drinking, aimed to assess the efficacy of high frequency DBS in the nucleus accumbens shell (NAcSh) for reducing alcohol consumption in individual animals.

Methods: Adult male Sprague-Dawley rats, implanted with bilateral electrodes targeting the NAcSh, were trained to drink 10% alcohol in 2hr sessions, 3 days/week. Following 4 weeks of baseline alcohol consumption, high frequency DBS was applied to the NAcSh (130Hz; n=9).

Results: Overall, changes in alcohol consumption were highly variable, with a 26% average reduction in amount of alcohol consumed. Importantly, only 5/9 rats showed a reduction in alcohol consumption more than two standard deviations from their individual baseline means.

Conclusions: Thus, these preclinical data mimic the variability in DBS treatment response observed in the clinical population, validating this rat model of DBS treatment for alcohol drinking. Ongoing preclinical research in this laboratory is correlating behavioral and electrophysiological measures with DBS response to elucidate the source of the variable decrease in alcohol drinking by DBS, thus promoting the development of individualized therapies for AUDs.

Financial Support: This work was supported by funds from the Department of Psychiatry at the Geisel School of Medicine at Dartmouth (AG, WD), the Hitchcock Foundation (WD), an LRP grant from the NIH NCATS (WD), the Dartmouth Clinical and Translational Science Institute, under award number UL1TR001086 (WD) and KL2TR001088 (WD) from NIH NCATS.

Abstract - ID: 105

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Title: A mapping review of take-home naloxone for people released from correctional settings

Abstract Category: Literature Review

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Other

Aims: People who use opioids are at elevated risk of overdose in the weeks immediately following release from custody. However, it is not well understood how this population, as a particularly high-risk groups, is include in, and benefits from, take-home naloxone (THN) programs. The aim of this review is to map existing research into THN for people released from correctional settings in order to identify further research needs.

Methods: We searched electronic databases, gray literature and conference abstracts for reports on THN for people in or released from correctional settings. Studies were categorised into themes defined by the study's aims and focus. Results from each study were summarised by theme.

Results: We identified 19 studies reporting on THN programs for people released from correctional settings. Studies have examined attitudes towards naloxone among people in custody or recently released from custody (theme 1), and among non-prisoner stakeholders such as prison staff (theme 2). Evaluations and interventional studies (theme 3) have examined process indicators and approaches to naloxone training, including for contacts of prisoners, but there are challenges in assessing health outcomes of THN in this context. Case reports suggest that training in correctional settings translates to action post-release (theme 4).

Conclusions: The feasibility of THN in the context of release from a correctional setting has been established, but there is a need for rigorous research into health outcomes, barriers to program implementation, and concerns among both prisoners and non-prisoner stakeholders about potential negative outcomes of THN for people released from correctional settings. This is an emerging field of study and ongoing assessment of the state of the literature and research needs is recommended.

Financial Support: No specific funding was received for this review.

Abstract - ID: 106

Author(s):

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Title: Does maternal drug treatment access affect the relationship between adult opioid misuse and neonatal abstinence syndrome?

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Perinatal

Aims: To determine how access to maternal drug treatment affects the relationship between maternal opioid misuse and neonatal abstinence syndrome (NAS). We hypothesize that states with greater access to maternal drug treatment will have lower rates of NAS relative to maternal opioid misuse.

Methods: We conducted a cross-sectional ecologic analysis of publicly available state-level data. To approximate maternal drug treatment access, we used state per capita estimates of buprenorphine waivered physicians and clients in outpatient treatment programs, as well as whether or not methadone was on the Medicaid preferred drug list. To approximate opioid misuse, we used state-level per capita estimates of illicit drug dependence or abuse and opioid prescribing. NAS cases were identified from discharge information from the Healthcare Cost and Utilization Project's State Inpatient Database. Associations between continuous variables and NAS were measured using Pearson linear correlation coefficients while NAS was compared between levels of binary classifications using a two-sample t-test.

Results: Measures of opioid misuse were positively associated with NAS (illicit drug dependence/abuse: r=0.43 [95% CI: 0.11, 0.66], opioid prescribing: r=0.36 [95% CI: 0.03, 0.61] and high-dose opioid prescribing: r=0.42 [95% CI: 0.10, 0.66]). In states with high levels of per capita buprenorphine-waived physicians and clients in OTPs, the relationships between measures of opioid misuse and NAS became non-significant. However, in states with low levels of per capita buprenorphine waived physicians and clients in OTPs, the relationships between opioid misuse and NAS became stronger. The relationship between opioid misuse and NAS was unchanged based on whether or not methadone was on the Medicaid preferred drug list.

Conclusions: Increased maternal drug treatment access may reduce rates of NAS relative to rates of maternal opioid misuse.

Financial Support: None

Abstract - ID: 107

Author(s):

Kelly Moore **(Presenter)**, Yale School of Medicine
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Title: Reconsidering the removal of the legal problems criterion from DSM-V: Legal problems and substance use disorder severity in a nationally representative sample

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Other

Aims: The legal problems criterion was removed from substance use disorder (SUD) diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders-V. However, legal problems may still provide useful clinical information when diagnosing SUDs. This study examines the degree to which legal problems are associated with the presence and severity of SUDs in a nationally representative sample.

Methods: U.S. adults (N=36,309) who participated in the National Epidemiological Survey of Alcohol and Related Conditions-III completed assessments of lifetime and current drug- and alcohol-related legal problems, current non-substance-related legal problems, and lifetime and current DSM-V alcohol use disorder (AUD) and drug use disorder (DUD) criteria. Ordinal and logistic regressions were used to analyze the relation between legal problems and AUD and DUD presence and severity.

Results: Current alcohol-related legal problems increased the odds of having a current AUD (OR=20.9) that is more severe (OR=7.23) and lifetime alcohol-related legal problems increased the odds of having a lifetime AUD (OR=15.5) that is more severe (OR=4.78). Current drug-related legal problems increased the odds of having a current DUD (OR=4.34) that is more severe (OR=2.65), and lifetime drug-related legal problems increased the odds of having a lifetime DUD (OR=9.36) that is more severe (OR=3.91). Current non-substance-related legal problems increased the odds of having a current AUD (OR=3.61) that is more severe (OR=2.69) and a current DUD (OR=4.83) that is more severe (OR=3.63).

Conclusions: Current and historical legal problems contribute important clinical information about the presence and severity of SUDs, especially alcohol use disorders. Also, these results suggest individuals in the criminal justice system are likely to have more severe SUDs, warranting more intensive treatment.

Financial Support: SAMHSA grant (1TI026330-01; PI: Dr. Sherry McKee) and NIDA grant (5T32DA019426-12; PI: Dr. Jacob Tebes)

Abstract - ID: 108

Author(s):

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Title: A qualitative study of barriers and facilitators affecting implementation of electronic health record-integrated screening for substance use in primary care

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Other

Aims: To inform implementation of the NIDA Common Data Elements (CDEs) for collecting substance use information in electronic health records (EHRs), we conducted interviews with key clinical stakeholders on the barriers and facilitators of screening in primary care clinics.

Methods: Focus groups and individual interviews were conducted with 67 stakeholders, including patients and medical providers (MDs, MAs, nurses) in two health systems. Interview guides and analysis were informed by the *Knowledge to Action (KTA)* framework, which guides the implementation of new clinical practices.

Results: Factors affecting implementation based on the KTA elements were: *Identifying the problem:* Participants unanimously agreed that knowledge of a patient's substance use is important to patients' medical care, and that universal screening is the best approach. *Adapting knowledge:* A majority stated that primary care providers should play a key role in substance use screening and interventions. There was discrepancy of opinion regarding the optimal screening approach, with self-administered and face-to-face screening recommended. Providers felt that they must be able to take effective action once unhealthy substance use is identified. *Assessing barriers:* Patients expressed concerns about confidentiality, 'denial', and providers' lack of empathy. Barriers identified by providers included lack of knowledge and training, and systems-level factors including limited time, resources, space, and communication between members of the medical team.

Conclusions: Based on these findings, we designed and are testing an implementation strategy utilizing universal screening, patient self-administered questionnaires, and EHR-integrated clinical decision support to help primary care providers conduct brief motivational counseling and link patients to behavioral health services.

Financial Support: NIDA U10DA013035, UG1DA013035, and UG1DA015815

Abstract - ID: 109

Author(s):

Joanna Streck **(Presenter)**, Vermont Center on Behavior and Health
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Title: Gender differences in effects of interim buprenorphine treatment on psychiatric symptoms

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Sex Differences

Aims: Prevalence of anxiety and mood disorders among opioid abusers far exceeds that of the general population, especially among women. While psychiatric symptoms often improve upon entry into opioid treatment, this has typically been seen with treatments involving psychosocial counseling. We examined changes in psychiatric symptoms during a randomized trial evaluating interim buprenorphine (BUP) dosing without counseling for reducing illicit drug use during treatment delays, as well as whether changes in symptoms were gender specific.

Methods: Waitlisted opioid-dependent adults were randomized to one of two 12-week conditions: Interim BUP Treatment (IBT; N=25; 40% female) consisting of BUP maintenance with bi-monthly visits and nightly calls from an automated phone system. Waitlist Control (WLC; N=25; 44% female) participants remained on the WL of their local clinic. All participants completed assessments at intake and Weeks 4, 8 and 12. We examined temporal changes by condition and gender on the Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI-II) and Brief Symptom Inventory (BSI).

Results: IBT participants demonstrated significant reductions in BAI, BDI and BSI scores over time ($p$spp=.05), Interpersonal Sensitivity (p=.05), Psychoticism (p=.06), Total Symptom (p=.10), and Global Severity Index (p=.10) subscales of the BSI as well as the BDI (p=.06). For all subscales, males demonstrated greater magnitude decreases in psychiatric symptoms during IBT vs. IBT females. In contrast, there was no change over time in either WLC males or females.

Conclusions: IBT, without formal counseling, may reduce psychiatric distress among waitlisted, opioid-dependent adults. The effects of IBT on psychiatric symptoms may also vary as a function of gender, with women possibly less sensitive to the beneficial effects of treatment.

Financial Support: NIDA R34DA037385 and T32DA007242; NIGMS P20GM103644

Abstract - ID: 110

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Michael McDonell **(Presenter)**, Washington State University, Program of Excellence in Addictions Research

Title: Seriously mentally ill adults who are stably housed are more likely to complete a contingency management intervention for alcohol dependence

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Treatment

Aims: We hypothesized that participants who were stably housed at baseline would be more likely to complete a contingency management (CM) intervention and have a longer duration of alcohol abstinence than those who were not stably housed at baseline.

Methods: Seventy-nine participants were randomized to either: contingency management (n=40), where they received reinforcers for submitting alcohol-negative urine samples, or the control condition (n=39) where they received reinforcers for study attendance, regardless of urine sample result. Participants were defined at baseline as being stably or not stably housed (i.e., literally homeless or residing in temporary housing). The intervention phase of the study was 12 weeks with study visits three times weekly. Treatment attrition was defined as missing 9 study visits (3 weeks). Longest duration of abstinence was defined as longest number of alcohol-negative ethyl glucuronide urine samples submitted.

Results: Only fifty-two percent (16) of participants who were not stably housed completed treatment, while 81% (39) of participants who were stably housed completed treatment. Participants who were not stably housed were more likely to drop out of treatment (p=.049). Stably housed participants did not have a longer duration of abstinence than non-stably housed participants (p=.634).

Conclusions: Stably housed participants were more likely to complete the contingency management treatment intervention than those who were not stably housed. However, housing status did not predict the longest duration of abstinence from alcohol. Interventions aimed specifically at non-stably housed individuals must be developed to address treatment attrition.

Financial Support: Funding for this study was provided by the National Institute on Alcohol Abuse and Alcoholism, R01 AA AA020248 (Principal Investigator: M.G. McDonell)

Abstract - ID: 111

Author(s):

Florence Allain **(Presenter)**, Université de Montréal, Department of Pharmacology and Physiology
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Title: Continuous D-amphetamine treatment during intermittent cocaine intake reduces addiction-like behaviors

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Behavior

Aims: During a bout of intoxication, experienced users take cocaine intermittently so as to produce spiking rather than continuously high brain drug levels (Beveridge et al., 2012). In rats, intermittent cocaine access (IntA) increases the motivation to take the drug in the future (Zimmer et al., 2012). This is linked to the ability of cocaine 'spikes' to sensitize the dopamine transporter (Calipari et al., 2013). Here we hypothesized that increasing monoaminergic tone during IntA cocaine reduces addiction-like behaviors, presumably by attenuating the monoamine spikes produced by IntA cocaine. To this end, we gave rats continuous AMPH treatment during IntA-sessions and assessed cocaine-taking and -seeking behaviors.

Methods: Rats (N = 33) self-administered cocaine (0.25 mg/kg/injection) for fourteen 5-h IntA-sessions where cocaine was available for ten 5-min trials intercalated with 25-min timeout trials. Some rats (n = 11) received concomitant AMPH treatment through a subcutaneous osmotic minipump (5 mg/kg/day). After the last IntA-session, we removed the minipumps and measured the motivation to take cocaine (0.063-0.25 mg/kg/injection) under a progressive ratio schedule of reinforcement. Three weeks later, we assessed cocaine (0-15 mg/kg, i.p.)-induced reinstatement of extinguished drug-seeking behavior in the AMPH-rats and one half of the Ctrl-rats (n = 11). The other half of the Ctrl-rats, now cocaine-experienced, were implanted with AMPH-containing minipumps and given 14 additional IntA-sessions. Their motivation to take cocaine was then assessed as before.

Results: AMPH did not change cocaine intake during IntA sessions. However, AMPH decreased the later motivation for cocaine both in cocaine-naive and experienced rats (2-way Anova; All *P's* < 0.05) and also decreased cocaine-induced reinstatement of drug seeking (2-way Anova; $p < 0.05$).

Conclusions: Continuous treatment with AMPH during active cocaine use can prevent both the development and expression of addiction-like symptoms.

Financial Support: CFI (#24326), CIHR (#157572) and FRQ-S (# 28998).

Abstract - ID: 112

Author(s):

Anna Ralph **(Presenter)**, Centre for Youth Substance Abuse Research

Title: Pathway from adverse childhood experiences to problematic substance use - investigating emotional dysregulation

Abstract Category: Literature Review

Abstract Detail: Human

Drug Category: Polydrug

Topic: Treatment

Aims: Epidemiological studies suggest that individuals who experience adverse childhood experiences (ACE) (e.g. physical, sexual and verbal abuse) are at a greater risk for developing substance use disorders (SUD). Evidence additionally suggests that emotional dysregulation - which refers to a poorly modulated pattern of emotional responding - may not only mediate the relationship between ACE and SUD but may also serve as a transdiagnostic mechanism of risk. Therefore in the treatment of addictions the impetus exists to identify biomarkers that can assess emotional dysregulation relatively inexpensively. In the present literature review, we review the evidence for a novel biomarker of emotional dysregulation - heart rate variability (HRV) which represents the change in heart rate that occurs with inspiration and expiration.

Two prominent theories, the Polyvagal theory and the Neurovisceral Integration Hypothesis link the role of the parasympathetic nervous system, particularly the vagus nerve to emotional regulation . Both theories propose that Heart Rate Variability (HRV) reflects the purely parasympathetic vagal influence on the heart and can therefore serve as a cheap, easy to measure psychophysiological index of emotional regulation and dysregulation.

Methods: **METHOD**

A comprehensive narrative review was conducted off all studies investigating heart rate variability with no restriction on publication dates.

Results: **RESULTS**

Results from the review suggest good support for the theoretical links between low HRV in response to emotional provocation with dysregulated emotion, appetitive urges as well as a wide range of psychopathologies including post traumatic stress disorder and substance use disorder. However, while studies focusing on the direct manipulation HRV have demonstrated therapeutic benefit, to date there have been only three preliminary studies that have directly applied HRV-focused interventions to substance misuse.

Conclusions: **CONCLUSIONS**

While there is good support for the theoretical links suggesting that the manipulation of HRV may improve emotional dysregulation in substance misusing populations, intervention studies to date have been of modest methodological quality. While the application of HRV-focused interventions to substance misuse appears promising, there is the need for intervention studies of higher methodological quality to support their wider adoption.

Financial Support: University of Queensland Sponsored by Professor Jan Copeland

Abstract - ID: 114

Author(s):

James Sorensen **(Presenter)**, UCSF at Zuckerberg San Francisco General Hospital
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Robin Stuart, CHI Recovery

Title: Provision of care in a hub-and-spoke outpatient treatment model

Abstract Category: Program Descriptions

Abstract Detail: Human

Drug Category: Polydrug

Topic: Treatment

Aims: To conduct a process evaluation of services planned and provided in components of a novel hub-and-spoke treatment program where a hub SUD treatment center addressed addiction while other affiliated professionals (spokes) addressed associated problems.

Methods: We analyzed deidentified treatment records of the first 18 clients of a new outpatient SUD treatment program and affiliated providers in northern California and reviewed services provided. Clients were 18-58 years old; nearly 90% reported prior SUD treatment. Using a logic model, we measured activities in 4 areas of the program's treatment model: **Inquiry-Intake**, **Assessment-Placement**, **Physiological Healthcare** (e.g., detox and pain management support), and **Behavioral Healthcare** (e.g., relational and multifamily therapy). To check data accuracy we audited a randomly-selected 10% of records in each area.

Results: The program averaged 142 total sessions of care delivered per client, exceeding the planned 120 sessions, in a 6-month course of treatment. Clients reported multiple traumas; almost three-quarters received an initial medical detoxification, and over half were placed in a sober living environment. Clients averaged 42 physiological care, 25 individual behavioral therapy, and 27 group behavioral therapy sessions. Total sessions of care delivered exceeded that planned, though patients received less of some services than planned.

Conclusions: The level of services provided exceeded those planned in most but not all areas. Study limitations include small N and limited program records. SUD treatment programs seldom provide comprehensive services that are urgently needed for patients with comorbid conditions, despite policymaker recommendations. This novel use of a hub-and-spoke model is ambitious in addressing comorbidities with an outpatient SUD treatment. While residential programs may more easily provide comprehensive services, an outpatient setting may be less costly and more able to retain patients in treatment.

Financial Support: Evaluation contract from CHI Recovery.

Abstract - ID: 115

Author(s):

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Title: Physician screening and advice on adolescent substance use according to sexual orientation

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Drinking, Smoking, and Drug Use

Topic: Adolescent

Aims: Sexual minority adolescents are more likely than heterosexual adolescents to report substance use behaviors, and these associations are stronger among females. Physicians may consider sexual minority status as a risk factor for substance use and accordingly provide more advice for sexual minority adolescents. We tested this hypothesis by examining differences in physician screening and two types of advice on drinking, smoking, and drug use by sexual orientation and gender.

Methods: Data were from a nationally representative sample of 11th grade adolescents who participated in Wave 2 of the NEXT Generation Health Study (*n* = 2,402; 56.2% female). Gender-stratified logistic regressions were run to relate the odds of receiving physician screening and advice about substance use behaviors to participants' sexual orientation (controlling for age, race/ethnicity, family affluence, and complex survey design).

Results: Sexual minority adolescents accounted for 5.4% of males and 11.1% of females. There was no association between sexual orientation and receipt of physician screening and advice about the risks of substance use. However, among females, sexual minority adolescents were more likely than heterosexual adolescents to report being advised by their physicians to reduce/stop drinking (35.1% vs. 16.4%; OR=2.58, 95%CI=1.61-4.14), smoking (34.7% vs. 16.6%; OR=2.46, 95%CI=1.51-4.01), and drug use (33.1% vs. 15.5%; OR=2.50, 95%CI=1.58-3.94). These associations were independent of recent drinking, smoking, and marijuana use. In contrast, sexual minority males were no more likely than heterosexual males to be advised by physician to reduce/stop drinking (18.5% vs. 19.4%; OR=0.91, 95%CI=0.41-2.03), smoking (19.2% vs. 19.8%; OR=1.00, 95%CI=0.44-2.25), and drug use (17.1% vs. 18.1%; OR=0.91, 95%CI=0.43-1.92).

Conclusions: More female than male sexual minority adolescents received physician advice to change substance use behaviors. Physician awareness of sexual orientation status may be greater among female adolescents, prompting more advice on substance use.

Financial Support: This project (contract HHSN275201200001I) was supported by the Intramural Research Program of the Eunice Kennedy Shriver National Institute of Child Health and Human Development; the National Heart, Lung, and Blood Institute; the National Institute on Alcohol Abuse and Alcoholism; the National Institute on Drug Abuse; and the Maternal and Child Health Bureau of the Health Resources and Services Administration.

Abstract - ID: 116

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Title: The global burden of opioid use disorders 1990-2015: Results on sex and age differences from the Global Burden of Disease Study 2015

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Sex Differences

Aims: The Global Burden of Disease Study 2015 (GBD 2015) quantified burden for 315 diseases and injuries, across 195 countries and territories, by sex, age, and year. The study estimated disease burden for seven substance use disorders. Here we present GBD findings for opioid use disorder. We aim to examine burden of opioid use disorders globally, and by country, age, and sex.

Methods: We modelled epidemiological data using a Bayesian meta-regression methodology. Burden was estimated using disability-adjusted life years (DALYs), a metric which combines the disability (years lived with disability, YLDs) and mortality (years of life lost, YLLs) associated to a given disease. Age-standardized rates are presented per 100k with 95% uncertainty intervals.

Results: Total global DALYs for opioid use disorders were 226.8 (187.1-263.9) in males and 90.7 (72.4-107.9) in females. In the United States, DALYs were 776.1 (661.9-887.4) in males and 359.6 (294.4-418.8) in females. Our analysis of GBD 2015 findings for opioid use disorders are currently being finalized and expected to be published late 2017.

Conclusions: GBD estimates of burden for opioid use disorder can be further improved with more and better quality epidemiological data. Based on the data that we have opioid use disorder imposes a significant burden on males and females, across the entire lifespan. The sex and age differences in burden of opioid use disorders need to be considered within the context of global trends in population growth and aging as well as the increasing use of prescription opioids.

Financial Support: Global Burden of Disease Study 2015 is funded by the Bill & Melinda Gates Foundation.

Abstract - ID: 118

Author(s):

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Title: Cognitive functioning and treatment outcomes in a trial of Internet-delivered drug and alcohol treatment

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Treatment

Aims: Substance use disorders (SUD) are a leading cause of morbidity and mortality. Previous research suggests SUDs are associated with lower cognitive functioning compared with the general population; within substance users, individuals with cognitive impairments have also been found to have poorer treatment outcomes in some studies. Previous randomized trials of technology based interventions have found that cognitive impairment did not moderate response to these interventions. This secondary analysis investigates the association between cognitive functioning and treatment outcomes in a randomized controlled trial of an internet-delivered psychosocial treatment compared to treatment-as-usual conducted within NIDA's Clinical Trials Network.

Methods: All participants were asked to complete a computer based cognitive assessment, (a modified version of the Microcog Neuropsychiatric Assessment). Population normed scores were calculated for 8 subtests measuring attention, reasoning and spatial perception. Cognitive subtest scores were tested as moderators of the treatment effect on abstinence and retention at the end of the 12-week treatment phase.

Results: 497 participants completed all eight subtests. Only one subtest had a significant interaction with treatment; clocks, a measure of spatial perception, moderated the association between treatment and abstinence whereby individuals with lower scores were more likely to respond to add on internet delivered treatment (P= 0.0494), although the number of individuals with impairment on this test was very low. A follow-up analysis explored the main effect of cognitive impairment. Results showed that lower cognitive functioning was associated with lower retention, but no significant results were found on the abstinent outcome.

Conclusions: This study confirms previous reports that cognitive impairment did not moderate treatment response to computer delivered treatment. Impairment in the area of reasoning and cognitive flexibility was associated with lower retention in treatment. It appears that automated Internet-based treatment may be appropriate regardless of the cognitive ability of the recipient.

Financial Support: NIDA UG1 DA013035 (Rotrosen, Nunes, PIs), K24 DA022412 (Nunes), T32 DA007294.

Abstract - ID: 119

Author(s):

Yiyang Liu **(Presenter)**, University of Florida
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Title: The association between different patterns of non-medical use of stimulants and motivations for use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Epidemiology

Aims: Aim: Among adult non-medical stimulants users, we examined differences in motivations for and patterns of use.

Methods: Methods: Using data from the Risk Behavior Assessment of the NIDA-funded Prescription Drug Misuse, Abuse, and Dependence study, adults who endorsed using stimulants non-medically on more than 5 days in the past 12 months were asked about their motivations for stimulant use. Use was stratified as off-label use (use in a way other than prescribed) and incoming diversion (use of someone else's drug). Descriptive analysis and Chi-square/Fisher exact tests were conducted using SAS 9.4.

Results: Results: Overall, 60 respondents reported use of stimulants non-medically for more than 5 days in the past 12 months: 16 (26.7%) off-label only, 29 (48.3%) incoming diversion only, and 15 (25.0%) both. Persons who had off-label use only were least likely to use to get high compared with other users (off-label:25%, incoming diverters: 69%, both:53.3%; P < 0 .05). Incoming diverters were less likely to endorse using to function compared with other users (incoming diverters 20.7%, off-label:81.3%, both:86.7%; P < 0 .01). Incoming diverters were also less likely to use stimulants to modify the effects of other prescription drugs than those who reported off-label use (incoming diverter: 3.5%, off-label:18.8%, both: 26.7%; P < 0 .05).

Conclusions: Conclusion: This study shows differences in prevalence for use of stimulants to get high, to function and to modify effects of other drugs by patterns of non-medical use, suggesting targeted interventions.

Financial Support: R01-DA20791, Cottler (PI)

Abstract - ID: 120

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Title: The burden of disease attributable to alcohol and illicit drug use: Findings from the Global Burden of Disease Study 2015

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Epidemiology

Aims: To present global and regional estimates of the prevalence of alcohol, amphetamine, cannabis, cocaine and opioid use disorders in 2015; years of life lived with disability (YLDs), years of life lost (YLLs) and disability-adjusted life-years (DALYs) attributable to these use disorders; summarise burden due to alcohol and illicit drug use as risk factors for other health outcomes, and analyse its relationship with a composite measure of developmental status, the Socio-Demographic Index (SDI).

Methods: We conducted systematic reviews of the epidemiology of alcohol and drug use, and estimated population-level prevalence of use disorders with GBD2015's Bayesian meta-regression tool (DisMod-MR 2.0). We combined these estimates with disability weights to calculate YLDs, YLLs, and DALYs. We also estimated burden attributable to alcohol and illicit drug use as risk factors for other health outcomes.

Results: Globally, alcohol use disorders were most prevalent: 63.5 million estimated cases (age-standardised rate of 843.2 per 100,000). Cannabis and opioid dependence were the most common drug use disorders (19.8 and 16.7 million cases, respectively; age-standardised rates of 259.3 and 220.4 per 100,000). The number of years of life lost per 100,000 people living with alcohol use disorders was by far the highest in Eastern Europe. The number of years of life lost due to drug dependence per 100,000 was highest in High-income North America, Eastern Europe and Australia – reflecting the fact that opioid dependence is highest in these regions (as opioid dependence has by far the highest mortality risk). Contrasting patterns were seen for the association between total alcohol and illicit drug-attributable burden and SDI: alcohol attributable burden was highest in countries with lower and middle SDI. Burden due to illicit drugs increased with increasing SDI, with the highest levels of burden in the highest-SDI countries. The composition of alcohol and drug-attributable burden also varied by SDI, with drug-attributable burden higher in high-SDI countries and alcohol-attributable burden highest in low-middle SDI countries.

Conclusions: Alcohol and illicit drug use are important contributors to global disease burden. There is a need to scale up effective interventions to prevent and reduce substance use disorders and their associated disease burden.

Financial Support: Australian National Health and Medical Research Council (NHMRC) Principal Research Fellowship; the Australian Government under the Substance Misuse Prevention and Service Improvements Grants Fund; the Queensland Department of Health; the Bill and Melinda Gates Foundation.

Abstract - ID: 121

Author(s):

Jason Coates **(Presenter)**, Centre for Youth Substance Abuse Research
Matthew Gullo, University of Queensland
Gerald Feeney, Princess Alexandra Hospital
Ross Young, University of Queensland
Jason Connor, University of Queensland

Title: Changing alcohol related beliefs: Implications for successful treatment of alcohol use disorder

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Treatment

Aims: Modification of the perceived outcomes of alcohol consumption (alcohol outcome expectancies) is a key feature of cognitive and behavioural interventions for Alcohol Use Disorders (AUDs). However, few studies have examined expectancy change over treatment. It was predicted that positive expectancies would be less strongly endorsed post-treatment, while negative expectancies would be more strongly endorsed. It was also hypothesised that greater drinking behaviour over treatment would attenuate the degree of expectancy change.

Methods: Six-hundred and ninety AUD patients attending a university hospital drug and alcohol outpatient clinic completed the Drinking Expectancy Questionnaire (DEQ). Assessments were conducted pre-treatment and post-treatment. Treatment comprised eight sessions of Cognitive-Behavioural Therapy conducted over 12 weeks, with the goal of abstinence. Multilevel modelling was used to analyse the data, where assessment points were nested within subjects.

Results: As hypothesised, all positive expectancy scores were significantly lower post-treatment while negative expectancy scores were higher. Greater lapse severity was significantly associated with the attenuation of expectations of 'Sexual Enhancement', 'Cognitive Improvement', and 'Tension Reduction', but not 'Social Assertiveness' or 'Negative Affective Change'.

Conclusions: The results suggest expectancy change is a key feature of successful treatment outcome. Furthermore, the association between drinking behaviour over treatment and expectancy change has implications regarding abstinence oriented versus controlled drinking approaches to AUD treatment. The relationship between expectancy change and drinking behaviour appears key to understanding treatment response.

Financial Support: Jason Connor is supported by a National Health and Medical Research Council (NHMRC) of Australia Career Development Fellowship (1031909). Matthew Gullo is supported by a NHMRC Early Career Fellowship (1036365).

Abstract - ID: 122

Author(s):

Laurence Lalanne **(Presenter)**, University Hospital of Strasbourg
Vincent Laprevote, CHRU de Nancy
Anne Giersch, INSERM

Title: Impaired contrast sensitivity at low spatial frequency in cannabis users with early onset

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Mechanisms of Action

Aims: The regular use of cannabis generates pronounced cognitive disorders, especially in users who began before the age of 16. However, less is known about the impact of regular cannabis on visual function, especially in the case of early onset. Cannabinoid receptors (CB1) are expressed in areas of the visual system, like the thalamus and primary cortex, which might originate sensory disorders. We hypothesized contrast sensitivity to be impaired in cannabis users in case of early onset of cannabis use. In this study, our aim is to test contrast sensitivity in cannabis users and to differentiate the effects of cannabis on contrast sensitivity according to the onset of cannabis use (early onset before 16 yo versus late onset after 16 yo).

Methods: To test our hypothesis, we measured contrast sensitivity (CS) in three groups, i.e. cannabis users with late onset of cannabis (after 16 yo), cannabis users with early onset (before 16 yo), and controls matched for gender, age and level of education.Stimuli were gratings, i.e. composed of alternating light and dark bars (with a sinusoidal variation of luminance), and were presented at high and low spatial frequencies (respectively narrow and large bars) and in both static and dynamic conditions (8hz): these two types of signals are processed by different pathways, that need to be distinguished. The participants' attention and vigilance was examined by means of the D2 test, CPT-AX for attention and pupillography for vigilance. **Statistical Analyses:** We performed analyses of variance (ANOVA) with groups (early onset cannabis use vs. late onset cannabis use, vs. no cannabis use) as between-group factor and spatial and temporal frequencies as within-group factors.

Results: We showed that cannabis users with early onset had difficulties to detect low spatial frequency gratings. This effect was independent of response biases, vigilance and attention.

Conclusions: These results might be related to similar difficulties in patients with schizophrenia, knowing cannabis is a risk factor for this pathology.

Financial Support: Direction de la recherche clinique et des Innovations- CHU de Strasbourg

Abstract - ID: 123

Author(s):

Nina Pocuca **(Presenter)**, University of Queensland
Leanne Hides, University of Queensland
Catherine Quinn, Centre for Youth Substance Abuse Research
Melanie White, University of Queensland
Louise Mewton, Centre for Youth Substance Abuse Research

Title: The structure of neuroticism and its relationship to problematic drinking in youth

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Prevention

Aims: Multiple measures of neuroticism exist, with specific focuses on behavioral inhibition, social anxiety, hopelessness and affect dysregulation. While neuroticism has been linked to youth drinking (18-25 years), results are inconsistent and it is unclear what aspects of neuroticism are most strongly related to drinking. This study aimed to examine the factor structure of neuroticism, to identify which factor most strongly related to alcohol consumption and dependence in youth. It was hypothesized that distinct factors of neuroticism would emerge, however, not all factors would relate to alcohol consumption and dependence.

Methods: Youth (N = 494) completed multiple neuroticism scales and the AUDIT, via an online survey. Exploratory and confirmatory factor analyses of the neuroticism scales determined which model best captured the construct of neuroticism, with the most parsimonious factor structure. SEM determined which factor was most strongly related to AUDIT consumption and dependence scores.

Results: Exploratory (RMSEA = .05; CFI =.99) and confirmatory (RMSEA = .06; CFI = .94) factor analyses found a 4-factor model comprised of social anxiety, hopelessness, affect dysregulation, and behavioral inhibition provided acceptable to excellent fit to data. An SEM provided excellent fit to data (RMSEA = .04; CFI = .95), finding social anxiety (B = -.29, *p*p

Conclusions: Multiple measures of neuroticism exist; however, social anxiety and behavioral inhibition were most strongly related to consumption and dependence, respectively. These results could help to identify the youth most at risk of developing problem drinking and inform the development of more effective prevention and intervention programs.

Financial Support: Nina Pocuca is supported by an Australian Postgraduate Award and a Centre for Youth Substance Abuse Research top-up scholarship. This abstract is sponsored by Professor Jan Copeland (j.copeland@unsw.edu.au)

Abstract - ID: 124

Author(s):

Tetiana Kiriazova **(Presenter)**, Ukrainian Institute on Public Health Policy
Yuliia Sereda, Ukrainian Institute on Public Health Policy
Roman Yorick, USAID RESPOND Project, Pact Inc.
Inna Shvab, USAID RESPOND Project, Pact Inc.
Sergii Dvoriak, Ukrainian Institute on Public Health Policy

Title: Assessment of the behavioral intervention “Steps towards Health” for HIV-positive persons who inject drugs in Ukraine

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: AIDS/Immune

Aims: In Ukraine, persons who inject drugs (PWID) demonstrate significant losses across HIV treatment cascade. This study assessed whether the behavioral intervention “Steps towards Health” improves linkage and retention in HIV care and treatment among HIV-positive PWID in Ukraine.

Methods: “Steps towards Health” is an intervention designed in Ukraine for targeting HIV-positive PWID, who had been registered at AIDS clinics but did not attend any follow-up visits for at least 6 months. It consists of five individual counseling sessions and was implemented by local HIV-servicing NGOs in two regions of Ukraine. Using randomized clinical study design, we compared the study outcomes between intervention group (IG, 150 participants) and control group (CG, standard of care, 150 participants) at baseline and after 3 and 6 months. Data analysis included assessment of intervention effects through the logistic and Poisson regressions.

Results: Ninety-four percent of IG participants received all 5 sessions; all sessions included 5 key elements. At 6-month follow-up, IG participants were more likely to attend follow-up visits at the AIDS clinic (OR 4.76; 95% CI: 2.65-8.56), take CD4 test (OR 4.16; 95% CI: 2.36-7.31), and initiate or return to ART (OR 2.62; 95% CI: 1.35-5.08). They had less odds of having unprotected sex at last intercourse (OR 0.51; 95% CI: 0.29-0.90 at 3 months, OR 0.52; 95% CI: 0.28-0.95 at 6 months) and of irregular condom use in past month (OR 0.29; 95% CI: 0.15-0.56 at 3 months, OR 0.32; 95% CI: 0.17-0.61 at 6 months). Short-term effect was found on the number of successful referrals to other services (SPI 1.33; 95% CI: 1.16-1.52 at 3-month follow-up).

Conclusions: Behavioral intervention "Steps towards Health" demonstrated promising results in terms of its fidelity, feasibility and effectiveness, and can be recommended for further dissemination in Ukraine.

Financial Support: The study was supported by the USAID’s RESPOND Project through the grant to UIPHP #380A0735.

Abstract - ID: 125

Author(s):

Katherine Marks **(Presenter)**, University of Kentucky
Justin Strickland, University of Kentucky
Carl Leukefeld, University of Kentucky
Carrie Oser, University of Kentucky
Michele Staton, University of Kentucky College of Medicine

Title: Strengths can decrease likelihood of drug use among high-risk rural women following brief intervention

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: AIDS/Immune

Aims: Strategies are needed to reduce drug use among rural women at high risk for HIV exposure. The aim of this study was to identify rural women's self-reported areas of strength and examine the association between strengths and decreased illicit drug use following brief intervention.

Methods: Data included 360 drug-using rural women over the age of 18 at high risk for HIV. Consenting women participated in a baseline interview assessing drug use and 10 areas of strength (e.g., doing well with close friends) and were then randomly assigned to one of two evidence-based brief intervention groups related to HIV education and risk reduction. Drug use was reassessed at the 3-month follow-up. Bivariate and multivariable logistic regression examined the relationship between strengths and self-reported past 30-day illicit drug use at the 3-month follow-up. Strengths significant at the bivariate-level were included in multivariable models, controlling for relevant demographic variables, baseline illicit drug use, and intervention group and site.

Results: Past 30-day illicit drug use significantly decreased from baseline (89.7%) to the 3-month follow-up (33.9%) and did not differ between groups. Results indicated that women reporting close friends (AOR = 2.16, CI95: 1.31 – 3.57), problem solving as a strength (AOR = 2.23, CI95: 1.38 – 3.61), and good/excellent physical health (AOR = 2.47, CI95: 1.53 – 3.99) were significantly less likely to report past 30-day illicit drug use at the 3-month follow-up.

Conclusions: Areas of strength can be associated with decreased likelihood of illicit drug use among high-risk rural women following brief intervention. Identifying factors associated with decreased risk behavior for HIV exposure informs solutions, rather than barriers, for public health practice.

Financial Support: NIDA Grants R01DA033866, T32DA035200

Abstract - ID: 126

Author(s):

Tara Carney **(Presenter)**, South African Medical Research Council
John Wells, Waterford Institute of Technology
Charles Parry, South African Medical Research Council
Padraig McGuinness, CARA Pharmacy
Richard Harris, Weldricks Pharmacy
Marie Claire van Hout, Waterford Institute of Technology

Title: Prescription and over-the counter opioids: A three country comparative analysis of pharmacists' perspectives on codeine use and misuse

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Other

Aims: The misuse of pharmaceutical opioids has increasingly become a global public health issue, with concerns around associated harms and the regulation of opioid-containing medicines. One of the weaker but most commonly-used opioids is codeine which is used for pain relief and cough suppression. The misuse of over-the-counter and prescription codeine products and dependence on this opioid is of increasing concern in a number of countries.

Methods: A cross-sectional web-based survey of pharmacy staff's perspectives on this issue was administered through regulatory bodies and completed by samples drawn in South Africa (n=124), Ireland (n=464) and the United Kingdom (n=129) in 2015.

Results: The majority reported combination (codeine and paracetamol or codeine and ibuprofen) codeine-containing products as most popular, but significantly more pharmacy staff in South Africa reported codeine-containing cough syrups as most commonly used in comparison to the other two countries ($X^2=122.7(2)$, $p < 0.001$). Codeine use was also seen significantly more of a public health problem in South Africa than in the other two countries ($X^2=7.6(2)$, $p=0.02$). In addition, pharmacy staff in South Africa and Ireland were significantly more likely to report a high level of codeine misuse ($X^2=9.9(4)$, $p=0.04$) in their jurisdiction. Further findings indicate that professional training and education is desired, with unequivocal findings for the need for greater control of codeine products ($X^2=12.0(2)$, $p=0.002$).

Conclusions: While there were some inter-country differences, overall the findings seem to suggest that the pharmacy stuff across all three countries included in the study viewed codeine misuse as a problem among their customers. Recommendations centre on risk management, surveillance and training pharmacy staff in substance use issues, as well as training in addiction, mental health and communication or conflict resolution skills.

Financial Support: The research leading to these results has received funding from the European Community's Seventh Framework Programme FP7/2007-2013 under grant agreement no 611736

Abstract - ID: 127

Author(s):

Zachary Mannes **(Presenter)**, University of Florida
Huiyin Lu, University of Florida
Nicole Ennis Whitehead, University of Florida
Robert Cook, University of Florida

Title: The prevalence and patterns of substance use across age cohorts in HIV+ adults within the state of Florida

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: tobacco, alcohol, marijuana, opioids, stimulants, sedatives, injection drugs

Topic: Epidemiology

Aims: Previous investigations have evidenced the high prevalence of substance use among HIV+ adults. Though use typically begins in adolescents, the age of initiation of first time illicit drug use has upturned. Previous work has highlighted a need to examine prevalence and trends of substance use across the adult lifespan. Thus, this study investigated the prevalence and possible differences in use of substances among age cohorts of HIV+ adults.

Methods: 795 HIV+ adults were recruited from seven community health centers in Florida. Following written informed consent, participants completed a questionnaire assessing information regarding demographics, HIV clinical outcomes, and substance use. Bivariate analyses assessed the differences in this information between age cohorts. Multivariate binary logistic regressions further examined the relationship between age, covariates, and substance use in the past 12 months. Participants were stratified into four age groups: 18-34, 35-45, 46-54, and 55+, with the youngest group designated as the referent group.

Results: The highest prevalence of binge drinking (38.6%) and current tobacco smoking (54.2%) were reported by the 18-34 and 35-45 year old groups respectively. The youngest group also reported the highest prevalence of marijuana (47.8%) and sedative (12.4%) use, while the 45-54 year old group reported the highest prevalence of crack (20.5%) and nonprescription opioid use (13.1%). Multivariate analyses indicated that the 44-54 year olds (AOR=.535, 95% CI=.333-.860) and 55+ group (AOR=.390, 95% CI=.217-.700) reported decreased odds in marijuana use compared to the youngest group. The 45-54 year old group and 55+ group evidenced increased odds of crack use (AOR=4.87, 95% CI=2.20-10.76; AOR=3.14, 95% CI=1.23-8.02). The 45-54 year old group also evidenced an increase in the odds of injection drug use (AOR=1.98, 95% CI=1.01-3.89).

Conclusions: HIV+ younger adults reported the highest prevalence of binge drinking and marijuana use while HIV+ older adults used crack and injection drugs at higher rates than HIV+ younger adults. These groups may be at increased risk for associated consequences resulting from the use of these substances. Results inform clinical screening and intervention of substance use among distinct age groups in adults with HIV.

Financial Support: U24AA022002

Abstract - ID: 128

Author(s):

Phillip Marotta **(Presenter)**, Columbia University
Nabila El-Bassel, Columbia University
Elwin Wu, Columbia University
Daniel Feaster, University of Miami Miller School of Medicine

Title: Assessing pathways between the legal environment, substance use and sexual risk among migrant and non-migrant workers in Kazakhstan

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Behavior

Aims: This presentation elucidates pathways among the legal environment, drug and alcohol use and sexual risk behaviors among migrant and non-migrant market vendors recruited from the largest marketplace in Central Asia.

Methods: A representative sample of 1342 external, internal and non-migrant male workers in the marketplace was recruited using Respondent Driven Sampling. Structural equation modeling (SEM) assessed if drug and alcohol use mediated the association between the legal environment and sexual risk. Our models conceptualized the legal environment as a latent construct including, legal residency status, work status, deportation history, experiencing violence or being jailed based on political beliefs, questioning by migration police and market officials, arrest and incarceration. We created a latent construct of sexual risk including multiple sex partners, unprotected sex, sex under the influence of drugs and exchanging money for sex. We used baseline data to test 2 SEM models hypothesizing that alcohol use (AUDIT) and any drug use (cannabis/hashish, opiates, cocaine, club drugs, other drugs) would mediate the relationship between the legal environment and sexual risk after adjusting for potential confounders and RDS survey weights.

Results: In support of our hypotheses, the legal environment predicted increased risk of alcohol use (B=.90, p

Conclusions: Findings suggest drug and alcohol use may shape the association between the legal environment and sexual risk. In particular, targeting alcohol use may attenuate the deleterious effects of the legal environment on sexual risks.

Financial Support: Research for the parent study was funded by a grant from the National Institute on Drug Abuse (R01DA022914) and data analysis for this presentation was funded by a T-32 Training Grant from the National Institute on Drug Abuse (1T32DA037801)

Abstract - ID: 129

Author(s):

Carol Boyd **(Presenter)**, University of Michigan
James Cranford, University of Michigan
Sean McCabe, University of Michigan

Title: A national study: Gender, drug dependence and recent drug use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Dependence

Aims: Determine gender differences in recent illicit drug use among those with a lifetime DSM-IV diagnosis of drug dependence (DD). *Research Question:* Are there gender differences in recent 'abstinent from illicit drug use' days among those with a previous history of DD?

Methods: Adults were interviewed with the Alcohol Use Disorder and Associated Disabilities Interview Schedule as part of the *National Epidemiologic Survey on Alcohol and Related Conditions.* Items included drug-specific criteria for prior-to-past-year (PPY) and past-year (PY) use of cannabis, opioid, cocaine, amphetamine, sedative, tranquilizer, hallucinogen, inhalant, and other drugs. Among respondents meeting criteria for PPY drug dependence (n = 921, 40.9% female), we examined average number of days since last drug use as a function of PY drug use status based on the following groups: 1) PY Abstainer: No PY drug use; 2) PY Drug Use: Used at least one drug in past year or had a past-year recurrence of drug use, but did not meet full criteria for DD; 3) PY drug dependence: Continued to meet criteria for DSM-IV DD.

Results: The prevalence of any PPY drug dependence was 2.3%; among those with PPY drug dependence, the prevalence of PY drug use was: Abstainer (60.5%), PY Drug Use (25.9%), and PY DD (13.6%). Results from design-based multiple regression analysis showed that females in the PY DD group reported statistically significantly fewer days since most recent illicit drug use compared to males (b = 958.6, t = 3.0, p < .05). There were no statistically significant gender differences in the number of days since most recent use for individual drugs.

Conclusions: Results suggest that females with PPY had less time with "abstinent days" from illicit drugs than males. These findings provide additional support to the recognized differences between men's and women's drug use, and have implications for gender-specific drug treatment.

Financial Support: This research was supported by the National Institute on Drug Abuse, National Institutes of Health (R01DA036541).

Abstract - ID: 130

Author(s):

Brooke Arterberry **(Presenter)**, University of Michigan
Alan Davis, Bowling Green State University
Maureen Walton, University of Michigan-Addiction Research Center
Rebecca Cunningham, University of Michigan
Frederic Blow, University of Michigan-Addiction Research Center
Erin Bonar, University of Michigan

Title: Associations of marijuana quantity and frequency with marijuana motives among emerging adults

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Sex Differences

Aims: Changes in marijuana legislation have caused concern about the potential public health problems associated with consumption. The present cross-sectional study examined associations among quantity and frequency of marijuana use with motives utilizing a timeline follow-back (TLFB) approach.

Methods: Participants (*n*=104) aged 18-25 (M=22, *SD*=2.2) were recruited from an urban Emergency Department (53% female, 47% African American, 38% European American). Screened participants, who reported past month marijuana use, completed baseline measures of demographics, past month marijuana quantity/frequency (TLFB), and motives. Multivariate regression analyses were conducted using 7 quantity/frequency variables entered as dependent variables and gender and motive subscale scores added as independent variables.

Results: Almost half (43.3%) of the sample used marijuana every day in the past month. Results indicated that gender was related to higher levels of past month marijuana use including frequency, $F(1, 95)=4.27$, $p < 0.05$, quantity, $F(1, 95)=6.52$, $p < 0.05$, and using 5+ joints more days, $F(1, 95)=8.89$, $p < 0.01$; being female was associated with more days of abstinence and being male was related to higher quantity, frequency, and more frequent use of higher quantities. Findings also indicated social motive scores were associated with higher frequency, $F(1, 95)=4.97$, $p < 0.05$, while enhancement motive scores were related to greater number of days using 2-4 joints per day, $F(1, 95)=4.48$, $p < 0.05$. Coping motives were associated with greater frequency, $F(1, 95)=5.31$, $p < 0.05$, quantity, $F(1, 95)=10.62$, $p < 0.01$, and number days using 5+ joints per day, $F(1, 95)=4.69$, $p < 0.05$.

Conclusions: These findings suggest using number of days of marijuana use, combined with specific quantities per day, may provide a more substantive understanding of marijuana-related motives than frequency or quantity alone. Furthermore, gender differences in quantity and frequency of marijuana use are important to consider when developing interventions.

Financial Support: This project was supported by NIH grants K23 DA036008 04 and T32 AA007477 25.

Abstract - ID: 131

Author(s):

Dustin Stairs **(Presenter)**, Creighton University
Nicole Chacho, Creighton University
Rachel Busselman, Creighton University
Madison Wolfe, Creighton University
Scott Christenson, Creighton University

Title: Effects of nicotine exposure on behavioral inhibition and self-administration in differentially reared rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Behavior

Aims: Previous research from our laboratory has shown that exposing differentially-reared rats, to nicotine in adolescence increased the level of self-administered of amphetamine in adulthood in isolated rats (IC) compared to enriched rats (EC). In the current study we tested if adolescent nicotine exposure altered behavioral inhibition in EC and IC rats and then investigated if the behavioral inhibition measure related to the level of amphetamine self-administration, rate of extinction and a drug-primed reinstatement.

Methods: Male Sprague-Dawley rats were received at postnatal day (PND) 21 and placed in either an EC or IC condition under a 12/12 hr. light/dark cycle, with lights on from 6:00-18:00 hr. After a seven day acclimation period (PND 28), animals received seven daily injections of 0.4 mg/kg dose of nicotine or saline. Following a 30 day washout period, rats learned to lever press in operant conditioning chambers through food reinforcement and were placed on a differential-reinforcement of low rate (DRL) schedule. The DRL schedule was increased from a DRL1s to a DRL10s schedule. Following responding on the DRL schedule, all animals underwent catheterization surgery. Following recovery, animals had 15 sessions to acquire amphetamine self-administration (0.06 mg/kg/infusion) on a FR1 schedule of reinforcement. This was then followed by 10 saline only extinction sessions. Finally the animals were given pretreatments of amphetamine (0, 0.25, 1.0 mg/kg; i.p.) prior to an extinction session.

Results: Results indicated that nicotine-treated IC rats had a higher percent accuracy in responding on the DRL task compared to saline-treated controls and nicotine-treated EC rats. Also nicotine-treated IC rats showed a greater resistance to extinction compared to nicotine-treated EC rats. Although, nicotine-treated EC rats showed greater levels of reinstatement compared to saline controls.

Conclusions: These results indicate that adolescent nicotine exposure may alter behavioral inhibition and sensitivity to amphetamine primed reinstatement differentially in EC and IC rats.

Financial Support: Financial Support was provided by College of Arts and Science at Creighton University.

Abstract - ID: 132

Author(s):

Sheri Towe **(Presenter)**, Duke University School of Medicine
Bianca Martin, Duke University School of Medicine
Christina Meade, Duke University School of Medicine

Title: Comparison of motives for cannabis initiation and continued use in HIV+ and HIV- cannabis users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: AIDS/Immune

Aims: Cannabis is the most commonly abused drug, and its use is even more prevalent in HIV+ persons. In states where medical cannabis use is legal, HIV is an indicated condition; however, it is not clear how motives for use differ between HIV+ and HIV- persons in states where cannabis use is not legalized. This study examined motives for cannabis initiation and continued illicit use in a sample of HIV+ and HIV- users.

Methods: The sample includes 71 cannabis users who differed on HIV status: HIV+ (n= 28) and HIV- (n= 43). Cannabis use and DSM-IV-TR dependence were assessed by clinical interviews. Motives were measured using the Marijuana Motives Measure, which assesses motives in 5 domains: enhancement, social, coping, conformity, and expansion. We added 6 new questions to assess medical motives.

Results: The sample was mostly male (75%) and African American (72%), with a mean age of 34 years. Participants used cannabis on 24.5 of the last 30 days and had used regularly for 13.2 years on average. Most reported initiating use for recreational reasons, with no difference between groups (HIV+ = 52%; HIV- = 67%). There was also no group difference on current diagnosis of dependence (HIV+ = 54%; HIV- = 51%). For current motives, HIV+ participants reported significantly higher medical motives compared to HIV- participants (p=.005), but the groups did not differ in other motives. There was a main effect for dependence across all motives scales except conformity, with dependence associated with higher scores (all $p < .02$). There were no interaction effects between HIV and dependence for any motives scale.

Conclusions: While HIV+ cannabis users reported higher medical motives for current use, they were equally likely as HIV- users to have initiated cannabis use for recreational reasons and to currently use for enjoyment, socializing, and coping. They were also equally likely to report symptoms of cannabis use disorder, which appears to drive self-reported motives.

Financial Support: K23 DA-028660, R03DA035670

Abstract - ID: 133

Author(s):

Amy Patterson **(Presenter)**, East Tennessee State University
Amanda Smith, East Tennessee State University
Curtis Bradley, East Tennessee State University
Moss Sanders, East Tennessee State University
Jessica Golson, East Tennessee State University
Matthew Palmatier, East Tennessee State University

Title: Flavor conditioned reinforcers promote nicotine self-administration in rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Nicotine/Tobacco

Topic: Behavior

Aims: All tobacco and vapor products contain flavor ingredients that are commonly found in foods and beverages (e.g., menthol, cocoa, and licorice). These flavors become conditioned reinforcers (CRs) based on their association with sweet tastes and calories. The aim of the present study was to expand previous research showing that nicotine (NIC) can enhance conditioned reinforcement to flavor CRs found in tobacco and vapor products. We predicted that the interaction between nicotine and flavor CRs would promote nicotine self-administration at low unit nicotine doses.

Methods: Rats were randomly assigned to one of two groups, PAIRED (target flavor paired with 20% sucrose) or UNPAIRED (control flavor paired with 20% sucrose). Rats received 24 drink sessions (1 h) with access to the sucrose and target or control flavor in the home cage to establish the target flavor as a CR in the PAIRED groups. Following taste conditioning, the rats were instrumented for intravenous nicotine self-administration (IVNSA). Licks at a sipper tube delivered IV nicotine (7.5 ug/kg/inf, base) and 0.12 mls of the target (unsweetened) solution into the sipper tube under an escalating fixed-ratio (FR) schedule of reinforcement that increased from FR2 (5 sessions) to FR5 (5 sessions) to FR10 (5 sessions). Licks at a separate 'inactive' sipper tube resulted in presentation of 0.12 ml of water. Menthol (160 or 320 um) or licorice root extract (LRE, 0.1 or 1% v/v) served as the target flavor (n=7-9/group/concentration).

Results: None of the UNPAIRED groups acquired IVNSA (Fs < 0 .1) whereas all PAIRED rats did acquire IVNSA ($p < 0.05$) – responding at the NIC sipper was higher than responding at the water sipper. For LRE, IVNSA increased more with the stronger CR (1% LRE) relative to the weaker CR (0.1% LRE, $p < 0.01$). Both menthol CRs increased IVNSA to a similar extent.

Conclusions: The present findings indicate that flavor CRs can promote nicotine self-administration by interaction with the incentive-promoting effects of NIC. Thus, inclusion of these flavor CRs in tobacco and vapor products promotes nicotine and tobacco dependence.

Financial Support: NIH (DA038843)

Abstract - ID: 134

Author(s):

Jessica Golson **(Presenter)**, East Tennessee State University
Amy Patterson, East Tennessee State University
Moss Sanders, East Tennessee State University
Samantha Malone, East Tennessee State University
Curtis Bradley, East Tennessee State University
Matthew Palmatier, East Tennessee State University

Title: Effect of adolescent caffeine self-administration on adult nicotine self-administration in rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Nicotine/Tobacco

Topic: Adolescent

Aims: The prevalence and intake of caffeine escalates during the adolescent period; approximately 90% of teens aged 12-17 consume roughly 70 mg of caffeine per day. The aim of the present study was to investigate the effects of adolescent caffeine self-administration on nicotine reinforcement in adulthood. We predicted that adolescent self-administration of caffeine would increase the reinforcing effects of nicotine in adulthood.

Methods: Rats were randomly assigned to one of two groups; CAFF (2.5 mg/ml, n=8) or Qui9 (0.3 uM, n=8). On postnatal day 28 (P28) rats began an exposure phase in which they received access to their assigned compound in a sweetened solution (5% sucrose, w/v) every other day for 30 days (15 exposures). Preliminary data indicated that these two solutions had comparable bitterness. Licks at a sipper tube connected to a lickometer resulted in delivery of 0.12 ml of the assigned solution under a fixed ratio 2 (FR2) schedule of reinforcement, providing relatively unrestricted access to the solutions. On P56-57 rats were instrumented for intravenous nicotine self-administration (IVNSA) which began on P67. A lever-press delivered IV nicotine (15 ug/kg/inf, base) under an FR1 schedule of reinforcement.

Results: The Qui9 group drank significantly more than the CAFF group over the last (8) exposure sessions (ps < 0 .05). However, the CAFF group self-administered a potent caffeine dose (37±14 mg/kg) throughout the exposure phase. During IVNSA, there was a non-significant trend for increased responding for nicotine in the CAFF group, relative to the Qui9 group. Additional tests requiring more effort (FR2, FR5, and PR) are currently being carried out.

Conclusions: Adolescent exposure to caffeine may alter the reinforcing effects of nicotine in adulthood. During the adolescent exposure phase caffeine intake was limited by two factors, the bitter taste and the pharmacological effect. Future studies will investigate whether a lower caffeine concentration will increase behavior without reducing total caffeine exposure.

Financial Support: NIH (DA038843) and the ETSU Office of Research and Sponsored Programs.

Abstract - ID: 135

Author(s):

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Title: The impact of sex on brain responses to smoking cues: Replication in a new cohort

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Imaging

Aims: Exposure to drug cues motivates drug-seeking in those with nicotine use disorder (NUD). Using perfusion fMRI, we showed that men activate the ventral striatum/ventral pallidum (VS/VP) and ventral medial prefrontal cortex (VMPFC) during exposure to appetitive smoking cues (SCs), women activate the VMPFC, and men showed greater activity in amygdala/hippocampal regions compared to women (Wetherill et al, *BOSD* 2014). In a follow up study we showed that women in the follicular phase had greater activity in the VMPFC compared to women in the luteal phase (Franklin et al *NTR* 2015). These data suggest that men and women process SCs differently, and that hormonal status influences women's response to SCs. Here, in a new NUD cohort we repeated our fMRI experiment. We expected to reproduce the results initially observed in men and potentially when comparing men and women; however given hormonal status affects SC activity, we expected variability in women's overall neural response to SCs.

Methods: Thirty-six (18 females) NUD treatment-seeking sated individuals recruited from Philadelphia, underwent perfusion fMRI during exposure to 9 minute visual/auditory/tactile SC and non-SC clips. Brain responses to SCs relative to non-SCs were examined within men and women separately and then compared between the sexes.

Results: Results replicate previous findings. Men had SC-induced activation within the VS/VP and VMPFC, while women had more variable brain activity. In comparing the sexes, men had greater SC activity in the VS/VP, VMPFC and hippocampus ($p < 0$ .005, cluster corrected). SCs elicited craving that correlated with VS/VP activity in all subjects but was driven primarily by men.

Conclusions: Given that SCs trigger relapse these findings suggest that treatment-seeking NUD men and women may benefit from NUD treatment strategies tailored to sex. Our future work will examine women with respect to hormonal status (including post-menopausal women and women taking exogenous hormonal preparations).

Financial Support: NIDA

Abstract - ID: 136

Author(s):

James Walker **(Presenter)**, Medical University of South Carolina
Jeffrey Korte, Medical University of South Carolina
Aimee McRae-Clark, Medical University of South Carolina
Karen Hartwell, Medical University of South Carolina

Title: Adherence across FDA-approved medications for alcohol use disorders in a VA population

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Other

Aims: Aims: Alcohol use disorders (AUDs) are responsible for significant morbidity and mortality, particularly in veterans. While multiple FDA-approved medications exist that are effective for AUDs, medication adherence is problematic. While most clinical trials report rates of adherence, few studies have compared adherence to these medications in a real-life clinical environment.

Methods: Methods: A retrospective chart review was conducted at the Ralph H. Johnson VAMC on every patient who was prescribed acamprosate (A), disulfiram (D), oral naltrexone (NT), and naltrexone extended-release injection (XRNT) between 2010-2015. Retention on each medication was estimated by calculating the proportion of days covered by the medication over a 6-month period (0-100%) as well as by a dichotomous measure of 80% or greater adherence vs. less than 80%. Adherence measures were compared between the four medications. Pairwise t-tests compared mean adherence between medications and chi-square tests assessed the proportion with 80% adherence between medications.

Results: Results: The records of 768 patients were included in the analysis. Mean adherence was 40.7% for disulfiram (n = 161), 46.0% for acamprosate (n = 86), 48.8% for oral naltrexone (n = 597), and 56.6% for naltrexone extended-release (n = 45). Mean adherence was significantly different between D & NT ($p = 0.0006$), D & XRNT ($p = 0.0004$), A & XRNT ($p = 0.04$), and borderline significant between NT & XRNT ($p = 0.08$). Adherence of 80% was achieved in 11.2%, 19.8%, 22.1%, and 28.9% of treatment courses with disulfiram, acamprosate, naltrexone, and XRNT, respectively. These differences were significant for D vs NT ($p = 0.002$) and D vs XRNT ($p = 0.003$), and borderline significant for D vs A ($p = 0.07$).

Conclusions: Conclusions: Naltrexone extended-release injection was significantly more adhered to than disulfiram, acamprosate, and possibly oral naltrexone; disulfiram was significantly less adhered to than NT and XRNT. Overall adherence was poor across all medications; adherence interventions in this population are needed.

Financial Support: Funding: R25 DA020537

Abstract - ID: 137

Author(s):

Ellie-Anna Minogianis **(Presenter)**, Université de Montréal, Department of Pharmacology and Physiology
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Title: Increased motivation to self-administer cocaine is linked to enhanced cocaine-induced gene regulation in the frontal cortex and dorsal striatum

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Behavior

Aims: An important challenge in addiction research is parsing out brain changes that are linked to addiction from those that result from merely taking drugs. To this end, we compared rats given intermittent access (IntA) to rapid cocaine injections (delivered i.v. over 5 s) to rats given continuous access (ContA) to slow injections (90 s). IntA to rapid cocaine produces the repeated spikes in brain levels of drug thought to model cocaine use by human addicts (Zimmer et al.; Beveridge et al.). Spiking brain levels of cocaine also increase incentive motivation for the drug (Zimmer et al.), a key addiction symptom. In contrast, ContA to slow cocaine injections supports high levels of drug intake, without promoting addiction-like behaviours (Minogianis et al.; Wakabayashi et al.). Thus, we assessed both motivation to take cocaine and cocaine-induced gene regulation in the two groups.

Methods: Male Wistar rats (N=22) self-administered i.v. cocaine (0.25 mg/kg/inf) 6h/day for 9 sessions. Group 1 had IntA to rapid cocaine infusions (delivered i.v. over 5 s). Group 2 had ContA to slower infusions (over 90 s; ContA). Motivation for cocaine was assessed under a progressive ratio schedule of reinforcement. Thirty minutes following a final self-administration session under a fixed ratio 2 schedule of reinforcement with an infusion criterion of 10, brains were extracted and processed for in situ hybridization of c-fos mRNA.

Results: IntA rats took less cocaine than ContA rats (mean ± SEM infusions/6-h session: IntA=22.9±1.3, ContA=49.1±10.5), but later showed greater motivation for the drug (One-way ANOVA, $p < 0.0001$). IntA rats expressed more c-fos mRNA than ContA rats in the orbitofrontal (OFC) and prelimbic (PrL) cortices, and in the dorsal striatum (DS) (all $P's < 0.0001$).

Conclusions: Our results suggest that the development of pathological cocaine intake is associated with increased gene regulation in corticostriatal regions. Because the OFC and PrL both project to the DS, an important next step would be to determine the role of these frontostriatal circuits in the motivation for cocaine.

Financial Support: FRQS: 28998 & 29651. CIHR: 97841. CFI : 24326.

Abstract - ID: 138

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Title: Naltrexone implant, compared to oral naltrexone, improves HIV treatment outcomes of opioid-addicted patients

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: AIDS/Immune

Aims: HIV+ opiate users often have poor adherence to antiretroviral therapy (ART). An implant containing 1000 mg extended release naltrexone (NI) prevents relapse for up to 3 months and improves addiction treatment outcomes. This study aimed to see if it improves outcomes of ART as compared to oral naltrexone 50 mg/day (ON).

Methods: 238 consenting, detoxified, HIV+ opiate addicted patients starting ART in St.-Petersburg, Russia were screened; 200 were randomized 1:1 to 12 months treatment with NI + ON placebo, or ON + NI placebo. All were offered biweekly drug counseling. Viral load, adherence to addiction and HIV treatment, CD4 count, opiate use, and adverse events were recorded. The primary outcome was undetectable VL (< 4 00 copies/ml) at month 12.

Results: The two groups did not differ in baseline characteristics. Addiction treatment completion was significantly better in NI than ON (32% vs 17%, respectably, p < 0 .05), and ART retention was better in NI than ON (46% vs 32%; p < 0 .05). Undetectable VL was more common in NI than ON [66% vs 50%; OR (95% CI) = 1.94(1.10-3.43)], and the mean number of MEMS cap openings was higher in NI than ON (247.5±77.1 vs. 63.9±58.5, p < 0 .01). The CD4 count was higher in those who continued on naltrexone, regardless of group assignment, vs. those who dropped out (453.1 cells/mm3 ±271.0 vs. 293.6 cells/mm3 ±170.3, p < 0 .001). The groups did not differ in adverse events (32% for ON vs. 30% for NI).

Conclusions: NI, compared to ON, improved addiction and HIV treatment outcomes in opiate addicted patients starting ART in Russia. Extended release naltrexone may be a useful alternative to methadone or buprenorphine maintenance for opioid addicted patients on ART who do not want agonist therapy or where it is difficult to access or unavailable.

Financial Support: NIDA grants R01 DA026336; K05 DA 17009; U10DA013043

Abstract - ID: 139

Author(s):

Rachel Hoopsick **(Presenter)**, State University of New York at Buffalo
D. Lynn Homish, State University of New York at Buffalo
Gregory Homish, State University of New York at Buffalo

Title: Combat exposure, emotional and physical role limitations, and substance use among male reserve soldiers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Epidemiology

Aims: Combat-exposed soldiers are at an increased risk for both health problems that diminish quality of life (QOL) and substance use. We aimed to examine the associations between combat exposure and two QOL measures and the effect of substance use on those associations in a sample of male US Army Reserve/National Guard (USAR/NG) soldiers. We hypothesized that there would be an inverse relationship between combat exposure and QOL and that substance use would moderate this relationship.

Methods: Data are from Operation: SAFETY (Soldiers and Families Excelling Through the Years), an ongoing study of USAR/NG soldiers. Regression models explored combat exposure and QOL (N = 248). The moderating effects of frequent heavy drinking (FHD), nonmedical use of prescription drugs (NMUPD), and illicit drug use were examined.

Results: Greater combat exposure was associated with limitations in usual activity due to physical and emotional problems (p

Conclusions: Combat is an unmodifiable risk factor for poor QOL among soldiers; therefore, subsequent substance use is a potential point of intervention to improve QOL and reduce unnecessary morbidity and mortality in this population.

Financial Support: Supported by R01-DA034072 to Gregory G. Homish

Abstract - ID: 140

Author(s):

Grant Victor, University of Kentucky
Athena Kheibari **(Presenter)**, University of Kentucky
Michele Staton, University of Kentucky College of Medicine
Carrie Oser, University of Kentucky

Title: Appalachian women's use of substance abuse treatment: Examining the behavioral model for vulnerable populations

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Treatment

Aims: Background/Aims: This study uses the Gelberg-Andersen Behavioral Model for Vulnerable Populations to understand correlates of Appalachian women's utilization of substance abuse treatment. A significant gap in the literature exists regarding treatment utilization among a high-risk, vulnerable, and understudied group of drug using women. It was hypothesized that **t**heoretical factors distinct to Appalachian women may negatively affect utilization of substance abuse treatment.

Methods: Method: This study used secondary data from a larger NIDA-funded grant study focused on risk reduction among high-risk women in Appalachia (N=400). Participants were recruited from three rural jail facilities located in Appalachian Kentucky counties. Analysis focused on utilization of lifetime substance abuse treatment. Variables were examined based on the original Andersen model, and the Gelberg-Andersen model to address issues relevant for vulnerable samples. Variables were included in the logistic regression analysis by blocks using the original Predisposing, Enabling, and Need factors (Model 1), and then vulnerable Predisposing, Enabling, and Need factors (Model 2).

Results: Results: Model 1 was statistically significant, ?²(3, 381)=21.04, *p*p

Conclusions: Conclusion: As expected, findings highlight the importance of understanding the unique role that culturally relevant factors play in access to treatment among vulnerable samples of women. Clinicians and policymakers should consider expanding the availability and accessibility of treatment services in rural areas. Proposed clinical and policy efforts should be communicated to rural community leaders so that regular community forums can be held to educate and formalize community-tailored treatment plans.

Financial Support: NIDA R01DA033866

Abstract - ID: 141

Author(s):

Christopher Fitzpatrick, University of Michigan
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Jonathan Morrow **(Presenter)**, University of Michigan

Title: Sign-tracking is difficult to extinguish and resistant to multiple cognitive enhancers

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Polydrug

Topic: Behavior

Aims: Sign-tracking is a type of Pavlovian conditioned approach (PCA) behavior that is thought to underlie some aspects of addictive behavior, due to evidence that sign-tracking is difficult to suppress or control, and that animals prone to sign-track also display more robust addiction-related outcomes such as cue-induced reinstatement of drug self-administration. We aimed to determine whether sign-tracking responses are resistant to extinction. We also tested whether extinction of sign-tracking could be facilitated by different classes of cognitive enhancers known to facilitate extinction of other learned behaviors.

Methods: We measured the effects of extinction training on a PCA procedure that exploits individual differences, such that identically trained rats developed one of three patterns of responses: sign-tracking (approach to the predictive cue), goal-tracking (approach to the location of reward delivery), or an intermediate response (both responses). We also compared the effects of systemic injections of three different cognitive enhancers on extinction of sign-and goal-tracking: sodium butyrate (a histone deacetylase inhibitor), D-cycloserine (an NMDA receptor partial agonist), and fibroblast growth factor 2 (a pro-synaptic neurotrophic factor).

Results: We found that, while goal-tracking extinguishes completely within four days, sign-tracking behavior persists for over three weeks during extinction training. None of the compounds we administered was able to facilitate extinction of sign-tracking.

Conclusions: These results indicate that sign-tracking is highly resistant to extinction training even when augmented with three classes of cognitive enhancers that are being investigated as pharmacotherapies for addicted patients. This work highlights one potential source of difficulty when attempting to control addictive behaviors.

Financial Support: NARSAD Young Investigator Grant (Grant ID: 20829); NIDA K08 DA037912-01

Abstract - ID: 142

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Title: Multi-site study on comprehensive opioid overdose prevention strategies with special emphasis on community settings and the use of injectable or intranasal naloxone

Abstract Category: Program Descriptions

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Opioid dependence and injecting drug use is a serious problem in the world, with an estimated 70,000-100,000 deaths from opioid overdose each year. In the framework of the UNODC-WHO Programme on Drug Dependence Treatment and Care, UNODC and WHO have developed a study protocol for a multi-site feasibility study of comprehensive management of opioid overdose in the community, in line with the WHO (2014) guidelines on "Community Management of Opioid Overdose". Its specific emphasis will be to assess the feasibility of increasing the availability of naloxone, including the introduction of intranasal naloxone in different sites to enhance the options for community management of opioid overdose.

Methods:

The proposed feasibility study is conceptualized as a multi-site, controlled prospective cohort study among samples of opioid users presenting at participating sites. The study will be implemented in Central Asia and Eastern Europe and is open for interested partners to join.

Results: While the feasibility and effectiveness of community-based naloxone for overdose prevention have been demonstrated in North America and Europe, it is not known how these results translate to other regions internationally, in particular to low- and middle-income countries. Existing findings do not inform which settings are preferable for overdose education and take-home naloxone distribution or which specific risk groups benefit most from the intervention. The study will investigate barriers and facilitators for the use of either injectable or intranasal naloxone, the performance of different project settings and the impact of community-based naloxone provision on health outcomes.

Conclusions: The poster will present the UNODC/WHO multisite study protocol on comprehensive opioid overdose prevention strategies in the community for discussion with the international scientific community.

Financial Support: UNODC and WHO receive voluntary and regular budget contributions from Member States. This UNODC/WHO study is supported primarily by the US State Department/INL and the government of Sweden.

Abstract - ID: 143

Author(s):

Lara Moody **(Presenter)**, Virginia Tech Carilion Research Institute
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Title: An analogue of relapse: Comparing monetary incentives, episodic future thinking, and implementation intentions

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Behavior

Aims: Aims: Most smokers desire to quit and more than half make a quit attempt; however, less than 10% successfully stop smoking. Effective interventions to increase successful quit attempts and cost and time effective strategies to develop therapeutics and therapeutic packages are needed. Laboratory analogues of relapse provide a screening mechanism for novel treatments and treatment packages.

Methods: Methods: We assessed 3 interventions: monetary incentives decreased from 15¢ by .002¢ every 2 min. until the participant smoked or earned $5.46 for abstaining the full 120 min., episodic future thinking consisted of writing down activities that would happen 1 day, 3 months, and 1 year in the future (3 events from yesterday in control episodic recent thinking), implementation intentions consisted of linking situations where the participant might smoke with alternative responses (selecting situations and responses that were not linked in the control condition). Nicotine-deprived smokers were allocated based on smoking history to 1 of 2 groups (N = 14 in each) to complete 4 randomized sessions. Group 1 completed all combinations of active episodic future thinking, control implementation intentions, with and without monetary incentives. Group 2 completed all combinations of control episodic recent thinking, active implementation intentions, with and without monetary incentives. Time to reinitiate smoking was compared across groups and conditions.

Results: Results: The repeated-measures ANOVA for groups 1 and 2 indicated a significant main effect of monetary incentives ($F_{(1,13)}$=13.87, p < 0 .001, $?_{p^2}$=0.52; $F_{(1,13)}$=23.17, p < 0 .001, $?_{p^2}$=0.67, respectively). Comparisons of active and control episodic thinking and implementations intentions indicate no significant differences between these interventions when controlling for monetary incentives.

Conclusions: Conclusion: Monetary incentives show robust effects in a laboratory analogue of relapse. Neither episodic future thinking nor implementation intentions showed efficacy alone. Future work may look at additional interventions or intervention packages to identify promising treatments.

Financial Support: F31AA024368

Abstract - ID: 144

Author(s):

Mirsada Serdarevic **(Presenter)**, University of Florida
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Henry Young, University of Florida
Catherine Woodstock Striley, University of Florida
Linda Cottler, University of Florida

Title: Emergency department visits, along with medical doctor visits, greatly increase odds of prescription opioid use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: With the growing opioid epidemic, it is important to understand the relationship between access to care and RX opioid use. The current analysis examines RX opioid use and patterns of healthcare utilization in a community sample from Northeast Florida recruited through a community outreach program, HealthStreet.

Methods: HealthStreet Community Health Workers assessed the health of community members in the field between November 2011 and November 2016 using an intake form. RX opioid use was defined as lifetime, past 30-day use, or none at all (yes/no). A 4 level variable was coded for past 6 month healthcare utilization: MD visits only, ED visits only, both or neither. Descriptive statistics, chi-square test, and multinomial logistic regression were used to compare patterns of healthcare utilization by opioid use.

Results: Among the 7,895 community members included in this analysis (59% female; 62% black), 39% reported MD visit only, 7% reported ED visit only, 27.3% reported both, and 28% reported neither MD visit nor ED visit. All patterns of healthcare utilization were significantly associated with higher odds of lifetime RX opioid use and past 30 day RX opioid use compared to those who neither visited the ED or MD. However, those who visited both the ED and MD in the past 6 months were 8.82 (95% CI, 6.85-11.36) times more likely to report past 30 day RX opioid use compared to non-healthcare utilizers even after adjusting for age, gender, race, education, depression, and other risk factors.

Conclusions: Among this community recruited sample, current RX opioid use was greatly associated with both ED and doctor office visits. RX opioid use could have been precipitated by or followed by healthcare utilization. Future research should clarify the relationship between healthcare utilization and RX opioid use and MDs should monitor RX use.

Financial Support: This research was supported by the NIDA T32 training grant at the UF Substance Abuse Training Center in Public Health from the National Institutes of Health (T32DA035167 Cottler, PI).

Abstract - ID: 145

Author(s):

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Kevin Freeman, University of Mississippi Medical Center

Title: Effects of nalfurafine on oxycodone reinforcement and thermal antinociception: Modeling a candidate abuse-deterrent opioid analgesic in male rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Strategies to reduce the misuse of mu opioid agonists are critically needed. Previous work has shown that kappa opioid receptor agonists can reduce the abuse-related effects and augment the antinociceptive effects of mu agonists. However, use of traditional kappa agonists is limited by their dysphoric and psychotomimetic side effects. The current study examined the effects of nalfurafine, the only kappa agonist clinically-approved for human use, on the reinforcing and thermal antinociceptive effects of the mu agonist oxycodone in male rats.

Methods: In Experiment 1, a progressive-ratio (PR) self-administration procedure was used to compare the reinforcing effects of oxycodone (0.056 mg/kg/inj) available alone or as a mixture with increasing doses of co-administered nalfurafine (0.32-3.2 µg/kg/inj). The proportions of oxycodone to nalfurafine for the three nalfurafine doses tested in Experiment 1 were 175:1, 56:1 and 18:1. In Experiment 2, full PR dose-effect functions were determined for oxycodone alone and for oxycodone/nalfurafine mixtures with these same fixed proportions of oxycodone to nalfurafine. Experiment 3 compared thermal antinociception dose-effect curves produced in a hot-plate test by oxycodone, nalfurafine, and the three mixtures.

Results: Nalfurafine dose-dependently decreased the reinforcing effects of oxycodone in Experiment 1. In Experiment 2, rats earned significantly fewer injections of the 18:1 mixture relative to oxycodone alone. Furthermore, the 18:1 mixture did not function as a reinforcer in Experiments 1 or 2. In Experiment 3, oxycodone and nalfurafine produced dose-dependent antinociception when administered alone, and the mixtures produced additive antinociception.

Conclusions: These results suggest that the addition of nalfurafine could decrease the abuse liability while augmenting the analgesic effect of oxycodone.

Financial Support: R01-DA039167 from the National Institute on Drug Abuse to KBF

Abstract - ID: 146

Author(s):

Jibran Khokhar **(Presenter)**, Dartmouth College
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Hanbing Lu, NIDA Intramural Research Program
Elliot Stein, NIDA Intramural Research Program

Title: Impaired brain reward circuitry may underlie alcohol drinking in a rat model of schizophrenia and co-occurring alcohol use disorder

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Alcohol

Topic: Imaging

Aims: Alcohol and substance use disorders commonly occur in patients with schizophrenia and contribute greatly to its morbidity. We have suggested that a brain reward circuit (BRC) dysfunction underlies alcohol and substance use in these patients. To causally understand the mechanisms underlying, and to develop medications for, co-occurring alcohol use in schizophrenia, we used the neonatal ventral hippocampal lesion (NVHL) rat model of alcohol drinking. **Hypothesis:** We hypothesized that this model would display BRC hypoconnectivity (using resting-state functional connectivity), as observed in patients with schizophrenia and cannabis use disorder.

Methods: Male Sprague-Dawley rat pups (n=140 NVHL; 100 Sham) on post-natal day (PND) 7 were bilaterally injected with excitotoxic ibotenic acid (or aCSF in sham animals) into their ventral hippocampi. After a brief adolescent alcohol exposure (10% v/v; PND28-42), adult animals (PND90) were allowed to drink 20% alcohol. Rats was treated with vehicle, 8 mg/kg clozapine or 0.8 mg/kg haloperidol (cohort 1). Animals (n=9/group) were also scanned for resting state-functional connectivity prior to increased alcohol drinking (cohort 2).

Results: The NVHL rat drinks more alcohol than sham rats (2.5-fold; $p < 0.0001$ main effects: time, lesion [RMANOVA]), and reduces its alcohol drinking when treated with clozapine, and not haloperidol ($p < 0.005$ main effects: time, treatment). Importantly, prior to increased alcohol drinking, NVHL rats displayed impaired MRI resting-state functional connectivity within the BRC ($p < 0.05$; hypoconnectivity between the nucleus accumbens and prefrontal cortex), but not in regions outside the BRC; this is consistent with a hypoconnected BRC observed in patients with schizophrenia and cannabis use disorder.

Conclusions: These findings suggest that connectivity abnormalities in the BRC may underlie, and predate, alcohol drinking in schizophrenia; these abnormalities can be targeted for treatment development in future studies.

Financial Support: This work was supported by National Institute for Alcoholism and Alcohol Abuse (NIAAA) Grant 1R01AA018151-02 (AIG), Canadian Institute of Health Research Fellowship award (JYK) and the Hitchcock Foundation (JYK).

Abstract - ID: 147

Author(s):

Amy Elliott **(Presenter)**, University of Florida
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Catherine Woodstock Striley, University of Florida
Linda Cottler, University of Florida

Title: Motivations for prescription opioid use by diversion pattern

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: The increase in non-medical prescription opioid use has resulted in a need for greater understanding of motivations for use and diversion of prescriptions.

Methods: Participants in the Prescription Drug Misuse, Abuse, and Dependence study (n=425), all past 12-month non-medical users of opioids, stimulants, or sedatives, were assessed for their misuse of, diversion of, and motivations for using prescription opioids. Participants were placed into one of four prescription opioid diversion categories and groups were analyzed for differences on 15 yes/no questions assessing motivations for use.

Results: A total of 319 participants had used prescription opioids non-medically at least 5 times in the last year; 69 engaged in neither incoming nor outgoing diversion (22%; Neither group), 109 in incoming diversion only (34%; Incoming), 38 in outgoing diversion only (12%; Outgoing), and 103 in both incoming and outgoing diversion (32%; Both). Chi-square tests indicated differences between diversion groups on 12 of 15 motivation-for-use items. The Both and Incoming diversion groups were significantly more likely than the Neither group to endorse using an opioid: to get high, to change mood, to party, to stay awake, to concentrate, to increase energy, to increase or decrease the effects of other prescription drugs, to relax, to sleep, or just because. The Neither group was more likely than the Both and Incoming groups to endorse using opioids for pain or because their doctor told them to.

Conclusions: Many differences for motivation of opioid use emerged by diversion status among prescription opioid non-medical users. Understanding the characteristics of each diversion group may help us develop more tailored intervention programs to reduce risky non-medical use behaviors and help guide physician prescribing practices.

Financial Support: NIDA, R01DA020791-04S2: Prescription Drug Misuse, Abuse, and Dependence (Cottler LB, PI).

Abstract - ID: 148

Author(s):

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Honoria Guarino, National Development and Research Institute, Inc.
Lauren Jessell, New York University
Elizabeth Goodbody, National Development and Research Institute, Inc.
Dongah Kim, University of Massachusetts
K. Gile, UMassAmherst

Title: Nonmedical benzodiazepine use among young adult opioid users: A prescription for overdose?

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Sedative-Hypnotics

Topic: Epidemiology

Aims: Benzodiazepines are a widely prescribed psychoactive drug, and prescription of them has continued to rise. Long- term use can lead to tolerance and dependence, and abrupt withdrawal can cause seizures or other life-threatening symptoms. Nonmedical use of benzodiazepines has also increased. They are often used nonmedically in conjunction with other drugs, and with opioids in particular – a combination that can increase the risk for fatal and non-fatal overdose. This mixed-methods study examines nonmedical use of benzodiazepines among young adults and its relationship with opioid use.

Methods: For qualitative analysis, 46 90-minute semi-structured interviews were conducted with young adult opioid users (ages 18-32). Interviews were transcribed and coded for key themes. For quantitative analysis, 464 young adult opioid users (ages 18-29) were recruited using Respondent-Driven Sampling and completed structured interviews. Benzodiazepine use was assessed via a self-report questionnaire that included measures related to nonmedical benzodiazepine and opioid use.

Results: Participants reported using benzodiazepines nonmedically for a wide variety of reasons, including: to increase the high of other drugs; to lessen withdrawal symptoms; and to come down from other drugs. Benzodiazepines were described as readily available and cheap. There was a high prevalence (93%) of nonmedical benzodiazepine use among nonmedical opioid users, with 57% reporting regular nonmedical use. Drug-related risk behaviors such as regular cocaine use (OR=2.42, p

Conclusions: Nonmedical benzodiazepine use may be common among nonmedical opioid users due to its drug-related multi-functionality. This study found nonmedical benzodiazepine use to be highly associated with drug related risk behaviors and with overdose. There is an urgent need to inform nonmedical opioid users of the risk associated with benzodiazepines, especially in combination with other drugs.

Financial Support: This research was supported by the National Institutes of Health (NIH)/National Institute on Drug Abuse (NIDA), Grant No. R01DA035146. The content is the sole responsibility of the authors and does not necessarily reflect the official views of NIDA or NIH.

Abstract - ID: 149

Author(s):

Heidi Melbostad **(Presenter)**, University of Vermont
Alexis Matusiewicz, University of Vermont
Sarah Heil, University of Vermont

Title: Knowledge and attitudes about pregnancy prevention among women who are opioid-maintained

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Perinatal

Aims: The aim of this study is to identify knowledge, attitudes, and sources of information about pregnancy prevention to characterize factors that may be associated with high rates of unintended pregnancy among women who are opioid-maintained.

Methods: Participants were 134 opioid-maintained women (20-44 years old) screened for a clinical trial on family planning interventions.

Results: Approximately 80% reported it was important to avoid becoming pregnant. Among women with a steady male partner (n=109), only 25% reported it was likely they would have a baby with their current partner and 55% reported they would be upset if they found out they were pregnant. On average, women incorrectly reported there was a 95% chance of getting pregnant after one act of unprotected sex, yet 26% endorsed, "it doesn't matter if you use birth control or not, when it is your time to get pregnant, it will happen." Approximately 80% of women reported they had all the information necessary to avoid an unintended pregnancy, but 75% incorrectly identified when women are more at risk to become pregnant during their menstrual cycle. In addition, 23% did not identify postpartum women can get pregnant before menstruation resumes, despite almost all women (n=131) reporting they had previously received information about pregnancy prevention from a health care provider. Most women (89%) indicated health care providers would give them the most accurate information about pregnancy prevention, but only 54% endorsed as a primary source for new information.

Conclusions: Opioid-maintained women may be at greater risk for unintended pregnancy because their pregnancy prevention knowledge is poor and they seem to regard pregnancy prevention as something not totally in their control. An important strategy in reducing unintended pregnancy may be increasing knowledge and addressing attitudes about pregnancy prevention.

Financial Support: University of Vermont - NIDA predoctoral fellow (T32 DA007242).

Abstract - ID: 150

Author(s):

Paul VanVeldhuisen **(Presenter)**, The Emmes Corporation
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Aimee Wahle, The Emmes Corporation

Title: Concordance of tobacco, alcohol, prescription medications, and substance use tool for unhealthy substance use with timeline follow back

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Behavior

Aims: To assess the concordance of the Tobacco, Alcohol, Prescription Medications, and Substance Use/Misuse Brief screen/assessment (TAPS) tool to screen and assess primary care patients for unhealthy substance use against the 30-day recall period with the Timeline Follow Back interview (TLFB).

Methods: This study is a planned secondary analysis using data from the National Drug Abuse Treatment Clinical Trials Network protocol CTN-0059, which was conducted to validate the TAPS tool. 2,000 adult patients at 5 primary care sites received both self- and interviewer-administered versions of the TAPS Tool, in random order. Participants also completed a 30-day TLFB interview on alcohol and drug use. Unhealthy alcohol use on the TLFB was defined as >4 drinks on one day or ³14 drinks within 1 week for men; >3 drinks for one day OR ³7 drinks within 1 week for women. Unhealthy drug use on the TLFB was defined as ³1 days of use over the 30-day recall of illicit drug(s) or non-medical use of prescription drugs. For the TAPS tool, a cut-off of ³1 defined unhealthy use for each substance.

Results: For identifying unhealthy substance use, the interviewer-administered TAPS tool had a sensitivity of 0.92 and specificity of 0.79 for alcohol (AUC = 0.85); a sensitivity of 0.93 and specificity of 0.97 for marijuana (AUC = 0.95); and a sensitivity of 0.92 and specificity of 0.99 for Cocaine, Crack, or Methamphetamine (AUC = 0.95). The prevalence of heroin, non-medical use of opioid analgesics, medication for anxiety or sleep and for ADHD reported on the TLFB was low .61 except opioid analgesics, medication for anxiety or sleep).

Conclusions: The TAPS Tool had a relatively high level of accuracy in identifying unhealthy substance use using the TLFB as the reference standard.

Financial Support: Funded by the National Institute on Drug Abuse, National Institutes of Health, Department of Health and Human Services, Contract No. HHSN271201400028C / N01DA-14-2237.

Abstract - ID: 151

Author(s):

Margaret Wolff **(Presenter)**, Icahn School of Medicine at Mount Sinai
Aimee Campbell, Columbia University and NYSPI
Susan Tross, Columbia University
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Title: Substance use disorder symptoms and HIV medication adherence

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: AIDS/Immune

Aims: Substance use disorders (SUD) are associated with decreased HIV antiretroviral (ART) adherence. Doctors may be reluctant to prescribe ART to patients with SUD despite recommended universal ART initiation for all HIV+ individuals. As such, the current study aims to examine specific SUD symptoms within ART non-adherence.

Methods: Baseline data are from 62 HIV+ participants with problem substance use enrolled in a New York City-based multilevel evaluation of universal ART (*n*=31 public sexually transmitted disease [STD] clinic patients; *n*=31 hospital detoxification unit patients). Descriptive analyses examined alcohol, cannabis, opioid, and stimulant SUD (DSM-5), categorized by domain: impaired control (e.g., use more/longer than planned), social impairment (e.g., fail to fulfill obligations), risky use (e.g., physically hazardous), and pharmacological criteria (e.g., withdrawal; tolerance). The Visual Analogue Scale (VAS) assessed 30-day HIV medication adherence (? 90%); SUD type and symptom domains were examined among non-adherent participants.

Results: 51.6% of the sample met criteria for alcohol SUD, 41.9% cannabis SUD, 35.5% stimulant SUD, and 3.2% opioid SUD. Impaired control was the most commonly endorsed symptom across SUD type (100% with stimulant; 91.9% with alcohol; and 88.5% with cannabis SUD). Of 60% on ART, 29.7% were non-adherent. Non-adherence was most prevalent among those with alcohol SUD (43.5%) and stimulant SUD (41.7%), compared with cannabis SUD (31.2%) and opioid SUD (23.1%). Those non-adherent with stimulant SUD endorsed more SUD symptoms (100% endorsed impaired control, social impairment, and risky use) than those non-adherent with other SUD (100% with opioid SUD endorsed impaired control and risky use; 100% with alcohol SUD endorsed social impairment; 100% with cannabis SUD endorsed impaired control).

Conclusions: Non-adherent participants with stimulant SUD had greater dysfunction than non-adherent participants with other SUD; however, non-adherence was most prevalent among those with alcohol SUD. Understanding specific SUD symptoms may assist providers in strategizing with patients on improving ART adherence.

Financial Support: This research is supported by grants from the National Institutes of Health, National Institute on Drug Abuse: R01 DA035707 (Des Jarlais and Campbell) and R01 DA003574 (Des Jarlais).

Abstract - ID: 152

Author(s):

Denise Williams **(Presenter)**, UCSF
Noah Gubner, UCSF
Barbara Tajima, UCSF
Joseph Guydish, UCSF

Title: High prevalence of menthol cigarette smoking among individuals in addiction treatment

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Dependence

Aims: There are higher rates of menthol cigarette use among women, people of color, and individuals of lower socioeconomic status, attributed in part to targeted marketing of menthol cigarettes to vulnerable populations. Use of menthol cigarettes is associated with more difficulty quitting smoking and may be associated with worse tobacco disease outcomes. Limited research has examined menthol use among individuals in treatment for substance abuse, a population with a high prevalence of cigarette smoking (~70% compared to 15.1% in the US general population).

Methods: Prevalence and correlates of menthol cigarette use were examined in 863 smokers (menthol, N=460) in substance abuse treatment in the U.S. surveyed in 2015. Bivariate and multivariate analyses were used to examine demographic and tobacco use characteristics associated with menthol cigarette smoking.

Results: Overall the prevalence of menthol smoking was 53%. Smoking menthol cigarettes was associated with being female (OR=1.60, CI [1.17, 2.19], p=0.002), being non-White (OR=2.80, CI [1.93, 4.07], p < 0 .001), and lower odds of having a college vs. a high school degree (OR=0.43, CI [0.24, 0.76], p=0.004). Controlling for demographic factors, menthol smokers were more likely to report cannabis (OR=3.97, CI [1.66, 9.49], p=0.002) or cocaine/crack (OR=2.48, CI [1.35, 4.58], p=0.004) as their primary drug compared to alcohol. Lastly, compared to non-menthol smokers, menthol users were more likely to report interest in getting help for quitting smoking (OR=1.52, CI [1.11, 2.10], p=0.009).

Conclusions: Among smokers in drug treatment, use of menthol cigarettes was higher than in general population smokers (national average=32%). Persons in drug treatment incur elevated health risks associated with high rates of smoking, which may be increased by the higher rate of menthol cigarette smoking. Regulatory policies targeting menthol cigarette use may benefit smokers in substance abuse treatment, where the health burden of menthol use is higher.

Financial Support: NIDA and FDA Center for Tobacco Products R01DA036066. These funders had no role in the analysis, interpretation, or reporting of this work.

Abstract - ID: 153

Author(s):

Kenzie Preston **(Presenter)**, NIDA Intramural Research Program
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Title: Exacerbated craving in the presence of stress and drug cues in drug-dependent patients

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Treatment

Aims: In addiction, risk factors for craving and use include stress and drug-related cues. Stress and cues exacerbate each other's effects in preclinical reinstatement studies, but attempts to show similar exacerbation in human laboratory studies have seen only limited success. We investigated craving during stress and drug cue exposure using ecological momentary assessment (EMA) in opioid-dependent polydrug users.

Methods: Outpatients (N=182) maintained on daily buprenorphine or methadone provided self-reports of stress, craving and mood and behavior on smartphones for up to 16 weeks. In three randomly prompted entries (RPs) per day participants rated the severity of stress and craving and reported on the context (location, activities, and companions) of the report and whether they had seen or been offered opioids, cocaine, cannabis, methamphetamine, alcohol, or tobacco.

Results: Stress ratings were significantly higher in entries in which participants indicated the presence of drug cues ($r_{effect} = 0.62$); conversely, the likelihood of exposure to drug cues increased linearly with stress ratings ($r_{effect} = 0.33$). For both opioid and cocaine craving, stress and drug cues each had a significant main effect and exacerbated each other's effects (interaction for opioid craving, $r_{effect} = 0.57$; interaction for cocaine craving, $r_{effect} = 0.37$).

Conclusions: Stress and drug cue were positively associated with each other and with craving for both opioids and cocaine. Craving in the field, unlike craving in prior laboratory studies, was further increased in the presence of combined drug cue and stress.

Financial Support: This study was supposed by the NIDA Intramural Research Program Z01 DA000499.

Abstract - ID: 154

Author(s):

Primavera Spagnolo **(Presenter)**, NIH, NIAAA
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Title: Brain dopamine response and modulatory effect of environmental context to morphine in healthy men

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Mechanisms of Action

Aims: The rewarding properties of many addictive agents are thought to reside in their ability to provoke dopamine (DA) release in the mesocorticolimbic system. However, opioid-induced DA release has not yet been demonstrated in opioid-naïve subjects.

The aim of this positron emission tomography (PET) study was to measure the effect of intravenous morphine on DA release measured by the change in [^{11}C]raclopride binding potential (BP) in mesolimbic areas as well as on subjective measures.

Methods: Ten healthy males underwent three sessions on separate days. The first session was performed outside the PET scanner to ensure that a 10 mg morphine infusion was tolerated. Subjective responses were assessed using the Drug Effects Questionnaire pre- and post-infusion. In the following sessions, subjects received morphine or placebo in a counter-balanced order while undergoing a PET scan with raclopride.

Results: During the first session outside the scanner, participants clearly discriminated the effects of morphine from saline, and reported significant liking and wanting associated with morphine. During the PET sessions, subjects distinguished drug effects, although there was no significant effect of drug condition on liking and wanting. With regard to DA release, morphine did not significantly change raclopride BP compared to placebo in the regions of interest, except for a modest effect in the pallidum ($p=0.09$).

Conclusions: To our knowledge, this is the first study investigating morphine-induced DA release in mesolimbic areas in opioid-naïve subjects. In these areas, morphine injection decreased raclopride BP, although not significantly. Our findings also suggest that the reinforcing properties of opioids are shaped by complex drug-environment interactions.

Financial Support: Supported by NIAAA Division of Intramural Clinical and Biological Research and NIDA Intramural Research Program

Abstract - ID: 155

Author(s):

Jodi Godfrey **(Presenter)**, Yerkes National Primate Research Center
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Mar Sanchez, Yerkes National Primate Research Center

Title: Cortico-limbic-striatal functional connectivity and behavior are impacted by dietary environment and exposure to social stressors in female rhesus macaques

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Other (specify)

Topic: Imaging

Aims: Diet-induced obesity, resulting from stress-induced overeating, may compromise brain structure and function. However, these adverse effects may emerge before significant body fat accumulates, suggesting that consuming an obesogenic diet itself may affect neurobehavioral outcomes. Using social subordination in rhesus macaques, we sought to investigate how social status interacts with dietary environment to affect resting-state functional connectivity (rsFC) between prefrontal, striatal, and other limbic regions known to affect emotional and motivated behavior, and vulnerability to drug addiction.

Methods: The impact of diet on rsFC and behavior was assessed in dominant and subordinate females who had been maintained on either a low fat/sugar diet (low caloric diet-only -LCD-only-; n=8) their entire lives, or the LCD in combination with a high fat/sugar diet (choice diet -CH-; n=8) for one year.

Results: Overall, we found that variance in region-specific FC for each dietary condition group was predicted differentially by calories consumed and social status. In the CH subjects, greater consumption of the high fat/sugar diet predicted increased FC between left amygdala and dorsolateral prefrontal cortex, which was associated with decreased affiliative behavior. In the LCD-only subjects, higher social status predicted increased FC between left amygdala and orbitofrontal cortex, which was associated with decreased anxious-avoidant behavior.

Conclusions: These results underscore the notion that calories derived from diets high in sugar and fat impact the brain and behavior differently than calories derived from healthier, low fat and sugar diets. Additionally, these data provide evidence for the necessity of considering dietary environment in any animal model of human health outcomes, including addictive phenotypes.

Financial Support: NIH grants DK096983, MH100029, MH078105-04S1 and ORIP/OD P51OD011132. Further support was provided by the Center for Behavioral Neuroscience through the STC Program of the National Science Foundation IBN-9876754.

Abstract - ID: 156

Author(s):

Maria Parker **(Presenter)**, University of Vermont
Taylor Ochalek, University of Vermont
Stacey Sigmon, University of Vermont

Title: Illicit drug use is associated with increased cigarette smoking among buprenorphine-maintained adults

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Prior studies have demonstrated that cocaine use is associated with increases in cigarette smoking among recreational and clinical samples of cocaine users. We sought to examine whether cocaine use among opioid-dependent adults receiving buprenorphine maintenance is also associated with increased smoking. Additionally, we examined whether instances of other illicit drug use during treatment (i.e., illicit oxycodone, cannabis) influences cigarette smoking.

Methods: Participants were 24 adult smokers enrolled in an NIH-funded randomized clinical trial evaluating an interim buprenorphine treatment for waitlisted opioid-dependent individuals. Cocaine users (n=8) were identified as those who provided $\geq$1 cocaine-positive urine specimen during the 12-week study, and urinary cotinine levels for cocaine-positive vs. -negative specimens were compared. Similar analyses were conducted for illicit oxycodone (n=2) and cannabis (n=16) users.

Results: Mean cotinine levels were significantly higher for cocaine-positive vs. cocaine-negative urine specimens (1731 vs. 1415 ng/mL, respectively; p=0.001). Similar results were seen with illicit oxycodone-positive vs. -negative specimens (1568 vs. 1290 ng/mL, respectively; p=0.007) and cannabis-positive vs. -negative specimens (1347 vs. 1160 ng/mL, respectively; p=0.004).

Conclusions: These data suggest that, as with other populations, cocaine and other drug use is associated with increased cigarette smoking among opioid-dependent individuals receiving buprenorphine maintenance. Future studies are warranted to identify the mechanisms involved in drug-induced smoking increases, as well as the adverse health consequences of concurrent illicit drug and tobacco use.

Financial Support: NIH research (R34DA037385) and training (T32DA007242) grants, and NIGMS center grant (P20GM103644).

Abstract - ID: 157

Author(s):

Steffani Bailey **(Presenter)**, Oregon Health and Science University
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Kim Hoffman, Oregon Health and Science University
Javier Ponce Terashima, International Center for Advanced Research and Applied Science
Dennis McCarty, Oregon Health and Science University

Title: Documentation of marijuana use in the electronic health records of community health center patients

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Technology Issues

Aims: The legal status and regulatory environment for marijuana control is shifting. States are legalizing marijuana for medicinal and non-medicinal use. The aim of this study is to determine the feasibility of using electronic health records (EHR) to identify and document marijuana use.

Methods: We utilized data from a network of community health centers (CHCs) in Washington, Oregon, and California that share a common, linked EHR. The study population comprised adult patients with 1 or more visits to 1 or more of the participating CHCs and who had data captured in the EHR in 2005 or later. Algorithms examined discrete data elements in the EHR potentially indicative of marijuana use, including encounter and problem list diagnoses, and 'flags' for drug use in social history tables. We examined where marijuana use was documented in the EHR, as well as prevalence of documented types of marijuana use (e.g. marijuana use disorders, medicinal marijuana).

Results: Of 958,127 eligible adult patients, 106,415 (11.1%) had documentation of marijuana use. Of those, 78,535 (73.8%) instances of documentation were found in the social history section, 31,233 (29.4%) in visit diagnoses, and 11,000 (10.3%) in the problem list (documentation could be in more than one place). Of the 34,787 coded as a problem list or visit diagnosis, 7,879 (22.6%) were coded as a marijuana use disorder only, 902 (2.6%) coded as use of medical marijuana only, 163 (0.5%) as both, and 25,843 (74.3%) as non-specified marijuana use.

Conclusions: These findings suggest that it is feasible to use EHRs to capture marijuana use; however, more systematic documentation is warranted to decrease false negatives, and to capture more detailed information among those with documented use.

Financial Support: NIDA awards #K23-DA037453 and #UG1-DA015851

Abstract - ID: 158

Author(s):

Verlin Joseph **(Presenter)**, University of Florida
Linda Cottler, University of Florida
Catherine Woodstock Striley, University of Florida

Title: Marijuana, tobacco, and prescription sedatives: Differences in non-medical, medical, and no use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Sedative-Hypnotics

Topic: Adolescent

Aims: The aim of this analysis is to evaluate the association between marijuana and tobacco use on medical and non-medical sedative use.

Methods: Data was derived from the National Monitoring of Adolescent Prescription Stimulants Study (N-MAPSS). Participants 10-18 years of age (N=11,048) from entertainment venues across 10 US cities were interviewed on lifetime sedative use and source of sedative attainment. Non-medical use in this analysis was defined as any lifetime sedative use without a prescription, while medical use was defined as any lifetime sedative use with a prescription. Statistical analysis was conducted using SAS 9.4.

Results: Among the sample, 5.8% of adolescents reported any lifetime sedative use, with 4.5% reporting any non-medical sedative use with or without medical use and 1.3% reporting medical use only. The odds of lifetime non-medical sedative use vs no sedative use were higher among adolescents reporting any lifetime marijuana use (adjusted odds ratio [AOR] = 4.792, 95% CI [3.592, 6.391]) and any lifetime tobacco use (AOR= 3.080, 95% CI [2.383, 3.980]). The same was true for lifetime non-medical sedative use vs medical use only though the odds were lower. A larger proportion of males reported lifetime non-medical sedative use compared to females (51.7% vs 48.3%; *p=< /em>0.0032). Adolescents aged 17 to 18 had the highest rate of non-medical sedative use (53.1%; p < 0 .0001) compared to adolescents aged 10 to 14 (14.4%; p < 0 .001) and 15 to 16 (32.5%; p < 0 .0001).* ***Conclusions:*** *Adolescents were more likely to report non-medical sedative use if they used marijuana or tobacco than adolescents not reporting marijuana or tobacco use. Assessment of these drugs may be imperative to combat the non-medical use of sedatives.****Financial Support:*** *The study was conducted under contract from Pinney Associates, Inc., funding provided by Shire Development LLC and Noven Therapeutics. Abstract - ID: 159* ***Author(s):*** *Amelia Dunn, The Rockefeller University*
Alexandra Dunn ***(Presenter)****, The Rockefeller University*
Brian Reed, The Rockefeller University
Eduardo Butelman, The Rockefeller University
Mary Jeanne Kreek, The Rockefeller University ***Title:*** *In vitro and in vivo characterization of N-butyl-N-phenylethyl-N-3-hydroxyphenylethyl-amine as an "extremely" G-protein signaling biased kappa opioid receptor agonist* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Stimulants* ***Topic:*** *Chemistry* ***Aims:*** *The kappa opioid receptor (KOPr) is a potential therapeutic target in the treatment of cocaine dependence as well as other addictive diseases. We investigated a recently published synthetic diphenethylamine, N-butyl-N-phenylethyl-N-3-hydroxyphenylethyl-amine (BPA) with reported selective agonism of the KOPr (versus mu and delta opioid receptor binding) in in vitro binding studies. In a search for KOPr ligands with novel properties, we tested this compound for both its in vitro and in vivo effects.* ***Methods:*** *In cells expressing the KOPr, we tested BPA for activation of the G-protein coupled pathway via GTPgammaS stimulation, as well as stimulation of beta-arrestin 2 via recruitment of arrestin fusion protein as measured by enzyme complementation assay. The effects of BPA were tested in C57BL6J mice, with investigation of both endocrine and behavioral endpoints, including serum prolactin, rotarod and place conditioning.* ***Results:*** *BPA had approximately equivalent efficacy to the full unbiased agonist U69,593 in the GTPgammaS assay, with no efficacy in the beta-arrestin 2 assay, suggesting that it is an "extremely" biased KOPr agonist. BPA administration resulted in similar prolactin release to U50,488, an unbiased full agonist of the KOPr. In contrast, BPA had no effect in the rotarod incoordination assay, while U50,488 cause significant incoordination. This is consistent with a prior study of a biased KOPr agonist with reduced potency, but not reduced efficacy, in inducing beta-arrestin 2 recruitment. In place conditioning, with 4 conditioning sessions, BPA resulted in significant conditioned place aversion, to a similar degree as U50,488.****Conclusions:*** *To our knowledge, this is the first report of in vivo characterization of an "extremely" G-protein biased KOPr agonist, with no measurable beta-arrestin 2 recruitment. These results provide further confirmation that beta-arrestin 2 coupling is essential to KOPr mediated sedation/incoordination, whereas G-protein coupling is responsible for KOPr mediated prolactin release and aversion. We will test this novel biased KOPr agonist in models of cocaine reward and dependence.* ***Financial Support:*** *These studies were supported by the Robertson Therapeutic Discovery Fund and the Dr. Miriam and Sheldon Adelson Medical Research Foundation, as well as the National Science Foundation Graduate Research Fellowship Program (A.D. Dunn). Abstract - ID: 160* ***Author(s):*** *Britahny Baskin* ***(Presenter)****, Boston University School of Medicine*
Susan Dymecki, Harvard Medical School
Kathleen Kantak, Boston University School of Medicine ***Title:*** *Distinct subtypes of genetically defined serotonin neurons differentially modulate cocaine reward in mice* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Stimulants* ***Topic:*** *Neurobiology* ***Aims:*** *Genetic subtypes of 5-HT neurons have been identified and their functionality is beginning to be elucidated. We hypothesized that two subtypes, Drd1a-Pet1 and r2Hoxa2-Pet1, would have opposing influences on cocaine reward based on projections to different regions of prefrontal cortex and limbic system.* ***Methods:*** *Transgenic mice were bred to express hM4Di (the inhibitory DREADD) targeting either Drd1a-Pet1 or r2Hoxa2-Pet1 neurons designed to be chemogenetically hyperpolarized by clozapine-N-oxide (CNO). In 282 adult male triple transgenics (Drd1a-cre,Pet1::Flpe,RC::FPDi; or r2Hoxa2-cre,Pet1::Flpe, RC::FPDi) and sibling controls, we determined the effects of acute silencing of Drd1a-Pet1 or r2Hoxa2-Pet1 neurons with 10 mg/kg CNO on expression (Exp 1) and development (Exp 2) of cocaine conditioned place preference (CPP; 1.0-17.8 mg/kg doses).* ***Results:*** *Unexpectedly, "Drd1a-Pet1-hM4Di" mice without CNO (presumed transgenically neutral) nonetheless expressed greater CPP than controls after receiving behaviorally active cocaine doses during conditioning (pr2Hoxa2-Pet1-hM4Di"* mice. Within 48 hr of CNO, *Drd1a-Pet1-hM4Di* mice returned to a cocaine-vulnerable state (pDrd1a-Pet1-hM4Di mice did not exhibit a cocaine-vulnerable phenotype, nor did sibling controls or *r2Hoxa2-Pet1-hM4Di* mice. However, *r2Hoxa2-Pet1-hM4Di* mice developed more persistent cocaine memory, showing greater CPP for 17.8 mg/kg cocaine on post-conditioning sessions 3-6 compared to controls (p

Conclusions: Novel insights into the role of 5-HT neurons in cocaine addiction were revealed. They emphasize functional specificity of *Drd1a-Pet1* and *r2Hoxa2-Pet1* neuron subtypes for promoting and inhibiting, respectively, cocaine reward and memory.

Financial Support: DA036056

Abstract - ID: 161

Author(s):

Joseph Sakai **(Presenter)**, University of Colorado School of Medicine
Manish Dalwani, University of Colorado School of Medicine
Shannon McWilliams, University of Colorado School of Medicine
Kristen Raymond, University of Colorado
Susan Mikulich-Gilbertson, University of Colorado School of Medicine

Title: What brain regions are engaged by decisions with varying levels of other-harm vs. self-benefit typically developing adolescents and those with substance and conduct problems?

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Imaging

Aims: We developed a novel game, which repeatedly asks subjects to accept or reject offers where they will receive money (self-benefit) but a charity donation will be reduced (other-harm), e.g., you get $0.02 and the charity donation, which starts at $16, decreases by $0.64. Offers vary systematically in amounts of self-benefit and other-harm but are presented in a shuffled pre-set order. Prior MRI analyses have shown that such decisions engage a brain network, which includes insula, nucleus accumbens, precuneus, medial frontal and inferior parietal cortexes. Here, we examine which parts of that network are engaged (1) with changing level of other-harm and (2) changing level of self-benefit.

Methods: 66 adolescents (24 TD, 42 SCP patients) played the game in the MRI. We categorized game trials into low, medium and high other-harm bins (bins had equivalent levels of self-benefit) and using SPM parametric modulation analyses, we tested what brain regions activate more as other-harm changes from low to high. We repeat those analyses binning trials into low, medium, and high self-benefit (bins had equivalent levels of other-harm). We specified a voxel level threshold ($p < 0 .005$) and a cluster-correction for whole brain significance.

Results: Initial results for TD showed: (1) decreasing other-harm associated with activation of insula, right inferior parietal, and other regions (8 clusters (c), 1091 total voxels (k)); (2) increasing other-harm associated with precuneus activation (c=1; k=58); (3) decreasing self-benefit associated with activation of left inferior parietal and other regions (c=6, k=621); and, (4) increasing self-benefit associated with activation of accumbens and other regions (c=11; k=1301).

Conclusions: Different parts of an identified network engaged by self-vs.-other decisions appear to be preferentially activated by increasing vs. decreasing levels of other-harm and self-benefit. Group comparisons will also be presented.

Financial Support: DA031761, the Kane Family and Hewit Family Foundations.

Abstract - ID: 162

Author(s):

Christina Meade **(Presenter)**, Duke University School of Medicine
Sheri Towe, Duke University School of Medicine
Ehi Ihionkhan, Duke University School of Medicine

Title: Respondent-driven sampling as a strategy to increase awareness of hepatitis C infection in stimulant users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Epidemiology

Aims: Hepatitis C (HCV) is a blood-borne virus that can lead to serious liver disease. While injection drug use (IDU) is a known risk factor, reports suggest that HCV prevalence is disproportionately high among non-IDU stimulant users. With medication available to cure HCV, early detection is critical. However, a large proportion of stimulant users are unaware of their HCV status. This project tests whether respondent driven sampling (RDS), which relies on peers to recruit members of hard-to-reach groups, is effective to reach stimulant users for HCV testing.

Methods: We are using RDS to recruit adults who used stimulants in the past month. With a two-tier incentive structure, participants are compensated for the survey and for up to 3 referrals. Within the first 8 weeks, we have enrolled 48 recruits from 2 initial seeds. By June 2017, we expect to have ~200 recruits. The survey includes assessments of substance abuse, risk behavior, access to healthcare, and HCV testing.

Results: To date, the sample includes 29 women and 21 men, primarily African American (96%) and 48.6 years old on average. Approximately half had an annual household income

Conclusions: The high prevalence of HCV underscores the importance of seek-and-test strategies for stimulant users. Co-occurring opioid use is becoming more common, and the social networks of stimulant users include IDU, increasing risk of HCV transmission. RDS may be an effective intervention for HCV testing among drug users who do not regularly interface with the healthcare system.

Financial Support: DP2-DA040226

Abstract - ID: 163

Author(s):

Jordan Blacktop **(Presenter)**, Washington State University

Title: Role of anterior dorsal lateral hypothalamic area perineuronal nets in the acquisition of cocaine-induced conditioned place preference and self-administration

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Neurobiology

Aims: Addiction involves drug-induced neuroplasticity of the circuitry of motivated behavior. Emerging at the forefront of neuroplasticity regulation are specialized extracellular matrix structures that form perineuronal nets (PNNs) making them a promising target for the regulation of drug-induced neuroplasticity. Despite the emerging significance of PNNs in drug-induced neuroplasticity and the well-established role of the lateral hypothalamic area (LHA) in reward/reinforcement/motivation, little is known about how PNN-expressing neurons in the LHA control drug-seeking behavior. Here we test the overarching *hypothesis* that PNNs in the LHad/i are essential for the rewarding and reinforcing effects of cocaine utilizing preclinical addiction models in *Rattus norvegicus* (Sprague Dawley; n = 101). The goals of this set of experiments were: 1) to determine and characterize areas of high PNN expression within the LHA, and 2) whether PNN expression within the LHA is necessary for the rewarding and reinforcing effects of cocaine exposure, measured by the acquisition of conditioned place preference (CPP) and self-administration (SA), respectively.

Methods: We used cocaine-induced conditioned place preference (CPP) and self-administration after PNN removal in the LHA using chondroitinase ABC. All CPP and SA experiments were analyzed using a two-way ANOVA and, when appropriate, further analyses of main effects were conducted using an unpaired Student's two-tailed t-test or a Fischer's LSD test in the case of a significant interaction.

Results: A discrete region of the anterior dorsal LHA (LHAad) was found to exhibit robust PNN expression. Compellingly, PNN removal within but not outside the LHAad prior to conditioning abolished acquisition of cocaine-induced CPP and SA. Removal of PNNs within the LHAad did not affect total locomotor activity, high-fat food intake, or sucrose intake in a separate group of cocaine naïve animals.

Conclusions: In summary, these data indicate that PNN expression in the LHAad is necessary for acquisition of both cocaine-induced CPP and self-administration. Collectively, these data support the hypothesis that PNN-dependent neuroplasticity within the LHAad is essential in the susceptibility to develop cocaine addiction.

Financial Support: NIH DA033404, WSU Alcohol and Drug Abuse Research Program 124777

Abstract - ID: 164

Author(s):

Jun-Xu Li **(Presenter)**, State University of New York at Buffalo
David Thorn, State University of New York at Buffalo
Yanan Zhang, RTI International

Title: Tolerance and cross-tolerance to the antinociceptive effects of oxycodone and the imidazoline I2 receptor agonist phenyzoline in adult male rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Opiates/Opioids

Topic: Behavior

Aims: Emerging evidence suggests the potential utility of combining opioids with imidazoline I_2 receptor agonists for chronic pain. However, chronic pain management requires prolonged pharmacotherapy and the consequence of such combination therapy remains unclear. This study examined the anti-hyperalgesic effect of the opioid oxycodone, the selective I_2 receptor agonist phenyzoline, alone and in combination, during prolong treatment.

Methods: Von Frey filament test was used to examine the anti-hyperalgesic effect of drugs in complete Freund's adjuvant (CFA)-induced inflammatory pain or chronic constriction injury (CCI)-induced neuropathic pain in rats. Twice daily treatment with oxycodone and phenyzoline, alone or in combination, was continued until the development of significant tolerance (oxycodone) or as long as 19 days passed (phenyzoline).

Results: In rats receiving CFA or CCI manipulation, mechanical hyperalgesia was dose-dependently reversed by oxycodone and phenyzoline. Twice daily treatment with 2 x ED_{50} dose of oxycodone for 7 days led to significant antinociceptive tolerance to oxycodone but not cross-tolerance to phenyzoline. Similarly, twice daily treatment with 2 x ED_{50} dose of phenyzoline for 19 days led to significant antinociceptive tolerance to phenyzoline but not cross-tolerance to oxycodone. Twice daily treatment with the combined oxycodone and phenyzoline using different ratios (1:3, 1:1 and 3: 1) for 13-19 days generally did not lead to significant antinociceptive tolerance.

Conclusions: Combination therapy with oxycodone and I_2 receptor agonists maintains prolonged antinociceptive effectiveness with reduced propensity to develop tolerance.

Financial Support: R01DA034806

Abstract - ID: 165

Author(s):

Rachel Tomko **(Presenter)**, Medical University of South Carolina
Nathaniel Baker, Medical University of South Carolina
Erin McClure, Medical University of South Carolina
Kevin Gray, Medical University of South Carolina

Title: Incremental validity of estimated marijuana grams as a predictor of marijuana-related problems and urine cannabinoid level: Evidence from a clinical trial

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Other

Aims: Quantifying marijuana (MJ) use is complex due to variations in potency, amounts, and sharing among users. Mariani et al. (2011) developed a quantification method by which a surrogate substance is used as a proxy for MJ. Participants are asked to measure approximately how much of the surrogate they typically put in a single joint, blunt, or other method of administration. The incremental validity of estimated grams in predicting clinical outcomes, above and beyond the simpler assessment of frequency of use and number of joints/blunts per day has not been established. The goal of this study was to test the hypothesis that estimation of grams would predict urine cannabinoid levels, but not problems due to MJ use, after controlling for past 30 day frequency of use and average number of joints/blunts per day.

Methods: Adults seeking treatment for cannabis use disorder were recruited for a National Drug Abuse Treatment Clinical Trials Network (NIDA CTN) 12-week clinical trial. Participants (N=302) attended baseline and weekly visits through the duration of treatment and at one month follow-up, providing urine drug tests at each visit and reporting on daily MJ use since the last visit (30 days prior at baseline). Participants reported problems due to use (Marijuana Problems Scale) 5 times during the trial.

Results: Days of use, average joints/blunts per day, and average grams per joint/blunt were computed for the 30 days prior to each urine drug screen or assessment of problems. Results from multilevel models suggest that grams per joint/blunt were positively associated with urine cannabinoid level (b=96.0, SE=41.6, p=0.02) and problems due to MJ use (b=0.96, SE=0.31, p < 0 .01) after accounting for days used, and average number of joints/blunts per day.

Conclusions: Detailed gram quantification may be useful when estimating biological/health effects and psychosocial problems due to marijuana use. Quantity of MJ use should be considered when defining and screening for high-risk use.

Financial Support: Supported by grants from NIDA (UG1DA013727, K01DA036739) and NIAAA (T32AA007474).

Abstract - ID: 166

Author(s):

Mudassir Mumtaz **(Presenter)**, Sophie Davis School of Biomedical Education
Jermaine Jones, Columbia University College of Physicians and Surgeons
Sandra Comer, Columbia University and NYSPI

Title: Comparison of overdose risk factors between intravenous and intranasal non-treatment-seeking heroin users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Behavior

Aims: Polydrug use and using drugs alone are two major risk factors for opioid overdose. In comparison to intranasal (IN) heroin users, intravenous (IV) users are generally considered to be at greater risk of experiencing an opioid overdose. However, a direct comparison of overdose risk behaviors between the two groups has yet to be performed.

Methods: As a part of a larger study investigating distribution of naloxone to drug users, clinical interviews were performed for IV and IN heroin users who were not currently seeking treatment for their drug use. Participants were questioned about their patterns of heroin and other drug use by a research psychologist.

Results: Both IV (n=36) and IN (n=56) heroin users had been using it for approximately the same amount of time (mean?15 years). Intravenous users reported using a slightly higher daily amount of heroin in bags per day and bags per episode (IV=6.62, 2.39, respectively; IN=5.38, 2.16). We found no significant differences in recent (30 days) non-opioid drug use, though IV users were more likely to use heroin in combination with other drugs like cocaine and sedatives. The large majority of both populations reported that they typically used heroin alone (IV 84%, IN 70%). We also found no significant differences in the number of overdoses experienced or witnessed (IV=2.25, 3.60, respectively; IN=2.44, 2.60).

Conclusions: We found no major differences in overdose risk behaviors between active IV and IN heroin users. However, disturbingly high proportions of both populations reported using heroin alone. Future research and interventions should target ways to reduce this heroin use risk behavior.

Financial Support: This study was supported by NIDA grant R01DA016759 to Dr. Sandra Comer.

Abstract - ID: 167

Author(s):

Emily Sargent **(Presenter)**, University of North Dakota
Tess Kilwein, University of Wyoming
Joseph Miller, University of North Dakota

Title: Training the future of health and social care providers: Outcomes from screening, brief intervention, and referral to treatment for substance use trainings

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Prevention

Aims: Screening, Brief Intervention, and Referral to Treatment (SBIRT) is an evidence-based practice used to identify and prevent harmful substance use. SBIRT trainings intend to improve knowledge and attitudes about substance use/users and enhance interprofessional collaboration among health and social care providers who play a role in substance use identification and treatment. This project aimed to disseminate SBIRT trainings and evaluate their impact on knowledge, attitudes, and readiness for interprofessional learning.

Methods: A total of 172 graduate students in the nurse practitioner (NP; *n*=68) and social work (SW) programs (*n*=104) at a Midwestern University completed the Knowledge and Adapted Substance Abuse Attitudes Survey and the Readiness for Interprofessional Learning Scale (RIPLS) pre- and post-training.

Results: There was a main effect of training on knowledge about substance use ($F_{(1,165)}$=160.22, *p*PES)=.485), with students demonstrating more knowledge at post-test. There was a main effect of training on attitudes towards substance users *(F*(1,170)=< /em>2611.20, *pPES*=.941), with students reporting more positive attitudes at post-test, and a significant interaction between training and program ($F_{(1,170)}$=9.48, *p*=.003, *PES*=.054), with social work students reporting more positive attitudes at pre-test and no difference between programs at post-test. Finally, there was a main effect of training on the RIPLS *(F*(1,160)=< /em>1423.60, *pPES*=.899), with students reporting higher RIPLS scores at post-test, and a significant interaction between training and program *(F*(1,160)
=< /em>5.02, p=.026, PES=.030), with NP students scoring higher on the RIPLS at pre-test and no difference between programs at post-test. There were no main effects by program for any outcomes, and no interaction between training and program for knowledge. **Conclusions:** Results from this study suggest SBIRT trainings improve knowledge and attitudes about substance use/users, as well as readiness to work with health care providers from other disciplines. **Financial Support:** Substance Abuse and Mental Health Services Administration (SAMHSA) Grant Abstract - ID: 169 **Author(s):** Barbara Sorg **(Presenter)**, Washington State University
Megan Slaker, Medical College of Wisconsin
Kyrie-Anne Reyes, Oregon Health and Science University **Title:** Cocaine-induced changes in perineuronal net and parvalbumin cell intensity in the rat medial prefrontal cortex **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Neurobiology **Aims:** Perineuronal nets (PNNs) are aggregations of extracellular matrix molecules that form a perimeter around the soma and proximal dendrites of primarily parvalbumin (PV) interneurons in the medial prefrontal cortex (mPFC). These cells are fast-spiking and are susceptible to damage via oxidative stress. Cocaine induces oxidative stress in the brain, including in the mPFC. Markers of oxidative stress increase following both acute and chronic exposure to cocaine. This increase can be reversed by administration of an antioxidant such as N-acetylcysteine (NAC). Additionally, PNNs protect their underlying cells from the harmful effects of oxidative stress. Data from our laboratory demonstrate that following acute exposure to cocaine, PNN staining intensity decreases 2 hr later, and following chronic exposure to cocaine, PNN staining intensity increases 2 hr later. We hypothesized that these dynamic changes in PNNs lead to protection of their underlying PV cells from cocaine-induced oxidative stress. **Methods:** Male Sprague Dawley rats (n = 48 total) were given an injection of either saline or NAC (60 mg/kg, intraperitoneally) followed 2 hr later by a single injection of saline or cocaine (15 mg/kg, intraperitoneally), then killed 2 hr later. We examined the levels of the oxidative stress marker, 8-oxo-dG, in PV-containing cells with and without PNNs. PNNs were labeled with Wisteria floribunda agglutinin. Data were analyzed using a Kruskal-Wallis test. **Results:** Exposure to acute cocaine tended to increase the level of the oxidative stress marker 8-oxo-dG in all PV cells, regardless of the presence of a PNN. Pretreatment with NAC prior to acute cocaine exposure tended to prevent this increase in 8-oxo-dG, but only in PV cells surrounded by PNNs. Cocaine decreased PNN staining intensity around non-PV cells, and this decrease was prevented by NAC pretreatment. **Conclusions:** These findings demonstrate that PV cells respond differently to cocaine-induced oxidative stress that depends on the presence of a PNN. This acute response to cocaine may be beneficial in the short term for protecting PV cells from oxidative stress, but in turn may prime the persistent and chronic nature of drug addiction. **Financial Support:** NIH DA033404 and DA040965 Abstract - ID: 170 **Author(s):** Alice Servonnet **(Presenter)**, Neuroscience Department; Université de Montréal
Pierre-Paul Rompré, Neuroscience Department, Université de Montréal
Anne-Noël Samaha, Université de Montréal, Department of Pharmacology and Physiology **Title:** Contributions of central dopamine mechanisms to antipsychotic-induced dopamine supersensitivity **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Other (specify) **Other Drug Category:** Antipsychotics and psychostimulants **Topic:** Mechanisms of Action **Aims:** Antipsychotic medications (AP) attenuate schizophrenia symptoms by decreasing dopamine (DA) neurotransmission. However, chronic AP treatment can sensitize the DA system, leading to treatment failure and altered reward function. In rats, AP-evoked DA supersensitivity is linked to a greater psychomotor response to DA agonists such as amphetamine (AMPH). The mesocorticolimbic system mediates the behavioural effects of DA drugs. We hypothesized that increasing neuron activity in the ventral tegmental area (VTA) is sufficient to evoke the expression of AP-induced DA supersensitivity (Exp. 1). We found that it was not, suggesting that DA stimulation outside of the mesocorticolimbic system might also be needed. Thus, we determined whether systemic administration of a selective DA agonist (GBR12783) would evoke the expression of DA supersensitivity (Exp. 2)**Methods:** Following a two-week treatment with the AP haloperidol, we measured the locomotor response to either intra-VTA neurotensin or DAMGO [both increase local neuronal activity (Exp. 1; n = 7/group)] or systemic GBR (Exp. 2; n = 10-11/group). **Results:** Group differences in locomotion over the session were analysed with mixed-model ANOVA (Group, with intra-VTA or systemic injection as a between-subjects variable. Time as a within-subject variable). Systemic AMPH evoked greater locomotion in AP-rats than in controls (main effect of Group; all P's < 0.05), indicating DA supersensitivity. However, both groups showed a similar locomotor response to neurotensin, DAMGO (Exp. 1) and GBR (Exp. 2; all P's > 0.05). Thus, selectively increasing VTA neuron activity or DA neurotransmission in the whole brain is not sufficient to evoke the expression of AP-induced DA supersensitivity. **Conclusions:** The expression of DA supersensitivity likely involves DA and non-DA neurotransmitter systems. **Financial Support:** NSERC (# 355923), FRQ-S (# 28998) and Canada Foundation for Innovation (# 24326) Abstract - ID: 171 **Author(s):** Elizabeth Saunders **(Presenter)**, The Dartmouth Institute
Meagan Dechen, Geisel School of Medicine at Dartmouth **Title:** Comparing integrated psychosocial treatment for co-occurring psychiatric and substance use disorders with addiction-focused treatment: A meta-analysis **Abstract Category:** Literature Review **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Treatment **Aims:** In contrast to traditional treatment approaches targeting substance use and psychiatric symptoms separately, integrated therapies simultaneously treat both disorders. It is unclear whether integrated therapies are more effective than therapies targeting only substance use. This meta-analysis compares the effectiveness of integrated psychosocial therapies with addiction-focused treatment for treating co-occurring substance use and psychiatric disorders. **Methods:** We systematically searched MEDLINE, PsychInfo, Web of Science, EMBASE, and the Cochrane Library for randomized controlled trials comparing integrated therapies with addiction-focused treatment. The Cochrane Risk of Bias tool was used to evaluate study quality. Primary substance use outcomes included abstinence rates, and days of use. Psychiatric outcomes included reduction in psychiatric symptoms and remission rates. Data were pooled using standardized mean differences and relative risk ratios. **Results:** Eighteen studies were eligible for inclusion, and data were available for fourteen studies. Integrated therapies were not associated with increased rates of abstinence post-treatment (RR= 0.92, 95%CI=0.72, 1.19), or with greater reductions in days of alcohol (MD=-0.05, 95%CI: -3.34, 3.23) or drug use (MD= -7.11, 95%CI: -15.80, 1.57). Additionally, integrated therapies did not significantly improve psychiatric symptoms or increase psychiatric remission rates (MD= 0.93, 95%CI: 0.78, 1.11) compared to addiction-focused treatment. **Conclusions:** Preliminary results suggest that integrated therapies are not superior to addiction-focused treatment for improving psychiatric symptoms and substance use in patients with co-occurring disorders. Methodological issues that inhibit our ability to draw clear and firm conclusions include a lack of consistent outcome measures for substance use**,** high risk of attrition bias, and low rates of treatment retention and completion across studies. **Financial Support:** NIDA T32 DA037202 Abstract - ID: 172 **Author(s):** Philip Vieira **(Presenter)**, California State University
Christina Shin, UCSF
Tod Kippin, UCSF
Netz Arroyo-Curras, UCSB
Kevin Plaxco, UCSB **Title:** Individual differences in drug pharmacokinetics using a novel biosensor technology in awake behaving animals **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Polydrug **Topic:** Sex Differences **Aims:**

- Measure real-time, continuous in vivo drug pharmacokinetics using a novel electrochemical aptamer-based (E-AB) biosensor in awake behaving animals
- Compare intake specific differences between groups by administering drugs intravenously and intramuscularly.
- Compare sex-specific differences in various drug pharmacokinetics using E-AB biosensors

Methods: *Adult Sprague-Dawley rats were anesthetized and implanted with the E-AB biosensor in the right jugular vein. For IV infusion, a catheter was inserted into the left jugular vein. For awake experiments, animals were placed into an operant chamber and allowed to explore while taking measurements. For anesthetized experiments, animals remained under isoflurane anesthesia for the duration of the study. After measuring a stable baseline, separate compounds were infused, either IV or IM, and realtime pharmacokinetics were measured over a period not exceeding 5 hours. Sex-specific differences were also measured by comparing pharmacokinetic profiles of male and female rats. Drugs tested included cocaine, doxorubicin, and tobramycin.****Results:*** *Animals were grouped by sex and peak voltammetric measurements were averaged within groups. Pharmacokinetic profiles were divided into uptake and excretion kinetics, comparing area under the curve (AUC), rise time and decay time to baseline. We established stable recordings in our awake behaving animals and were able to measure a change in peak voltammetric response following drug administration. As revealed by an independent samples t-test, we found significant differences (p* ***Conclusions:*** *By taking advantage of this novel biosensor technology, we have demonstrated that realtime, continuous measurment of specific drug pharmacokinetics is possible in vivo in awake behaving animals. Additionally, we are the first to show sex-specific pharmacokinetic differences in realtime in the living animal. These prelimminary findings are a first step to establishing individual pharmacokinetic profiles for specific drug compounds.* ***Financial Support:*** *Keck Foundation Abstract - ID: 173* ***Author(s):*** *Jonathan Colasanti* ***(Presenter)****, Emory University*
Marlene C. Lira, Boston University School of Medicine
Debbie Cheng, Boston University School of Medicine
Leah S. Forman, Boston University School of Medicine
Meg Sullivan, Boston University School of Medicine
Christin Root, Emory University
Catherine Abrams, Emory University
Melissa Podolsky, Boston University School of Medicine
Wendy S. Armstrong, Emory University
Jeffrey Samet, Boston University School of Medicine
Carlos del Rio, Emory University ***Title:*** *Opioid use for chronic pain among patients with HIV* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *AIDS/Immune* ***Aims:*** *Chronic opioid therapy (COT) for pain is common in HIV-infected patients, but little is known about patients' 1) understanding of COT risks and 2) satisfaction with COT monitoring guidelines. We describe opioid risk behaviors, perceptions of risk, and the receipt of and satisfaction with opioid monitoring among HIV-infected patients on COT.* ***Methods:*** *A cohort of HIV-infected patients on COT was recruited in Boston and Atlanta. Inclusion criteria were age ?18 years, HIV-infected, English-speaking, and having ? 3 opioid prescriptions written ?21 days apart in the past 6 months. Demographics, substance use, overdose history, aberrant opioid use, and perceptions of and satisfaction with COT monitoring (1-10,10=highest) were assessed.* ***Results:*** *Characteristics of HIV-infected patients on COT (n=146) were as follows: age 54 (±7) years, 64% male, 71% Black, 29% MSM, 33% HCV Ab+, living with HIV 18 (±8) years, 43% with depressive symptoms, and 23% with substance use disorder in past 12-month. Median (IQR) past 30-day ART adherence was 100% (95, 100). Past 12-month illicit opioid use was reported by only 5%, but 44% had a Current Opioid Misuse Measure (COMM™) score suggestive of prescription opioid misuse behaviors and 8% reported ever having an opioid overdose. Opioid monitoring was as follows: 33% ever with a medication agreement, 66% urine drug tested, and 12% past pill count. 89% agreed there was a danger of becoming addicted to opioids. Median (IQR) satisfaction levels for agreements, urine drug tests and pill counts were 10 (7, 10), 10 (8, 10) and 10 (7, 10) respectively.* ***Conclusions:*** *Among HIV-infected patients on COT, opioid misuse and awareness of the addictive potential of COT are common. COT prescribing practices for HIV-infected patients was inconsistent. Patients who received monitoring practices reported high satisfaction. With effective implementation, patient attitudes suggest acceptance of such practices will be the norm.****Financial Support:*** *1RO1 DA037768 Abstract - ID: 174* ***Author(s):*** *Sheng-Chang Wang* ***(Presenter)****, National Health Research Institutes*
Yu-Cheng Zhao, National Health Research Institutes
Chieh-Liang Huang, China Medical University
Hsiao-Hui Tsou, National Health Research Institutes ***Title:*** *Community ketamine users in Taiwan* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Club/Designer Drugs* ***Topic:*** *Epidemiology* ***Aims:***

- *To reach the hidden community ketamine users via snow-ball sampling*
- *To characterize ketamine users' drug career, psychiatric comorbidity and urological problems*

Methods: *Community ketamine users were recruited using snow-ball sampling. All participants were assessed using Structured Clinical Interview for DSM-IV Axis-I Disorder (SCID-I) for psychiatric comobidity, urine testing for illicit drug and uroflowmetry for urological problems.* ***Results:*** *A total of 148 ketamine users were enrolled; 60 met lifetime diagnosis of ketamine abuse or dependence by DSM-IV-TR (problematic user, PU) and 88 ever used with no clinical diagnosis for ketamine (ever user, EU). A comparison group of 49 with never exposure of ketamine (never user, NU) were also recruited. Relative to NU, both PU and EU were significantly characterized by less educated, more unemployed as well as more subjective complaints of urological problems. However, concurrent psychiatirc comorbidities, including affective, anxiety and psychotic disorders, did not differentiate these 3 groups. Polydrug use was frequent among EU and PU, and alcohol and methamphetamine were the most commonly co-used.* ***Conclusions:*** *Since polydrug use is common in this population, their drug career and the effects of drug combination on clinical outcomes warrants further investigation. Routine urological assessment should be considered in management of ketamine use problem.* ***Financial Support:*** *103-2314-B-400-001-MY3, Ministry of Science and Technology, Taiwan; NP-105-SP-04, National Health Research Institutes, Taiwan Abstract - ID: 175* ***Author(s):*** *Christina Shin* ***(Presenter)****, UCSF*
Taylor Templeton, UCSF
Ellen Gable, UCSF
Alvin Chiu, UCSF
Jennifer Kim, UCSF
Philip Vieira, California State University
Tod Kippin, UCSF
Karen Szumlinski, UCSF ***Title:*** *Augmenting endogenous glutamate within infralimbic cortex attenuates the incubation of cocaine-craving in rats* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Stimulants* ***Topic:*** *Dependence* ***Aims:*** *Incubation of craving is paralleled with an incubation of extracellular glutamate (GLU_{EC}) within the ventromedial prefrontal cortex (vmPFC). Prior evidence posits an inhibitory role for the infralimbic cortex (IL) and a potentiating role for the prelimbic cortex (PL) subregions of the vmPFC during incubation. As no study has directly examined the role for vmPFC GLU_{EC} in the incubation of cocaine-seeking, the present study aimed to fill this gap. Hypothesis: Increasing GLU_{EC} in the IL using the excitatory amino acid transporter inhibitor threo-?-benzyloxyaspartate (TBOA) will attenuate incubated drug-seeking. Conversely, increasing GLU_{EC} in the PL will potentiate drug-seeking.* ***Methods:*** *Male Sprague-Dawley rats (n= 91) were trained for 10 days to lever-press for cocaine (0.25 mg/infusion; 6 h/day), the delivery of which was signaled by a 20 second tone-lights cue. Rats were then divided into 3 or 30-day withdrawal (WD) groups at which point they were microinjected with vehicle or 300 µM TBOA (0.5µl/min/side) into either the IL or PL, and given a 30-min extinction test during which responding resulted in presentation of the cues, but no cocaine. The next day, rats were tested again to assay for any carry-over effects of TBOA.* ***Results:*** *Increasing GLU_{EC} via TBOA infusion into the IL temporarily reduced incubated drug-seeking behavior at 30WD, but not at 3WD. On the other hand, TBOA into the PL did not influence drug-seeking. This observation was supported by a significant 3-way interaction between Treatment (VEH vs. TBOA) X Withdrawal (3 vs. 30 days) X Test (Cue test 1 and 2) interaction [$F(1,38)= 4.12$, $p< .05$].* ***Conclusions:*** *The present findings are consistent with prior evidence that IL activity facilitates extinction of incubated drug-seeking. Such results argue that pharmacotherapeutic strategies aimed at increasing GLU_{EC} in the IL may have potential for reducing cue-elicited craving and behavioral reactivity in protracted withdrawal to facilitate addiction recovery.* ***Financial Support:*** *No financial support Abstract - ID: 176* ***Author(s):*** *Brian Walsh* ***(Presenter)****, University of Colorado*
Joseph Sakai, University of Colorado School of Medicine
Manish Dalwani, University of Colorado School of Medicine ***Title:*** *Default mode network activity: Association with externalizing behavior problems with and without limited prosocial emotion* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Polydrug* ***Topic:*** *Adolescent* ***Aims:*** ***Aim:*** *Adolescents with externalizing behavior problems (substance use disorders (SUD) and conduct disorder (CD)) have large social and economic costs. Such adolescents sometimes display high levels of limited prosocial emotions (LPE). Recent work supports that the presence of LPE identifies a subgroup within CD. We tested whether activity of the default mode network (DMN), a functional brain network involved in self-reflective thought, empathy, and foresight, is associated with these disorders.****Methods:*** ***Methods:*** *6 minutes of resting state fMRI for 20 patients with SUD/CD and LPE, 21 patients with SUD/CD without LPE, and 22 controls (males 14-18 years). We used data-driven independent component analysis to identify networks, clusters of voxels which activate together across time. We utilized a standard template and spatial correlation to select the DMN. We tested: (1) whether the 3 groups differed significantly in DMN activity, (2) whether DMN activity was associated with severity of externalizing behavior problems, and (3) whether DMN activity was associated with LPE severity.* ***Results:*** ***Results:*** *Comparisons revealed differences in one cluster including portions of the posterior cingulate cortex (PCC) and precuneus (Brodmann area (BA) 31). Two-group comparisons showed that patients had significantly less activation. Our within-patient analysis showed that severity of externalizing behavior problems was negatively associated with activity in the ventral and dorsal anterior cingulate areas (BA24/32) and positively associated with activity in the PCC. Finally, within patients, severity of LPE was negatively associated with activity in the inferior parietal lobule (BA40).* ***Conclusions:*** ***Conclusions:*** *While both patient groups, regardless of LPE, showed less activity in the DMN (BA31), higher levels of LPE were associated with a distinct pattern of hypo-activity. Further investigation may lead to better treatment of these disorders.****Financial Support:*** *Supported By: NIDA Grant DA031761 Abstract - ID: 177* ***Author(s):*** *Chuan-Yu Chen* ***(Presenter)****, National Taiwan University*
Shao-You Fang, Children and Family Research Center, National Taiwan University
Nicole Huang, National Taiwan University, Epidemiology and Preventive Medicine
Su-Hui Chang, Children and Family Research Center, National Taiwan University ***Title:*** *Excess mortality in children born to opioid-involved parents: A national register study in Taiwan* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Epidemiology* ***Aims:*** *Families of opioid addicts are at great exposure to a wide array of social disadvantage and stressors, and subsequent adverse*

outcomes are often worse in young children due to higher vulnerability. This study aims to investigate the excess mortality of young children born to opioid-involved parents, the causes of death, and associated sociodemographic and clinical predictors. ***Methods:*** *A retrospective cohort comprising 3210 children born in the period 2004–2009 by parents ever attending methadone maintenance treatment (MMT) was identified, with follow-up until the age of six years. Survival status and causes of death were confirmed through the National Death Registry. The age- and sex-adjusted standardized mortality ratio (SMR) and Cox regression analyses were used to evaluate the strength of risk.* ***Results:*** *Children with opioid-involved parents disproportionately experience disadvantaged socioeconomic conditions and parental medical problems. Their overall SMR was 2.31 (95% CI=1.68-3.10), with the estimated SMR reaching 3.5 (95% CI=1.51-6.90) when the causes of death were unnatural (e.g., injury and accident). The SMR varied considerably by parental gender, with the higher estimates unanimously found when mothers were opioid-involved. Low birth weight and parental opioid problem (severity), the most salient predictors in both genders of parents, were found to increase the hazard of premature death by 145%~393% (all p < 0 .05). Having birth after the MMT enrollment was slightly associated with reduced risk of death in those mothered by opioid addicts (adjusted hazard ratio [aHR]=0.28).* ***Conclusions:*** *Our study indicates that offspring of the opioid-involved parents are at greater risk of death before the age of six and suggests the need to prioritize resource allocation to safeguard this marginalized and vulnerable segment of the pediatric population.* ***Financial Support:*** *This work was supported by the grants from the National Health Research Institutes (MDPP04-014, 05A1-NPSP03-021, and NHRI-102A1-PDCO-1312141). Abstract - ID: 178* ***Author(s):*** *Petal Petersen* ***(Presenter)****, South African Medical Research Council*
Catherine Mathews, University of Cape Town
Esme Jordaan, University of Cape Town
Charles Parry, South African Medical Research Council ***Title:*** *Predictors of risk of illicit drug use during pregnancy among women attending midwife obstetric units in the Cape Metropole, South Africa* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Polydrug* ***Topic:*** *Perinatal* ***Aims:*** *Little is known about the nature and extent of substance use among pregnant women in Cape Town (South Africa) despite the very high levels of substance use and related consequences in this part of the country. The aim of the study was to determine predictors of drug use among pregnant women.* ***Methods:*** *A cross-sectional survey was conducted among pregnant women attending 11 Midwife Obstetric Units (MOUs) in greater Cape Town in 2010 and 2011. A two-stage cluster survey design was used. In total, 5231 pregnant women were screened to assess self-reported prevalence estimates. Of these, 684 (13.1%) were intentionally sub-sampled and completed an interviewer-administered questionnaire and provided a urine sample for biological screening. Univariate and multivariate statistical procedures were used to determine factors predictive of illicit drug use.* ***Results:*** *Findings highlight various demographic, social and partner substance use predictors for both self-reported and biologically verified drug use in two different models. Being Coloured, having a marital status other than being married, being unemployed and partner drug use are all independently associated with higher odds of self-reported drug use. In contrast, younger age, being Coloured, unemployed, higher mental ill-health score, partner tobacco and drug use are all independently associated with higher odds of biologically verified drug use. Those who had a partner who drinks alcohol were less likely to test positive for drugs.* ***Conclusions:*** *Knowing the risk factors for illicit drug use in pregnancy is important so that intervention efforts can accurately target those women in need of services. Intervention programs addressing risk factors of high-risk pregnant women are needed.* ***Financial Support:*** *This research was funded by the US President's Emergency Fund for AIDS Relief (PEPFAR) through the US Centers for Disease Control and Prevention (CDC) under the terms of 5U2GPS001137-05. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the CDC or PEPFAR. Abstract - ID: 179* ***Author(s):***
Wan-Ting Chen ***(Presenter)****, National Yang-Ming University*
Kuan-Chia Lin, National Yang-Ming University
Fang-Yi Tseng, National Yang-Ming University
Wei-J Chen, National Taiwan University
Chuan-Yu Chen, National Taiwan University ***Title:*** *Alcohol expectancy in early adolescence with problematic drinking in young adulthood* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Alcohol* ***Topic:*** *Adolescent* ***Aims:*** *Alcohol expectancies (AE) have been recognized as a strong predictor for the emergence of alcohol use disorder in clinical research. The present study aims to pattern endorsed AEs in early adolescence and examine their relationship with problematic drinking in young adulthood.* ***Methods:*** *A prospective cohort of 928 6th graders was recruited from 17 elementary schools in the northern Taiwan in 2006; subsequent follow-up was conducted in early adolescence and young adulthood (n=806, 636, response rate=87%, 69%). Information concerning three-domain AEs (i.e., social enhancement, global transformation, relaxation promotion), individual and social attributes was collected by paper-and-pencil self-administered questionnaires at baseline and adolescence; problematic drinking experiences were assessed by web-based questionnaires in the ages of 19~20 year-old. Latent profile analysis and logistic regression analysis were used to evaluate the association estimates.* ***Results:*** *Among 806 young participants, 28.6% experienced at least one drinking problems and 7% reported being drunken in past year; 9% had binge drinking in past month. Three classes of positive AEs were identified: low (42%), moderate (39%), and high (19%). Children endorsing high-class AEs subsequently had greater risk for drinking problems (OR=1.82, 95% CI=0.82-2.10), drunkenness (OR=1.80, 95% CI= 0.89-3.66), and binge drinking (OR=2.0, 95% CI=1.07-3.81). With covariate adjustment (e.g. peer drinking and alcohol initiation), the risk estimates became diluted (binge drinking: aOR=1.64, 95% CI=0.84- 3.20).* ***Conclusions:*** *The endorsement of High AEs in early adolescence may predict subsequent risk of problematic drinking. Future research is needed to delineate possible processes underlying enduring effects of positive alcohol expectancy.* ***Financial Support:*** *NSC95-2314-B-400-009-MY3 and NSC104-2314-B-010-008-MY3 Abstract - ID: 180* ***Author(s):*** *Victoria Manning* ***(Presenter)****, Turning Point*
Petra Staiger, Deakin University
Hall Kate, Deakin University
Joshua Garfield, Turning Point
Daniel Lubman, Turning Point
Pinar Thorn, Turning Point
Leung Daniel, Deakin University
Jarrad Lum, Deakin University
Antonio Verdejo-Garcia, Monash University ***Title:*** *Approach bias modification training during detoxification: 3-Month outcomes of a pilot RCT* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Alcohol* ***Topic:*** *Treatment* ***Aims:*** *We recently reported that four consecutive days of approach bias modification (ABM) training delivered during inpatient alcohol detoxification (a period of marked neuroplasticity) reduces rate of early relapse during the first two-weeks post-discharge (Manning et al., 2016). The aim of the current study was determine whether the initial positive outcomes were maintained 3-months post-discharge.* ***Methods:*** *In a two-group parallel block (ratio 1:1) randomised controlled trial, 83 alcohol dependent patients received either four sessions of computerised ABM training or four sessions of sham-training (controls) on days 3-6 on inpatient detoxification. The computerised training program was designed to reduce approach bias and strengthen avoidance bias in response to alcohol-cues. Self-reported abstinence was assessed via telephone, by a researcher who was blinded to group allocation for the 53 participants successfully followed up.* ***Results:*** *With per-protocol analysis (completion of 4 training sessions), there was no significant difference in rate of abstinence between groups (ABM group: 36.0%; control group: 31.8%; ?² = 0.09, p = 0.76, Cramer's V =0.04).* ***Conclusions:*** *These findings suggest that the effects ABM delivered during detoxification in preventing post-discharge relapse, were short-lived. The importance of the findings are that they suggest a more extended period of ABM, commencing during detoxification and with booster sessions throughout the first three months of abstinence, may be necessary to enhance long-term outcomes. However, the delivery of training in a community setting is challenging and may require innovative approaches to optimise adherence and motivation.* ***Financial Support:*** *None Abstract - ID: 181* ***Author(s):***
Rebecca McDonald ***(Presenter)****, King's College*
Ulrike Lorch, Richmond Pharmacology Ltd
Jo Woodward, Mundipharma Research Ltd.
Björn Bosse, Mundipharma Research Ltd.
Helen Johnson, Mundipharma Research Ltd.
Gill Mundin, Mundipharma Research Ltd.
Kevin Smith, Mundipharma Research Ltd.
John Strang, King's College ***Title:*** *Concentrated naloxone nasal spray for opioid overdose reversal: A pharmacokinetic study in healthy volunteers* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Other* ***Aims: Background:*** *Take-home naloxone can prevent fatal outcome from heroin/opioid overdose but pre-provision is difficult because naloxone is given by injection. FDA approved a first nasal spray in the US in late 2015. For nasal sprays, the dose must be adequate, rapid-acting, but not excessive with risk of 'over-antagonism'. We report on the pharmacokinetics (PK) of a concentrated naloxone nasal spray. Primary aims:*

- *To assess PK profiles of intranasal (IN) naloxone*
- *To compare early partial systemic exposure with IN vs intramuscular (IM) naloxone*

Secondary aim:

- *To determine IN bioavailability relative to IM naloxone*

Hypothesis: *Early phase PK of dose-adjusted concentrated IN naloxone is comparable to IM injection.* ***Methods: Species:*** *Humans (male and female)* ***Number of subjects:*** *38* ***Procedures:*** *A PK study (open-label, randomised, 5-way crossover; EudraCT 201500449315) in healthy volunteers compared 3 doses of IN (1mg/0.1mL, 2mg/0.1mL, 4mg/0.2mL) versus 0.4mg IM (reference) and 0.4mg IV naloxone.* ***Statistical analyses:*** *PK parameters were determined from plasma naloxone concentrations.* ***Results:*** *The 2mg IN dose closely followed the 0.4mg IM curve for 10 minutes post-dosing, reached blood levels at twice the 0.4mg IM dose by 15 minutes and maintained blood levels at more than twice the 0.4mg IM dose for the next two hours. All three IN naloxone doses rapidly achieved plasma levels >50% of peak concentrations (T50%) by 10 minutes, peaking at 15 minutes (Tmax). IN naloxone had mean relative bioavailability of 47-51%.* ***Conclusions:*** *Clinicians may see merit in*

the PK profile of concentrated IN naloxone: it appears well-absorbed (~50% relative bioavailability); the 2mg IN dose provides speed of onset and early exposure comparable to a 0.4mg IM dose, paired with longer duration of effect. Furthermore, clinicians and policymakers may see implementation advantages with IN naloxone for take-home naloxone programs. ***Financial Support:*** *This research was financially supported by Mundipharma Research Ltd, Cambridge, UK. Abstract - ID: 182* ***Author(s):*** *Julie Marusich* ***(Presenter)****, RTI International*
Tim Lefever, RTI International
Jenny Wiley, RTI International ***Title:*** *A rodent model of nicotine and delta-9-tetrahydrocannabinol co-abuse* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Polydrug* ***Topic:*** *Drug Interactions* ***Aims:*** *Co-abuse of nicotine products and cannabis is a major public health problem which can lead to problematic use patterns, dependence, and greater toxicant exposure. Similarity in route of administration and shared environmental cues may perpetuate sustained nicotine and cannabis co-use. The present study examined sex differences in effects of ? 9-tetrahydrocannabinol (THC) pretreatment on nicotine self-administration.* ***Methods:*** *Male and female rats (n=12/sex) were trained to self-administer nicotine. Once responding for nicotine was established, a nicotine dose-effect curve was determined. Subsequently, the ability of THC to disrupt responding for nicotine was evaluated. The nicotine dose-effect curve was re-determined, with THC administered before the third consecutive session of each nicotine dose.* ***Results:*** *Males and females acquired self-administration of nicotine. There were no sex differences in responding during the nicotine dose-effect curve. When THC was administered before the session, males decreased responding for high doses of nicotine. THC did not affect self-administration of low doses of nicotine or saline for males. In contrast, females decreased responding for a range of nicotine doses and saline following THC pretreatments. Responding also became highly variable across female subjects when THC pretreatment commenced.* ***Conclusions:*** *THC attenuated responding for nicotine in both sexes. While this study did not examine mechanisms for this decrease, previous research supports a role for endocannabinoid modulation of nicotine reinforcement, suggesting that THC's actions on this system may contribute to the observed effect. Although THC decreased nicotine self-administration, frequent co-use of this drug combination may be related to their shared route of administration, shared withdrawal syndrome, and/or compensatory effects. Additionally, sex differences in pharmacokinetics suggest that females may be more susceptible to the increased abuse liability of this drug combination.* ***Financial Support:*** *NIDA Grants DA-016644 and DA003672 Abstract - ID: 183* ***Author(s):*** *Bethea Kleykamp* ***(Presenter)****, Pinney Associates* ***Title:*** *Drug abuse research and scientific integrity in the 21st century* ***Abstract Category:*** *Theoretical/Commentary* ***Abstract Detail:*** *Human* ***Drug Category:*** *Other (specify)* ***Other Drug Category:*** *General drugs of abuse (not specific to one type)* ***Topic:*** *Other* ***Aims:*** *The aims of this commentary are two-fold. First, it will critically examine what it means to have and maintain scientific integrity as a drug abuse scientist given the considerable changes that have taken place within the field of psychopharmacology in recent years. Second, it will emphasize the importance of making scientific integrity a priority given that many graduate- and postdoctoral-level trainees in drug abuse will have career trajectories outside of academia (i.e., private sector or government) and will face very different demands on their integrity compared to their predecessors.* ***Methods:*** *This commentary will be structured around four key changes in the field of psychopharmacology: 1) rapidly developing drug-related technology and associated regulatory policies (e.g., drug formulations, drug delivery devices, research methods), 2) changes to the funding of science and the role of private and public institutions, 3) mass communication of science (e.g., popular media, open-access research journals), and 4) unique career trajectories for psychopharmacologists due to cuts in research funding and overpopulation of PhDs on the job market, matched by a growing healthcare economy providing new and unique job opportunities. Additionally, the commentary will highlight the reality that although financial conflicts of interest are some of the most obvious threats to scientific integrity, other less obvious sources of bias should also be considered such as academic demands (i.e., publish or perish), changes to the peer-review process and open-access journals, and ideologies (i.e., views on drug abuse that are focused on abstinence only versus harm reduction).* ***Results:*** *Not applicable (commentaries do not require a results section/data)* ***Conclusions:*** *Increased dialog around the topic of scientific integrity is essential for ensuring that drug abuse research remains scientifically rigorous in the face of fast-paced, sweeping changes to the field currently happening and likely to occur in the 21st century.* ***Financial Support:*** *This research was supported Pinney Associates. PinneyAssociates provides consulting services on smoking cessation and tobacco harm minimization (including nicotine replacement therapy and digital vapor products) to Niconovum USA, RJ Reynolds Vapor Company, and RAI Services Company, all subsidiaries of Reynolds American, Inc. Our work for RAI focuses on products, regulations, and policies related to smoking cessation and harm minimization; we do not work on combustible conventional cigarettes. In the past three years, PinneyAssociates has also consulted to GlaxoSmithKline Consumer Healthcare on smoking cessation and NJOY, Inc. on electronic nicotine delivery systems. Clients of Pinney Associates had no role in the conceptualization, conduct, interpretation of the data, or presentation of the work. Abstract - ID: 184* ***Author(s):*** *Bonnie Vest* ***(Presenter)****, State University of New York at Buffalo*
Rachel Hoopsick, State University of New York at Buffalo
D. Lynn Homish, State University of New York at Buffalo
Rachel Daws, State University of New York at Buffalo
Gregory Homish, State University of New York at Buffalo ***Title:*** *Effects of trauma type on substance use in reserve soldiers and spouses* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Polydrug* ***Topic:*** *Epidemiology* ***Aims: AIMS:*** *To explore associations between different types of trauma on substance use in Reserve soldiers and spouses. We compared the impact of civilian trauma (childhood and adult) and, among soldiers, military combat trauma, on substance use.* ***Methods: METHODS:*** *Participants (N=411 couples) completed a survey assessing substance use and other health behaviors. Trauma was assessed with the Comprehensive Childhood Maltreatment Scale, the Traumatic Events Questionnaire (civilian trauma) and the Combat Exposure Scale (military combat trauma). Regression models were used to examine the impact of each type of trauma independently for each type of substance use (lifetime illicit drug use, current non-medical use of prescription drugs (NMUPD), current alcohol problems). An additional set of regression models focused only on soldiers (N=282) and compared the relative contribution of all trauma measures for each type of substance use.* ***Results: RESULTS:*** *Childhood trauma was associated with illicit drug use (p* ***Conclusions: CONCLUSIONS:*** *Evidence indicates that childhood and adult trauma are related to illicit drugs and NMUPD in Reserve soldiers and their spouses. In male soldiers, combat trauma is associated with alcohol problems, and noncombat trauma is associated with drug use. These results suggest that it is important to consider the differential influence of different trauma types on substance use.* ***Financial Support:*** *This work was supported by the NIDA under award R01DA034072 (GGH). Abstract - ID: 185* ***Author(s):*** *Lynn Hull* ***(Presenter)****, FDA Center for Tobacco Products*
Chad Reissig, FDA Center for Tobacco Products
Patricia Braschayko, Battelle Public Health Center for Tobacco Research
Jennifer Potts, Battelle Public Health Center for Tobacco Research
Meredith Thanner, Battelle Public Health Center for Tobacco Research
Wallace Pickworth, Battelle Memorial Institute ***Title:*** *Use topography and dependence in loose and portioned smokeless tobacco users* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Nicotine/Tobacco* ***Topic:*** *Behavior* ***Aims:*** *Preliminary evidence suggests that the form of smokeless tobacco (ST) affects exposure to nicotine and tobacco constituents. A better understanding of the differences between loose and portioned ST is needed. This exploratory study evaluated the association of loose or portioned ST use on topography, dependence, and exposure.* ***Methods:*** *The study employed a between-subject study design comparing 30 loose ST users and 20 portioned ST users. Participants attended a single session to evaluate use behaviors (amount, frequency, deposition time) of the subject's own brand. In the first hour, participants used one portion of their product; the subsequent hours were ad-lib use. Descriptive statistics, including the frequency and variability of data, indicate that these two user groups are similar to one another.* ***Results:*** *The average age of all participants was 34yrs (SD 11.1); both groups were majority white (73.3% loose, 75% portioned) and male (100% loose, 95% portioned). While the amount of product was significantly different between the two groups (3.4gm loose and 1.5gm portioned; $p < 0.05$) the time the product was held in the mouth during the first hour of the session was not (42.0min loose and 39.3min portioned). The Hooked on Nicotine Checklist (HONC) and the Fagerström Test for Nicotine Dependence (FTND) scores were not different between the two groups, however the range of scores within the groups was wide, with 16.6% of loose and 25% of portioned users reporting a score of 10 on the HONC and 6.6% of loose and 5% of portioned users reporting a score of 9 on the FTND. These scores are similar to those reported by highly dependent cigarette users.* ***Conclusions:*** *The study findings indicate there are differences in loose and portioned ST users' topography. A similar range of nicotine dependence is evident in users of each group despite their preference for different ST format and amount of product used.* ***Financial Support:*** *US Food and Drug Administration Abstract - ID: 186*
Author(s): *Sarah Wallingford, Canadian Centre on Substance Abuse*
Amy Porath ***(Presenter)****, Canadian Centre on Substance Abuse*
Matthew Young, Canadian Centre on Substance Abuse ***Title:*** *Hospitalizations due to cannabis-related disorders in Canada* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Marijuana/Cannabinoids* ***Topic:*** *Epidemiology* ***Aims:*** *Given the impending changes to the legal status of cannabis in Canada, understanding the impact of cannabis use on the healthcare system is important for evaluating the impact of policy change. The objective of this study was to establish baseline trends in inpatient hospitalizations for cannabis-related disorders in Canada, pre-legalization.* ***Methods:*** *National data on inpatient hospitalizations due to a primary diagnosis of a mental or behavioural disorder due to cannabis use were assessed using records collected by the Canadian Institute for Health Information for eight fiscal years (2006/07 to 2013/14). Hospitalizations and associated clinical condition were identified using ICD-10-CA codes.* ***Results:*** *Between 2006/07 and 2013/14 the rate of inpatient hospitalizations due to cannabis-related disorder in Canada nearly doubled from 2.0 to 3.8 per 100,000 population. By 2013/14 these hospitalizations represented nearly 5% of all separations due to any substance use disorder. Rates of hospital use among males were consistently higher than for females, with respective rates increasing from 2.9 to 5.7 and 1.1 to 1.9 per 100,000. Youth age 15-24 accounted for the majority of hospitalizations and their rates more than doubled from 7.4 to 16.4 per 100,000 over the period. In 2013/14, rates varied widely by jurisdiction from a high of 19.7 per 100,000 in the territories to a low of 3.0 per 100,000 in Newfoundland. The most common clinical condition associated with cannabis-related hospitalizations across jurisdictions were psychotic disorder and harmful use.* ***Conclusions:*** *These results indicate that cannabis-related hospitalizations are increasing, particularly among males and youth, although this these data likely represent an underestimate of the impact of cannabis on the Canadian healthcare system. These data may be used to inform tailored prevention strategies and treatment resource*

planning, as well as to monitor the impact of legislative changes on health and health system use. ***Financial Support:*** *Health Canada Abstract - ID: 187* ***Author(s):*** *Robyn McQuaid* ***(Presenter)****, Canadian Centre on Substance Abuse*
Aqsa Malik, Canadian Centre on Substance Abuse
Amy Porath, Canadian Centre on Substance Abuse ***Title:*** *Life in recovery from addiction in Canada: A focus on barriers, relapse, and stigma* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Polydrug* ***Topic:*** *Treatment* ***Aims:*** *Very little evidence exists regarding the experiences of individuals in recovery from addiction to alcohol and other drugs in Canada. Thus, the aim of the current study was to address this gap by conducting the first-ever survey of Life in Recovery from Addiction in Canada.* ***Methods:*** *The current study used an online survey that comprised both quantitative and qualitative questions. There were 855 individuals (M_{age} = 47 years) who completed the survey; 45.7% were male, 53% female and 1.3% other.* ***Results:*** *Participants' mean age at first drug use at 13.5 years, and the most common drug first used was alcohol. A variety of drugs were used by participants during active addiction, however, alcohol was most prevalent being reported by 93.3%, followed by tobacco (81.8%), cannabis (61.5%) and cocaine powder or crack (55.2%). The majority of individuals (82.5%) indicated that they experienced one or more barriers to initiating recovery, with access to treatment being reported by a number of individuals, such as long delays for treatment (25.0%) and the costs of recovery services (21.6%). Once beginning recovery, 51.2% of participants reported never relapsing back into active addiction, 14.3% reported a single relapse, 19.4% two to five relapses and 15.0% reported six or more relapses. Finally, 48.7% of respondents experienced stigma or discimination during their active addiction, whereas 33.2% of respondents reported such experiences during recovery. The most common themes identified from participants' qualitative responses included being judged or ridiculed by others (27.9%) and being excluded by family, friends and society (16.6%). Detailed results examining gender and ethnicity differences will be discussed****Conclusions:*** *This survey is the first in Canada to document the difficult journey faced by individuals in recovery and will be used to educate healthcare practitioners, decision makers and the public about the experiences of individuals in recovery.* ***Financial Support:*** *Health Canada Abstract - ID: 188* ***Author(s):*** *Vera Grywacheski, Canadian Institute for Health Information*
Sarah Wallingford ***(Presenter)****, Canadian Centre on Substance Abuse*
Aqsa Malik, Canadian Centre on Substance Abuse
Sheril Perry, Canadian Institute for Health Information
Krista Louie, Canadian Institute for Health Information
Matthew Young, Canadian Centre on Substance Abuse ***Title:*** *The impact of opioid poisonings on hospital use in Canada* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Epidemiology* ***Aims:*** *Second to the United States, Canada is one of highest consumer of prescription opioids worldwide. Given the rise in opioid-related harms in this country, addressing opioid poisonings has emerged as a priority public health issue. The aim of this study was to examine pan-Canadian trends in hospitalizations due to opioid poisoning so to gain a better understanding of the magnitude of this issue and to inform prevention efforts.* ***Methods:*** *This descriptive analysis used acute care hospitalization data for fiscal years 2007/08 to 2014/15 from the Hospital Morbidity Database, for all Canadian provinces and territories. Hospitalizations due to opioid poisoning, the type of opioid implicated and the reason for occurrence were identified using ICD-10-CA codes. Direct standardization was used to calculate incidence rates using the 2011 Canadian population as reference.****Results:*** *The rate of opioid poisoning hospitalizations increased 30% from 10.2 to 13.5 per 100,000 between 2007/08 and 2014/15. Across the study period, older adults aged 65 and older consistently had the highest rates, reaching 20.1 per 100,000 in 2014/15. However, the rate of opioid poisoning hospitalizations increased most rapidly for youth aged 15-24, by 62% from 6.5 to 10.4 per 100,000. In terms of types of opioids responsible, across the study period, the "other opioid" category (including oxycodone, morphine and others) accounted for more than half of hospitalizations, while synthetic opioids (such as fentanyl and tramadol) as well as heroin each accounted for only 6%. The majority of poisonings among youth were intentional (52%) in nature, while among older adults most were accidental (55%). Therapeutic poisonings were also most prevalent among older adults, accounting for almost one-quarter (24%) of poisonings****Conclusions:*** *These data underscore the significant public health concern posed by opioid poisonings in as well as the importance of evidence-based strategies aimed at reducing the risk of and harms associated with opioids.* ***Financial Support:*** *Health Canada Abstract - ID: 189* ***Author(s):*** *Michelle Lofwall* ***(Presenter)****, University of Kentucky College of Medicine*
Edward Nunes, Columbia University and NYSPI
Genie Bailey, Warren Alpert Medical School of Brown University
Sharon Walsh, University of Kentucky
Stacey Sigmon, University of Vermont
Fredrik Tiberg, Camurus
Margareta Linden, Camurus
Behshad Sheldon, Braeburn Pharmaceuticals
Sonnie Kim, Braeburn Pharmaceuticals ***Title:*** *A Phase III outpatient randomized, double-blind, double-dummy controlled trial evaluating efficacy of CAM2038 (weekly and monthly buprenorphine FluidCrystal® injection depot) for opioid use disorder* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Treatment* ***Aims:*** *To demonstrate efficacy and safety of weekly (q1w) and monthly (q4w) buprenorphine depot (CAM2038) in the treatment of opioid use disorder (OUD) compared with sublingual (SL) buprenorphine/naloxone (BPX).* ***Methods:*** *Adults with moderate-severe OUD were randomized (1:1) to daily SL BPX and weekly placebo injections (Group 1) or weekly injections of CAM2038 q1w and daily SL placebo (Group 2) for 12 weeks (Phase 1). Participants then transitioned at week 13 to monthly visits for 12 weeks (Phase 2). At each visit, Group 1 received a monthly supply of SL BPX and a monthly placebo injection, and Group 2 received a monthly supply of SL placebo and a CAM2038 q4w injection. Urine samples, self-reported drug use and other outcomes were collected at each study visit. The pre-specified primary endpoint for the European Medicine Agency was proportion of urine toxicology results negative for illicit opioids.* ***Results:*** *428 participants enrolled over 36 sites. Retention was 57.5% and not different (p>0.05) between groups. The primary endpoint, percentage of negative illicit opioid urines, met non-inferiority criteria favoring CAM2038 (CI -0.2%, 13.7%; p < 0 .001). A key secondary endpoint, the cumulative distribution function of percentage of urines negative for illicit opioids, met superiority for CAM2038 compared to SL BPX (p=0.004). CAM2038 was well-tolerated with no serious injection site reactions.* ***Conclusions:*** *These results demonstrate the efficacy and safety of CAM2038 q1w and q4w,injections, potentially important new tools for the treatment of OUD.* ***Financial Support:*** *This study was funded by Braeburn Pharmaceuticals Abstract - ID: 190* ***Author(s):*** *Stacey Sigmon* ***(Presenter)****, University of Vermont*
Joanna Streck, Vermont Center on Behavior and Health
Sarah Heil, University of Vermont
Maxine Stitzer, Johns Hopkins Bayview Medical Center
Jennifer Tidey, Brown University School of Medicine
Diann Gaalema, University of Vermont UHC Campus
Stephen Higgins, University of Vermont ***Title:*** *Subjective effects of smoking among opioid-maintained individuals: Results from a pilot study examining reduced nicotine content cigarettes* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Nicotine/Tobacco* ***Topic:*** *Drug Interactions* ***Aims:*** *Prevalence of smoking and smoking-related mortality in opioid-dependent individuals is 4-fold that of the general population, perhaps due to a pharmacological interaction whereby opioids increase nicotine reinforcement. This has implications for recent efforts to evaluate reduced nicotine content (RNC) cigarettes in this group. We compared the subjective effects of research cigarettes with varying nicotine levels and usual brand cigarettes between opioid-dependent vs. nondependent smokers.* ***Methods:*** *Participants were 26 smokers from vulnerable populations (i.e., economically disadvantaged women, methadone- or buprenorphine-maintained patients, individuals with affective disorders), dichotomized into those with (n=11) or without (n=15) current opioid dependence. In 5 lab sessions they smoked 1 of 4 research cigarettes varying in nicotine yield (0.03, 0.12, 0.26, 0.80 mg) or their usual brand cigarette under double-blind and acute abstinence conditions. Participants then completed a Cigarette Evaluation Scale assessing the positive and negative effects of the smoked cigarette. Subjective effects data for opioid-dependent and nondependent smokers were compared at each dose****Results:*** *Opioid-dependent smokers reported significantly higher scores at some dose level on 4 of the 5 CES scales: Satisfaction (p=.02) and Enjoyment of Respiratory Tract Sensations (p=.01) following the 0.12 mg cigarette, and Psychological Reward (pp*

Conclusions: Opioid-dependent smokers may experience greater positive subjective response to cigarettes across a range of nicotine doses, including reduced levels. Further research with larger samples is needed to understand generality of effects across doses and subjective effects. However, these data support the future use of RNC cigarettes in this population.

Financial Support: TCORS NIH/FDA P50DA036114

Abstract - ID: 191

Author(s):

Julie Johnson **(Presenter)**, Johns Hopkins Bloomberg School of Public Health
Renee Johnson, Johns Hopkins Bloomberg School of Public Health, Department of Mental Health
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Title: Medical marijuana laws and youth alcohol and marijuana use in 45 states

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Epidemiology

Aims: To assess associations between U.S. state medical marijuana laws (MML), their degree of restrictiveness, and past-month youth alcohol and marijuana use. We hypothesized that alcohol and marijuana use are complementary and rates for both would be higher in MML states, and with less MML restrictiveness.

Methods: This study used state-level Youth Risk Behavior Survey data of 9th-12th grade students in 45 states from 1991-2011 (N=715,014). We conducted bivariate (unadjusted) and multivariable (adjusted for state, year, individual characteristics) logistic regression analyses to examine the effect of having any MML, and a MML restrictiveness variable (from Chapman et al., 2016), on six alcohol/marijuana use variables.

Results: Overall prevalence rates showed generally steady decreases from 1991-2011 for past-30-day: alcohol use, binge drinking, and alcohol use/no marijuana use, and increases for use of both alcohol/marijuana, both binge drinking/heavy marijuana, and marijuana use/no alcohol. Bivariate analyses found MML states had higher rates of binge drinking/heavy marijuana use, and marijuana use/no alcohol use, and lower rates of alcohol use, binge drinking, and alcohol use/no marijuana use. In adjusted analyses, the positive associations were no longer significant, but MML states maintained lowered odds of alcohol use (odds ratio [OR]=0.92, 95% confidence interval, [(CI)=0.87,0.97], p

Conclusions: Youth in states with any MML, and with less restrictive MMLs, have lower odds than non-MML youth of past-month alcohol use, use of both alcohol/marijuana, and alcohol use/no marijuana use, suggesting a substitutive relationship between alcohol and marijuana among youth up to 2011.

Financial Support: This research was supported by Grant 5F31DA036923-02 from the National Institute on Drug Abuse (PI: Julie Johnson) and Grant 4T32DA007292-24 from the National Institute on Drug Abuse (PI: Renee Johnson).

Abstract - ID: 192

Author(s):

Andrea Howard **(Presenter)**, Carleton University, Department of Psychology
Brooke Molina, University of Pittsburgh
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Traci Kennedy, University of Pittsburgh
Annamarie Stehli, University of California Irvine
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Title: Substance use escalation into early adulthood among the children in the MTA

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Other

Aims: Children with Attention-Deficit/Hyperactivity Disorder (ADHD) report more substance use and disorder by adulthood (Lee et al., 2011), but there is heterogeneity in findings and little understanding of progression. This study makes use of the longitudinal follow-up of the children in the Multimodal Treatment of ADHD study (MTA) to test whether childhood ADHD diagnosis predicts faster escalation of substance use into early adulthood. We also tested whether escalation to and rates of use in early adulthood is worst for atypically early and heavy substance use in children with ADHD (Molina & Pelham, 2014).

Methods: 579 children were diagnosed with DSM-IV ADHD, Combined subtype, and 258 Local Normative Comparison Group (LNCG) children without ADHD, were followed to M age 25. Substance use was self-reported up to 8 times using the Substance Use Questionnaire (Molina & Pelham, 2003, Molina et al., 2013). 471 ADHD and 240 LNCG provided substance use data in adulthood (12, 14, and/or 16 years after ADHD baseline).

Results: At M_{age} 25, ADHD predicted more weekly marijuana use (32.8% vs 21.3%, p=.002) and daily smoking (35.9% vs 17.5% LNCG, p 2(1)=18.05, p

Conclusions: Support for our hypotheses was mixed, but the finding of increased regular marijuana use for children with ADHD was particularly important given heterogeneity across prior studies. Given the prognostic value of early/heavy teen substance use for adult substance use, and the chronicity of ADHD (Sibley et al., 2012), our findings suggest that prevention and continued monitoring may be necessary to forestall the development of substance-related problems in early adulthood.

Financial Support: NIH R01 grant number DA039881

Abstract - ID: 193

Author(s):

Kristin Maple **(Presenter)**, University of Wisconsin-Milwaukee
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Krista Lisdahl, University of Wisconsin-Milwaukee

Title: Associations between cannabis use, gender, and frontolimbic white matter integrity in adolescents and emerging adults

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Imaging

Aims: Cannabis use is the most frequently used illicit substance amongst adolescents and emerging adults in the United States (Johnston et al., 2015). Reduced frontolimbic white matter (WM) integrity has previously been observed in cannabis users (e.g., Shollenbarger et al., 2015). The current study hypothesized that increased cannabis use would *dose-dependently* predict reduced frontolimbic WM integrity, with gender moderating this relationship.

Methods: After exclusion for comorbid psychiatric and neurological disorders, psychotropic medication use, and excessive other substance use, 75 cannabis users and non-users were included. WM integrity was measured using fractional anisotropy (FA) and mean diffusivity (MD) with FreeSurfer's tractography program (Yendiki et al., 2011). Multiple regressions examined whether past year cannabis use and cannabis x gender predicted frontolimbic WM integrity after controlling for gender, alcohol, and nicotine use. False Discovery Rate (FDR) corrections were used (Benjamini & Hochberg, 1995).

Results: Increased cannabis use marginally predicted reduced MD in the left uncinate fasciculus [*t* (70) = -1.85, *beta*=-.22, *p*= .07] and significantly predicted reduced MD in the right uncinate fasciculus [*t* (70) = -2.00, *beta*=< /em>-.24, *p*= .05, f^2= .06; FDR corrected: p= .34]. Additionally, a significant cannabis x gender interaction was observed in forceps minor FA [t (60) = 2.06, beta=< /em>.26, p=.04, f^2= .07; FDR corrected: p=.44]. Increased cannabis use was associated with increased and decreased forceps minor FA in females and males, respectively. **Conclusions:** In conclusion, greater cannabis use predicted increased integrity in the uncinate fasciculus. Most previous studies have shown reduced WM integrity in cannabis users (Jacobus et al., 2013). Gender moderated the relationship between cannabis use and forceps minor WM integrity, with female users showing increased integrity. Thus, cannabis use may differentially impact WM in females compared with males. Longitudinal research is needed to further characterize WM development in male and female cannabis users. **Financial Support:** 3R01DA030354 (PI: Lisdahl) Abstract - ID: 194 **Author(s):** Kasey Claborn **(Presenter)**, Rhode Island Hospital
Elizabeth Aston, Center for Alcohol and Addiction Studies, Brown University School of Public Health
Michael Saccoccio, Rhode Island Hospital
Susan Ramsey, Rhode Island Hospital **Title:** Prescribing narcotics and recommending medicinal marijuana as incentives to retain patients in HIV care **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** AIDS/Immune **Aims:** Treatment retention is a significant public health concern among people living with HIV with less than half receiving consistent HIV medical care. People who use drugs are at increased risk for treatment drop-out. This qualitative study aimed to assess HIV and substance use (SU) treatment providers' perspectives on prescribing narcotics and medical marijuana to incentivize retention in HIV care. **Methods:** Individual interviews (IDIs) were conducted with N=29 providers [n=16 HIV; n=13 SU]. Participants were included if they were employed at a HIV or SU clinic, had a relevant position title, and had a minimum of one year experience working with PLWH, or patients at-risk for HIV, with a comorbid SU disorder. IDIs were 45-90 minutes and followed a semi-structured guide. Data was analyzed iteratively using thematic analysis. **Results:** Prescriptions as a retention strategy emerged as a theme. Analyses revealed 9 of 11 (82%) HIV providers reported prior knowledge/experience with incentivizing treatment retention through prescribing narcotics or recommending medical marijuana; while only 1 of 12 (8%) SU providers indicated prior knowledge. Providers indicated positive and negative perceptions of this retention strategy. Positive perceptions included: (a) harm reduction approach to HIV prevention; (b) increased appointment attendance; and (c) sustained engagement in care. Negative perceptions included the potential to proliferate addiction, increased appointment attendance may not translate into improved health outcomes, and the prescription could become the focus of appointments and distract from medical outcomes. **Conclusions:** This study highlighted a strategy used by some providers to improve HIV treatment retention. No studies have examined the potential effects of prescribing narcotics and/or medical marijuana on HIV patient health outcomes. Research is needed to understand the prevalence and both patient-level and population health outcomes of this prescribing pattern. **Financial Support:** This research was supported by grant number K23 DA039037 from the National Institutes of Drug Abuse, USA. Abstract - ID: 195 **Author(s):** Tara Chaplin **(Presenter)**, George Mason University
Jennifer Poon, George Mason University
James Thompson, George Mason University
Rajita Sinha, Yale School of Medicine
Emily Ansell, Syracuse University **Title:** Brain pathways from parenting to adolescent substance use: Gender differences **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Adolescent **Aims:** Maladaptive parenting is a well-established risk factor for adolescent substance use. However, the brain mechanisms for effects of parenting on substance use are not known. This study examined: 1) whether maladaptive parenting behaviors predict early adolescent emotion-related brain activation, and 2) whether emotion-related brain activation predicts adolescent current substance use. Further, we examined gender differences in these predictions. **Methods:** Sixty six 12-14 year olds completed laboratory and MRI sessions. In the laboratory session, adolescents and their parents discussed a family conflict topic for ten minutes. Discussions were coded for parenting behaviors (parental warmth, parental structure, negative/critical parenting). In the MRI session, adolescents viewed negative emotional and neutral IAPS pictures in an event-related task. fMRI responses in a-priori regions of interest (amygdala, insula, anterior cingulate cortex [ACC], and ventromedial prefrontal cortex [vmPFC]) to negative (-neutral) pictures were extracted. **Results:** Negative/critical parenting X gender interactions were found predicting brain activation to negative emotional pictures (mean ? = -1.24, p's < .05). For girls, negative parenting predicted heightened activation in L&R amygdala, ACC, and vmPFC to negative emotional pictures (r's = .22 - .51). For boys, negative parenting predicted blunted activation in R amygdala, and L&R insula and ACC (r's = -.34 to -.45). Brain activation X gender interactions were found predicting substance use for L insula. For girls, heightened insula activation predicted substance use (?= .92, p = .06) and for boys blunted activation predicted substance use, though not significantly (B = -.53, ns). **Conclusions:** Maladaptive parenting behaviors (especially negative parenting) predicted heightened emotion-related brain activation for girls and blunted for boys. And, for insula, those same activation patterns predicted substance use. This suggests gender-differentiated brain pathways from family environment to adolescent substance use. **Financial Support:** NIH (R01-DA033431). Abstract - ID: 196 **Author(s):** Alexander Wallace **(Presenter)**, University of Wisconsin-Milwaukee
Natasha E Wright, University of Wisconsin-Milwaukee
Erika R. Gilbart, University of Wisconsin-Milwaukee
Krista Lisdahl, University of Wisconsin-Milwaukee **Title:** ADHD symptoms and marijuana exposure predict sustained attention accuracy **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Adolescent **Aims:** Marijuana (MJ) use in young adults has significant effects on individuals' attentional ability (Lisdahl et al., 2014). Further, attention deficit-hyperactivity disorder (ADHD) symptoms lead to more severe cannabis problems in later life (Bidwell et al., 2014). Here we investigate whether current ADHD symptoms and MJ interact in predicting attention performance in adolescent and young adult MJ users. **Methods:** 79 participants (23 MJ, 56 control) aged 16-26 years old were used for this study. Participants were balanced for gender (53%M) and predominantly Caucasian (67%). Exclusion criteria were comorbid Axis-I disorders, major medical or neurological disorders, prenatal medical issues, prenatal alcohol/illicit drug exposure, or excessive (>20 times) other drug use in lifetime. ADHD symptoms were measured by the parent's report on the Child Behavioral Checklist (CBCL) and raw total syndrome scores were calculated. Participants then completed the Ruff 2&7 Selective Attention Test, the Connor's Continuous Performance Task II (CPT), and WAIS-III Letter Number Sequencing (LNS). Multiple regressions were run to examine the interaction between ADHD scores and MJ use group status in predicting CPT, LNS, and Ruff 2&7 performance, while controlling for past year alcohol use. **Results:** A significant interaction between MJ use and ADHD scores was observed on the Ruff 2&7 total accuracy scores (p=.02). As ADHD syndrome scores increased, MJ users had decreased accuracy compared to controls and MJ users with low ADHD symptoms. MJ use, ADHD scores, and their interaction did not significantly predict any other measures. **Conclusions:** Our results showed that marijuana users with high ADHD symptoms demonstrate reduced total accuracy for the Ruff 2&7. Longitudinal studies are needed to determine whether pre-clinical ADHD symptoms predate MJ use, or are a result of chronic MJ exposure during development. **Financial Support:** R01 DA030354, NIDA; PI: Lisdahl, K.M Abstract - ID: 197 **Author(s):** Maria Mavrikaki **(Presenter)**, McLean Hospital, Harvard Medical School
Lorena Pantano, Harvard School of Public Health
David Norris, McLean Hospital, Harvard Medical School
Maximilian A Rogers-Grazado , Translational Genomics Core, Partners Healthcare Personalized Medicine
Sami S Amr, Translational Genomics Core, Partners Healthcare Personalized Medicine
Elena Chartoff, McLean Hospital, Harvard Medical School **Title:** Stress- and sex-dependent changes in miRNA expression and their potential impact on opioid addiction **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Opiates/Opioids **Topic:** Sex Differences **Aims:** Prescription opioid addiction disproportionately affects women compared to men, and stress has a facilitating role in opioid abuse—particularly in women. MiRNAs are small non-coding RNAs regulated by factors such as stress and gonadal sex, and they have been implicated in the

pathophysiology of drug addiction. We hypothesize that stress- and sex-regulated miRNAs can affect vulnerability to opioid addiction. The present study assessed putative sex differences in the effects of an ethologically relevant stressor, adolescent social isolation (SI), on miRNA expression in the bed nucleus of stria terminalis (BNST), a brain region implicated in anxiety. ***Methods:*** *Male and female Sprague-Dawley rats underwent SI during adolescence or remained grouped housed (GH), and were tested for anxiety-like behavior in the elevated plus maze as adults. Small RNA sequencing was performed on tissue extracted from the BNST. A separate cohort of adult rats was implanted with jugular vein catheters and trained to self-administer oxycodone in 1-h sessions.* ***Results:*** *We show that SI induced a more robust anxiogenic profile in females compared to males. SI stress resulted in differential expression of 56 miRNAs unique for females, 25 miRNAs unique for males, and 12 miRNAs were differentially expressed in both sexes compared to GH controls. Drug naïve males self-administered more oxycodone than females in the initial training sessions.* ***Conclusions:*** *Our future studies aim to assess the effects of SI stress and BNST miRNA expression on oxycodone self-administration in male and female rats. These results suggest that stress- and sex-regulated miRNAs might underlie, in part, sex differences in the anxiogenic effects of SI and ultimately in vulnerability to opioid addiction.* ***Financial Support:*** *The bioinformatics analysis was funded by the Harvard NeuroDiscovery Center. Abstract - ID: 198* ***Author(s):*** *Kumiko Lippold* ***(Presenter)****, Virginia Commonwealth University, Pharmacology and Toxicology*
William Dewey, Virginia Commonwealth University ***Title:*** *Modification of the antinociceptive effect of opiates by lorcaserin* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Drug Interactions* ***Aims:*** *Functional interactions between the serotonergic system and opoids have been noted and studies have demonstrated enhancement of the effects of mu opioid agonists by serotonin modulators. Recent studies have shown that lorcaserin, a selective 5-HT $_{2C}$ agonist, modulates the abuse-related effects of opioids. The purpose of our studies was to investigate the effect of lorcaserin on the antinociceptive effect of opioids.* ***Methods:*** *We utilized male Swiss Webster mice and used the warm-water tail withdrawal assay. We tested the following doses of a lorcaserin (0.25, 0.5, 1, 2, & 4mg/kg, s.c.) against a cumulative oxycodone dose response paradigm (n=5-10/group) and at all doses tested, there was a leftward shift of the curve.* ***Results:*** *Oxycodone produced an ED50 of 6.11mg/kg but when animals were pretreated with the following doses of lorcaserin, we observed significant shifts at 0.25mg/kg (ED50 = 1.3mg/kg), 0.5mg/kg (ED50=1.21mg/kg), 1mg/kg (ED50 = 2.08mg/kg), and 2mg/kg (ED50 = 3.77mg/kg). Additional studies were conducted to test the hypothesis that lorcaserin also enhanced other opiates, such as morphine, fentanyl, and methadone. 2mg/kg lorcaserin nonsignificantly shifted the ED50 of morphine from 6.01mg/kg to 3.89mg/kg. The ED50 of fentanyl (57.64ug/kg) was significantly shifted by 1mg/kg lorcaserin (ED50 = 33.52). Curiously, methadone was not altered by any doses of lorcaserin. It is important to note that all doses of lorcaserin that were tested had no antinociceptive activity. Intrathecal lorcaserin produced a robust dose-dependent increase in antinociception with an ED50 of 54ug. This effect was not attenuated by 1mg/kg naloxone. Intracerebroventricularly administered lorcaserin (n=8-9) had no effect in our assay and actually attenuated the acute effect of 12mg/kg oral oxycodone by approximately 40%.* ***Conclusions:*** *In summary, lorcaserin enhanced the effects of several opiates, including oxycodone, morphine, and fentanyl, but not methadone. We postulate that this enhancing effect is mediated through a spinal mechanism and isn't dependent on endogenous opioid activity.* ***Financial Support:*** *USPHS DA036975 Abstract - ID: 199* ***Author(s):***
Brantley Jarvis ***(Presenter)****, Johns Hopkins University School of Medicine*
August Holtyn, Johns Hopkins University School of Medicine
Shrinidhi Subramaniam, Johns Hopkins University School of Medicine
Kenneth Silverman, Johns Hopkins University ***Title:*** *Extended-release injectable naltrexone for opioid use disorder: A systematic review* ***Abstract Category:*** *Literature Review* ***Abstract Detail:*** *Human* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Treatment* ***Aims:*** *To systematically review rates of induction, adherence, and opioid use outcomes for extended-release injectable naltrexone (XR-NTX) in individuals with opioid use disorder (OUD).* ***Methods:*** *We used PUBMED to search peer-reviewed studies that reported outcomes on induction, adherence, or opioid use among treatment-seeking individuals intending to receive one or more doses of XR-NTX for OUD. There were no search restrictions related to study design, population, comparator, or context.* ***Results:*** *We selected 23 studies that reported outcomes on induction (n = 10), adherence (n = 16), or opioid use (n = 18). Among studies using multiday detox and oral NTX induction protocols, 65% of participants completed these and 64% received their first dose. Adherence decreased significantly over time. Approximately one-third (36%) received all scheduled doses or the maximum doses in the observation period. Opioid use measures (12 unique measures in total) varied considerably across studies. 18 studies reported opioid use outcomes but most (14; 78%) did not use randomized controlled trials (RCTs) to isolate XR-NTX's effects on opioid use. The 4 RCTs that used placebo (n = 2) and treatment as usual (n = 2) controls showed that XR-NTX decreased opioid use during the intervention. However, two of these studies had differential urine sample collection rates between groups that confounded evaluation of treatment effects.* ***Conclusions:*** *Many individuals intending to initiate XR-NTX do not, and among those who do most discontinue treatment prematurely. The available evidence for XR-NTX's effects on opioid use is weak. More rigorous evaluations of XR-NTX's clinical efficacy, its comparative effectiveness with other medication-assisted treatments for OUD, and its implementation in real-world settings are needed.* ***Financial Support:*** *T32DA07209 Abstract - ID: 200* ***Author(s):*** *Curtis Bradley* ***(Presenter)****, East Tennessee State University*
Moss Sanders, East Tennessee State University
Amy Patterson, East Tennessee State University
Samantha Malone, East Tennessee State University
Amanda Smith, East Tennessee State University
Matthew Palmatier, East Tennessee State University ***Title:*** *Mechanisms of caffeine self-administration in rats* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Other (specify)* ***Other Drug Category:*** *Caffeine* ***Topic:*** *Behavior* ***Aims:*** *Caffeine is consumed for its pharmacological effects by more than 90% of adults in the United States. Preclinical studies have shown that although caffeine is a weak primary reinforcer it potently enhances responding for other rewards. The aim of the present studies was to investigate whether these 'reinforcement enhancing' effects could lead to caffeine self-administration. An additional aim was to investigate the behavioral and neurobiological mechanisms of these effects. We predicted that caffeine delivered in conjunction with a sweet taste would result in self-administration, increased conditioned approach (sign-tracking) and increased extracellular dopamine in the nucleus accumbens (NAc).* ***Methods:*** *In Experiment 1, rats were allowed to self-administer caffeine orally (0 or 2.5 mg/ml) or intravenously (0 or 0.5 mg/kg/inf) in conjunction with saccharin (0.2% w/v) or water. In Experiment 2, rats were assigned to one of two groups (Paired or Unpaired) and one of two drug conditions (CAFF or SAL). All rats were subsequently trained in a Pavlovian conditioned approach procedure in which approach to the CS and US could be measured separately (e.g., sign vs. goal tracking). The assigned solution (CAFF or SAL) was injected 15 min before testing. Following conditioning, all rats were instrumented with intracranial cannulae and microdialysis samples were collected from the NAc during an 'extinction' test (only CS presented).* ***Results:*** *Caffeine robustly increased self-administration of saccharin relative to saccharine alone (0 caffeine dose) or caffeine alone (oral water), ps < 0 .05. Preliminary data from Experiment 2 suggest that caffeine increased the incentive salience of the CS (e.g., more sign tracking) and extracellular dopamine in the NAc, but additional replications are being conducted to confirm this finding.* ***Conclusions:*** *The present findings suggest that caffeine interacts with non-drug rewards to promote self-administration. The behavioral and neurobiological mechanisms appear to be enhanced NAc dopamine release and incentive salience of reward-predictive cues.* ***Financial Support:*** *SUPPORTED BY: NIH (DA038843) and the East Tennessee State University Office of Research and Sponsored Programs. Abstract - ID: 201* ***Author(s):*** *Kerry Green* ***(Presenter)****, University of Maryland*
Rashelle Musci, Johns Hopkins Bloomberg School of Public Health, Department of Mental Health
Pamela Matson, Johns Hopkins University
Renee Johnson, Johns Hopkins Bloomberg School of Public Health, Department of Mental Health
Beth Reboussin, Wake Forest School of Medicine
Nicholas Ialongo, Johns Hopkins Bloomberg School of Public Health ***Title:*** *Developmental patterns of adolescent marijuana and alcohol use and their joint association with sexual risk behavior and outcomes in young adulthood* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Other (specify)* ***Other Drug Category:*** *Dual use of alcohol and marijuana* ***Topic:*** *Adolescent* ***Aims:*** *Urban populations disproportionately experience poor sexual outcomes, including high rates of teenage pregnancy and sexually transmitted infections. However, the contribution of substance use across adolescence to poor sexual outcomes in young adulthood has not been investigated in depth, despite offering opportunities for more targeted prevention. This study aimed to estimate joint trajectories of adolescent alcohol and marijuana use and determine if they relate differently to four sexual outcomes: multiple sexual partners, sex without a condom, teenage pregnancy, and contraction of a sexually transmitted infection in young adulthood (by age 25).* ***Methods:*** *Data came from a longitudinal study of urban youth followed from age 6 to age 25, with annual assessments during adolescence and young adulthood (n=608). The sample showed high levels of sexual risk, with young adults on average having sex without a condom once in the past month, 28.5% having multiple sexual partners in the past month, one quarter having contracted a sexually transmitted infection, and over 60% of the women being pregnant as a teenager and 36% of the men having gotten a partner pregnant.* ***Results:*** *Applying longitudinal latent profile analysis to estimate joint trajectories of alcohol and marijuana use from grades 8-12, we identified four classes representing high dual use, moderate alcohol use, moderate alcohol use with increasing marijuana use, and non-use. Class membership differently predicted all four outcomes investigated with high dual users having the highest level of teenage pregnancy and the increasing marijuana trajectory having the highest risk of engaging with multiple sexual partners in the past month.* ***Conclusions:*** *Because of the strong link between substance use trajectory and a variety of sexual risk, a broader focus on shared risk and protective factors and joint programming is clearly needed. This study provides evidence that interventions for urban youth aimed at reducing sexual risk behaviors and outcomes clearly should consider the various patterns of adolescent alcohol and marijuana use as certain patterns of use may put urban youth at greatest risk of specific, adverse sexual outcomes.* ***Financial Support:*** *R01DA032550 Abstract - ID: 202* ***Author(s):*** *Alison Looby* ***(Presenter)****, University of Wyoming*
Sarah Kittleson, University of North Dakota ***Title:*** *Nonmedical prescription stimulant users experience subjective but not objective impairments in attention and impulsivity* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Stimulants* ***Topic:*** *Behavior* ***Aims:*** *Nonmedical prescription stimulant use (i.e., use without a prescription or in ways other than prescribed) is frequently reported by college students to improve attention and academic performance. Yet, it is unknown whether users experience general impairments in cognitive functions that may drive use. The aim of this research was to compare lifetime nonmedical users and nonusers of prescription stimulants on self-report and objective measures of inattention and impulsivity to assess whether users experience cognitive impairments.* ***Methods:*** *Two separate studies were conducted with college students to examine inattention (N = 158; 82.3% female; age: M = 19.51, SD = 2.70) and impulsivity (N = 121; 79.3% female; age: M = 19.83, SD = 3.93). Participants completed self-report questionnaires and a brief battery of cognitive tests in the laboratory.* ***Results:*** *Current ADHD, past-month illicit drug use, and past-month alcohol use differed between groups and were used as covariates in all analyses.*

Users reported significantly higher levels of inattention on the short version of the Young ADHD Questionnaires ($F(1,152)$= 8.16, p = .005, partial eta squared (PES) = .05) and impulsivity on the Barratt Impulsiveness Scale ($F(1,108)$ = 8.16, p = .005, PES = .07) than nonusers. However, no significant differences were observed between groups on tasks of inattention, including a Continuous Performance Test ($F(8,145)$ = 0.80, p = .603, PES = .04), Digit Span ($F(1,152)$ = 0.09, p = .769, PES = .001), and the Paced Auditory Serial Addition Test ($F(1,151)$ = 0.07, p= .795, PES = .00), nor on tasks of impulsivity, including the Balloon Analogue Risk Task ($F(3,94)$ = 0.91, p = .438, PES = .03) and the Stop Signal Task ($F(1,100)$ = 0.03, p = .853, PES = .00). ***Conclusions:*** *Nonmedical prescription stimulant users may engage in use to overcome perceived deficits in cognitive abilities despite lack of objective evidence.* ***Financial Support:*** *None Abstract - ID: 203* ***Author(s):*** *Maciej Gonek* ***(Presenter)****, Virginia Commonwealth University*
William Dewey, Virginia Commonwealth University ***Title:*** *Inhibition of gap junctions impair the development of opioid tolerance* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Tolerance/Dependence* ***Aims:*** *A major issue in treating painful conditions is that tolerance limits the long-term utility of opioid analgesics. Increasing evidence has shown that glial cells play important roles in the development of morphine antinociceptive tolerance. Glial cells form gap junction-coupled networks. Therefore we investigated the effects of the gap junction inhibitor carbenoxolone on the development of morphine tolerance.* ***Methods:*** *The mice used in this study were Male Swiss Webster mice (Harlan Laboratories, Indianapolis, IN) weighing 25–30 g. We tested antinociception using the warm-water tail withdrawal assay and the hot plate assay. To induce tolerance, we surgically implanted a 75mg morphine pellet and tested after 5 days. Carbenoxolone was administered I.P.* ***Results:*** *Carbenoxolone had no antinociceptive effect on its own and did not alter morphine's antinociceptive effects. We observed a 4x antinociceptive tolerance in the warm water tail withdrawal assay and 6x tolerance in the hotplate assay 5 days after the implantation of a 75mg morphine pellet. Administrating 25 mg/kg of carbenoxolone on the 3rd and 4th day significantly reduced the antinociceptive tolerance in the tail withdrawal assay but not the hot plate assay. The administration of carbenoxolone on test day only did not affect morphine tolerance.* ***Conclusions:*** *Carbenoxolone administration on the 3rd and 4th day significantly reduced the antinociceptive tolerance in the tail withdrawal assay but not the hot plate assay. This suggests that carbenoxolone may be affecting spinal but not supraspinal mechanisms responsible for antinociceptive tolerance. Carbenoxolone administration on the test day only did not affect tolerance suggesting carbenoxolone attenuated the development of tolerance but did not affect the expression of tolerance. There is no evidence in our studies of carbenoxolone having an antinociceptive effect on its own or potentiating morphine's antinociceptive effects. Further research would elucidate the mechanisms by which specific gap junctions mediate this effect and may lead to the development of new drugs that relieve severe pain with limited tolerance.* ***Financial Support:*** *Supported by USPHS Grant T32DA007027 Abstract - ID: 204* ***Author(s):*** *Laura Johnson* ***(Presenter)****, Virginia Commonwealth University*
Hamid Akbarali, Virginia Commonwealth University
Graeme Henderson, University of Bristol
William Dewey, Virginia Commonwealth University ***Title:*** *Ethanol reversal of prescription opioid tolerance* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Tolerance/Dependence* ***Aims:*** *Many individuals who abuse opioids co-consume substances such as alcohol regularly. Based on our previous findings with ethanol and morphine in mice, we tested the hypothesis that ethanol also reverses antinociceptive tolerance to oxycodone and hydrocodone.* ***Methods:*** *Analgesic tolerance was developed via chronic s.c. injections of an ED_{80} dose of either oxycodone or hydrocodone, and then altered by a single i.p. injection of 1g/kg ethanol in male Swiss Webster mice, aged 6-8 weeks, with a minimum of 5 mice per dose per treatment. Antinociception was measured by changes in tail withdrawal latencies from baseline (2-4 sec) using a hot water bath at 56 ± 0.1?C. A 10 second cutoff time was utilized to reduce tissue damage, and final values were calculated as: %MPE = [(test – baseline)/(max – baseline)]*100. Thoracic blood and whole brains were collected and analyzed by GC-MS for opioid concentrations with and without co-administration of ethanol.* ***Results:*** *We found a significant reversal of oxycodone and hydrocodone-induced analgesic tolerance by ethanol. The ED_{50} for oxycodone was significantly shifted from 0.9 mg/kg (0.72 – 1.12) to 1.70 mg/kg (1.42 – 2.03) after repeated administration and returned to 1.02 mg/kg (0.77-1.37) after 1 g/kg ethanol. The ED_{50} after acute hydrocodone was 3.92 mg/kg (3.26 – 4.71), 9.01 mg/kg (6.44 – 12.62) after chronic administration, and returned to 4.73 mg/kg (3.51 – 6.38) by 1 g/kg ethanol. 2 g/kg oral ethanol fully reversed tolerance to a s.c. ED_{80} dose of oxycodone. Extensive pharmacokinetic studies showed that the reversal of opioid tolerance by ethanol was not due to an alteration of brain or blood concentrations of the opioid.* ***Conclusions:*** *Ethanol fully reversed antinociceptive tolerance to both oxycodone and hydrocodone without altering blood or brain opioid concentrations, suggesting an effect at brain ?-opioid receptors.* ***Financial Support:*** *USPHS RO1 DA036975 and DA007027 Abstract - ID: 205* ***Author(s):*** *Joseph Guydish* ***(Presenter)****, UCSF*
Deborah Yip, UCSF
Barbara Tajima, UCSF
Thao Le, UCSF
Denise Williams, UCSF ***Title:*** *Staff and clients smoking together in drug abuse treatment: A target policy change* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Nicotine/Tobacco* ***Topic:*** *Policy* ***Aims:*** *Smoking is endemic in drug abuse treatment populations, and smoking is often not addressed in drug abuse treatment programs. The current study examined the practice of staff and clients smoking together, and whether this practice is associated with other tobacco-related behaviors among clients.* ***Methods:*** *Clients (N = 1,113) were surveyed and program directors were interviewed in a national sample of 24 drug abuse treatment programs affiliated with the NIDA Clinical Trials Network (CTN). Clients were asked whether they observed staff and client smoking together in their program and, using the program as the unit of analysis, this measure was tested for its association with six smoking behavior outcomes.* ***Results:*** *Higher rates of staff and client smoking together were associated with higher staff smoking prevalence (p = 0.006), lower rates of client thoughts about quitting in the next 30 days (p = 0.027), more negative client attitudes toward quitting smoking (p = 0.004), and with clients receiving fewer tobacco-related services (p = 0.024).* ***Conclusions:*** *A feasible and low-cost policy intervention to address smoking in substance abuse treatment is to prohibit staff and client smoking together. In the interest of health of the clients whom they serve, treatment programs, and state and federal substance abuse agencies, should recommend ending this practice.* ***Financial Support:*** *NIDA and FDA Center for Tobacco Products R01DA036066. The funders had no role in the analysis, interpretation, or reporting of these data. Abstract - ID: 206* ***Author(s):*** *Beth Reboussin* ***(Presenter)****, Wake Forest School of Medicine*
Nicholas Ialongo, Johns Hopkins Bloomberg School of Public Health
Kerry Green, University of Maryland
Debra Furr-Holden, Michigan State University
Renee Johnson, Johns Hopkins Bloomberg School of Public Health, Department of Mental Health
Adam Milam, Johns Hopkins University ***Title:*** *The impact of the urban neighborhood environment on longitudinal transitions in marijuana use during emerging adulthood* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Marijuana/Cannabinoids* ***Topic:*** *Prevention* ***Aims:*** *To investigate transitions in marijuana use during emerging adulthood and estimate the influence of objective measures of neighborhood physical and social disorder on these transitions.* ***Methods:*** *Data are from a longitudinal cohort study of 379 primarily Black emerging adults (age 18-21) who were first sampled in childhood based on their residence in low-income neighborhoods in Baltimore and followed up annually. Neighborhood was measured using a valid and reliable field-rater assessment of the residential block. Longitudinal latent class and latent transition analyses were performed.* ***Results:*** *Fit indices supported three-classes of marijuana use: no use (most prevalent class; 73% at age 18 to 86% by age 21), infrequent use (17% at age 18 to 7% by age 21), and frequent use (10% to 7%). Over three years, young adults tended to transition toward lower levels of use. However, neighborhood physical disorder (e.g. broken windows, drug paraphernalia) was associated with transitioning to increased marijuana use (no use to frequent use; AOR=2.712; p=0.023) while neighborhood social activity (e.g. positive adult interaction, youth playing outside) was associated with a lower likelihood of transitioning from no use to frequent use (AOR=0.002; p=0.013) after adjusting for gender, socioeconomic status and race. Neighborhood social activity was also associated with transitioning from frequent use to infrequent use (AOR=2.342; p=0.020).* ***Conclusions:*** *These findings suggest that improving the neighborhood physical environment perhaps through municipal intervention including street cleaning and tearing down of vacant and abandoned buildings could make neighborhoods less inviting for drug activity and reduce rates of marijuana initiation. However, even in the absence of resources to improve the physical environment, prosocial activities in the neighborhood may prevent initiation of marijuana use as well as support reductions in use.* ***Financial Support:*** *Data analyses were supported by R01DA032550 and K01DA031738 from the National Institute on Drug Abuse. Abstract - ID: 207* ***Author(s):*** *Megan Kangiser* ***(Presenter)****, University of Wisconsin-Milwaukee*

Kyle Jennette, University of Wisconsin-Milwaukee
Alicia Thomas, University of Wisconsin-Milwaukee
Krista Lisdahl, University of Wisconsin-Milwaukee ***Title:*** *Gender moderates chronic nicotine effects on cognition in young adults* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Nicotine/Tobacco* ***Topic:*** *Sex Differences* ***Aims:*** *Tobacco use and cigarette smoking is still a significant public health concern in young adults. Animal and human research has yielded generally mixed findings regarding the impact of the interaction of gender and nicotine use on cognition; however, with some exceptions, most human studies show poorer cognition in male smokers. Few studies have been published regarding the effects of chronic nicotine exposure on cognition, as well as the effect of gender, in adolescents and young adults.* ***Methods:*** *Sixty-five participants (22 nicotine users and 43 controls) aged 18-25 were recruited from the community. Participants completed one session with questionnaires, drug use interview, neuropsychological battery, and MRI scan. A series of multiple regressions were run to examine whether gender moderated the effects of nicotine group (control or nicotine user) on neuropsychological variables in a battery focusing on sustained attention and verbal memory (including the PASAT and California Verbal Learning Test-II (CVLT-II)), controlling for nicotine use, gender, past year alcohol use, and cotinine.* ***Results:*** *Gender significantly moderated the relationship between nicotine group status and sustained attention (p* ***Conclusions:*** *Consistent with previous research, male nicotine users performed worse than controls on sustained attention and memory tasks. Surprisingly, female nicotine users outperformed female controls on two verbal memory tasks. Additional research is needed to replicate the gender findings. Future studies may examine the impact of chronic nicotine exposure on neurocognition longitudinally to examine causal direction.* ***Financial Support:*** *NIDA R03 DA027457 (PI: Lisdahl) Abstract - ID: 208* ***Author(s):*** *Scott Novak* ***(Presenter)****, RTI International*
Erica Peters, Battelle Memorial Institute
Nick Peiper, RTI International
Mark Edlund, RTI International ***Title:*** *Illicit gabapentin use among nonmedical prescription opioid users: Findings from the national opioid misuse, abuse, and diversion study* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Epidemiology* ***Aims:*** *Gabapentin (GBP) is an anti-epileptic medication that is also emerging as a novel treatment for pain. There have been anecdotal reports of GBP abuse, but current most national data symptoms do not capture information on its prevalence, and to date, there are no epidemiological studies across a wide range of population sub-groups and geographic regions.* ***Methods:*** *The National Opioid Misuse, Abuse, and Diversion Study (NOMAD) is a national survey of nonmedical prescription opioid abusers (n=1,826) that was administered to United States citizens ages 18 or older who reported any nonmedical use of prescription opioid medications in the past month. The study also oversampled (a) persons who had at least one symptom of DSM-IV opioid use abuse/dependence and (b) injection drug use. Data were collected between June of 2015 and November of 2015 using targeted sampling in approximately 38 metropolitan areas in 30 states nationally. The measures were drawn from the Composite International Diagnostic Interview Schedule (CIDI), with modifications to the question wording for self-administration via audio-computer aided self-administration. Comparisons to the National Survey on Drug Use revealed no significant difference on common measures used in both studies.* ***Results:*** *The lifetime and past-year prevalence of GBP was 4% and 1%, respectively. Median age of onset was late adolescence (age 22). Cox-proportional hazard models were fit to predict the time-varying predictors of initiation. Significant predictors indicated that risk of initiation was elevated among experienced drug user groups, such as injection drug users (28%), poly-drug users (68%), and persons with Hepatitis-C (54%). The most prevalent method of acquisition reported was stealing the medication from a friend or family member who had a prescription (86%). Few (8%) reported receiving the medication directly from a physician, either by faking symptoms or as a treatment for pain. The most common motivation for abuse was euphoria (68%) followed by self-treatment for pain (32%).* ***Conclusions:*** *The prevalence of GBP abuse appears to be concentrated in high-risk groups of experienced prescription opioid abusers, so early intervention efforts are needed to prevent GHB from diffusing into the larger population of recreational and self-medicating abusers.* ***Financial Support:*** *Support for this project was funded by a Pfizer Investigator Initiated Research grant (#WI183138). Abstract - ID: 209* ***Author(s):*** *Delfin Lovelina Francis* ***(Presenter)****, The Tamil Nadu Dr. M.G.R. Medical University* ***Title:*** *An assessment of prevalence of substance abuse and associated factors among the medical and dental students in Chennai City, India* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Epidemiology* ***Aims:*** *To assess the prevalence of substance abuse and associated factors among the medical and Dental students in Chennai City, India.* ***Methods:*** *After obtaining the ethical clearance from Tagore dental college and hospital, using a validated questionnaire with demographic details, details of the substance abuse (name, duration, frequency, amount) and its source, attempt to quit in the past, ill-effects and legal consequences of substance abuse, factors associated and the impact on academia, a cross-sectional descriptive study was conducted among 450 undergraduate medical and dental students in private medical and dental colleges. The collected data was subjected to analysis using SPSS version20 software.* ***Results:*** *The prevalence of substance abuse was 22% among medical and dental students. An increase in substance abuse was observed in the latter years of medical education. 91% students using these substances were aware of the ill effects. The most common reasons for substance use were relief from psychological stress 74% and occasional celebration 72.%. Of the substance users, 56% made past attempts to quit the substance abuse.* ***Conclusions:*** *The present study found that nearly one-fourth of medical students, more males than the females, used at least one substance of abuse. Most of them did so despite knowing the ill effects and legal consequences of such use. Nearly one half of the study participants had made attempts to quit in the past but failed to maintain due to lack of will power. Psychological stress was the main factor leading to substance abuse.* ***Financial Support:*** *Self Abstract - ID: 210* ***Author(s):*** *Odochi Ohia-Nwoko* ***(Presenter)****, University of Houston*
Colin Haile, University of Houston
Therese Kosten, University of Houston ***Title:*** *Sex differences in novelty- and cocaine-induced behaviors in Lewis and Fischer 344 rats* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Stimulants* ***Topic:*** *Sex Differences* ***Aims:*** *Cocaine use is a significant public health concern in the United States, but there are no approved medications to treat individuals with cocaine use disorder (CUD). Identifying risk factors associated with the development of CUD may aid in directing specific and effective treatments to at-risk populations. Rodent models of CUD can help identify risk factors by examining how gender and genetics influence behavioral responses to cocaine. In this study, we compared the behavioral responses of male and female Lewis (LEW) and Fischer 344 (F344) rats during exposure to a novel environment and after cocaine administrations.* ***Methods:*** *Male Lewis (LEW) and Fischer 344 (F344) rats (n=7 per strain) and female LEW (n=5) and F334 (n=6) were exposed to a novel environment and also tested after three consecutive cocaine (15 mg/kg; IP) administrations given once per hour. For the novelty test, rats were placed in an open-field testing apparatus (TruScan, Coulbourn Instruments) for one 60-min session prior to cocaine administration. For the drug administration tests, activity measures were recorded for 60 min. after each cocaine injection. Ambulatory distance, rearing and time spent in the center (a measure of anxiety-like behavior) were recorded for both test conditions.* ***Results:*** *Results from the novelty tests revealed that LEW rats showed greater ambulation than F344 rats in the novelty condition (p < 0 .05), and male F344 rats spent the greatest time in the center (Sex effect: p < 0 .01, Strain effect: p < 0 .05, Sex x Strain: p < 0 .05), which reflects a lower level of anxiety compared to all other groups. Cocaine-induced ambulation in LEW rats was greater than F344 rats (p < 0 .01) and females showed greater ambulation than males (p < 0 .0001). Additionally, greater center times were observed in F344 rats of both sexes after cocaine compared to LEW rats (p < 0 .0001); however, the sex differences were strain-dependent. Female F344 rats had lower center times than their male counterparts, whereas LEW females had higher center times than LEW male****Conclusions:*** *Taken together, our observations suggest that genetics and sex contribute to the anxiogenic effects of cocaine.* ***Financial Support:*** *N/A Abstract - ID: 211* ***Author(s):*** *Kenneth Conner* ***(Presenter)****, University of Rochester Medical Center*
Timothy Wiegand, University of Rochester Medical Center
Rachel Gorodetsky, University of Rochester Medical Center
Rachel Schult, University of Rochester Medical Center
Kimberly Kaukeinen, University of Rochester Medical Center
Peter Crane, University of Rochester Medical Center ***Title:*** *Medical consequences of the use of prescription opiates and other medications in intentional self-harm* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Behavior* ***Aims:*** *The potential for abuse and unintentional overdose with prescription opiates is well-documented, but there are few data on the medical consequences of ingestion of opiates in acts of intentional self-harm (ISH). This is a critical gap because ISP with pharmaceutical agents is the most common method of suicidal behavior leading to medical attention, and increased availability of opiates may be expected to increase their use in ISP.* ***Methods:*** *This was a secondary analysis of hospitalized patients treated by a local toxicology consult service that participates in the multisite Toxicology Investigators Consortium Case Registry (ToxIC Registry; Rhyee et al., 2015). The current analyses examined ISP patients ages 13 to 65 (N=673). Data were analyzed using a series of multivariate linear regression analyses adjusted for age, sex, and the ingestion of drugs in multiple classes (vs. single class). Poisoning Severity Scores with range from 0 (none) to 4 (death) were the outcome (Persson et al., 1998). Presence/absence of a drug in various classes (e.g., opioid) and of specific agents (e.g., oxycodone) were the primary predictors.* ***Results:*** *In multivariate analyses, the ingestion of opiates (pp=0.030) were associated with higher poisoning severity, and the use of analgesics (p=0.028) were associated with lower poisoning severity. Analysis of specific agents identified several opiates, sedatives, and select other drugs that were associated with greater poisoning severity, along with a small number that were associated with lower poisoning severity.* ***Conclusions:*** *The ingestion of opiates is associated with more severe ISP events, suggesting that prescribing practices that limit the use of opiates may have benefits for the prevention of medically serious suicidal behavior. This conclusion appears to apply to prescription sedative drugs as well.* ***Financial Support:*** *None Abstract - ID: 212* ***Author(s):*** *Tanya Saraiya* ***(Presenter)****, TRACC Program*
Denise Hien, Adelphi University
Aimee Campbell, Columbia University and NYSPI ***Title:*** *Model minorities? Asian-American trauma and drug use* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Other (specify)* ***Other Drug Category:*** *Drugs and Alcohol* ***Topic:*** *Ethnic Differences* ***Aims:*** *Asian Americans are the fastest growing racial and ethnic minority group in the USA with a projected size of 40.6 million in 2050. Research has documented increasing rates of substance use and some of the highest rates of traumatic exposure among this group, but little information is available on the relationship between posttraumatic symptoms (PTSS) and substance use. Further, given that shame is a culturally relevant variable implicated in the use of drugs and alcohol, it was also examined as a potential mediator of substance use. This study aimed to address the*

substantial research gaps on PTSS prevalence, substance use risk, and the relationship between the two among Asian American minority individuals. ***Methods:*** *Asian American participants (East Asian=67%, South Asian=14%, Southeast Asian=17%, Multi-Asian=2%) recruited from Amazon Mechanical Turks (N=102) completed a 45-minute online assessment of substance use, shame, and PTSS. Hierarchical linear regressions were used to test the association between PTSS and shame on substance use, and shame was examined as a mediator of PTSS and substance use.* ***Results:*** *PTSS was significantly associated with alcohol use (ß=0.28, t(98)=2.84, p=.005) and drug use (ß=0.37, t(99)=3.84, pB*=0.14, *t*(101)=8.24, p t(97)=-0.27, p=.79) or drug use (ß=-.14, *t*(97)=-1.12, p=.27). Thus, shame was not a significant mediator of the relationship between PTSS and substance use.

Conclusions: Findings replicate evidence found in non-Asian American groups: PTSS is associated with greater drug and alcohol use. However, unlike research linking shame with substance use in other minority groups, this was not the case among this sample of Asian Americans. Shame may arise from trauma exposure, but it does not appear to lead directly to substance use. More research is needed to understand the risk and protective factors among Asian Americans to inform the development of culturally-appropriate substance use interventions and prevention strategies.

Financial Support: NIDA R25 DA035161

Abstract - ID: 213

Author(s):

Laurie Zawertailo **(Presenter)**, Centre for Addiction and Mental Health
Carolyn Peters, Centre for Addiction and Mental Health
Peter Selby, Centre for Addiction and Mental Health

Title: Treating tobacco dependence in addictions settings: Substance use co-morbidity and other predictors of cessation

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: The prevalence of tobacco dependence among those with a substance use disorder (SUD) is more than double the general population. However, treatment for tobacco dependence is seldom undertaken in addiction treatment facilities. We hypothesized that implementing tobacco dependence treatment within addictions settings would result in cessation outcomes that are comparable to that found in primary care settings but may be lower among those also in treatment for a SUD.

Methods: Between April 11, 2016 and November 28. 2016, 1,961 individuals enrolled in the smoking cessation program across 25 addictions settings. The program offered cost-free treatment for tobacco dependence consisting of behavioral counselling and nicotine replacement therapy for up to 26 weeks. Data from participants who completed a 3-month follow-up survey (n=490) were included in the analysis. Chi-square and t-tests for between group analysis of differences in baseline characteristics and smoking abstinence at 3-month follow-up was done using SPSS v.21.0. Additional analyses with covariates known to be associated with smoking cessation entered into a regression model will be done.

Results: Of the 490 participants analyzed, 199 (41% were in treatment for another SUD in the past 30 days while the remaining were currently being treated solely for tobacco dependence. Those in treatment for an SUD were younger (41 +/- 12 vs 50 +/- 13; $p < 0.001$), were more likely to have a lifetime history of mental illness (79% vs 61%; $p < 0.001$), but less likely to have any medical co-morbidities (38% vs 62%; $p < 0.001$). Self-reported abstinence at 3-month follow-up differed significantly between the two groups with those in treatment for another SUD reported lower quit rates compared to those in treatment for smoking alone (25% vs 38%; $p < 0.004$).

Conclusions: These preliminary findings suggest that smoking cessation can be successfully undertaken in those also in treatment for another SUD but specific attention may need to be paid to co-occurring mental health issues in order to improve quit outcomes.

Financial Support: This research is supported by the Ontario Ministry of Health and Long Term Care

Abstract - ID: 214

Author(s):

Ginnie Ng **(Presenter)**, Centre for Addiction and Mental Health
Robert Schwartz, University of Toronto
Alexa Minichiello, Centre for Addiction and Mental Health
Laurie Zawertailo, Centre for Addiction and Mental Health

Title: Health effects of electronic cigarettes: A systematic review of the literature

Abstract Category: Literature Review

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Other

Aims: While the awareness and use of electronic cigarettes (e-cigarettes) has increased in recent years, their associated health effects remain unclear. This review aimed to evaluate the existing literature regarding the safety and health effects of e-cigarette use and exposure.

Methods: A systematic literature search of academic databases and grey literature was conducted to identify relevant studies published up to December, 2016. Original research articles published in English in peer-reviewed journals were included. Using the GRADE system, the overall quality of evidence was assessed as low.

Results: Findings suggest low to very low levels of most of the toxicants measured in e-cigarette liquid and vapor. Additionally, toxicants levels in e-cigarette vapor were often significantly lower than those measured in tobacco cigarette smoke. Exposure to e-cigarette liquid and vapor was associated with some cytotoxic effects. Respiratory and cardiovascular effects such as increased airway resistance and increased heart rate were reported in some clinical studies; however, findings were equivocal. Adverse effects associated with e-cigarette use were mild and often attributable to nicotine exposure. Elevated environmental levels of nicotine, metals, and particulate matter were measured during e-cigarette use, suggesting minimal potential passive exposure. Current studies focus on the effects of acute exposure and are often limited by small sample sizes and large variability in products and use patterns.

Conclusions: Limited information is currently available on the safety and health effects of e-cigarette use and exposure. E-cigarette vapor contains lower levels of toxicants compared to cigarette smoke. However, current findings from clinical studies assessing the human health effects of active and passive e-cigarette exposure reflect only short-term exposure. As such, the health effects of long-term exposure are unclear. The focus of future research should be to empirically evaluate and quantify the toxicity and health effects of both acute and prolonged e-cigarette use and exposure to inform the development of evidence-based government policies.

Financial Support: This work was supported by a Health Services Research Grant from the Ontario Ministry of Health and Long term Care

Abstract - ID: 215

Author(s):

Helena Zhang **(Presenter)**, CAMH Nicotine Dependence Clinic
Bernard Le Foll, Centre for Addiction and Mental Health
Peter Selby, Centre for Addiction and Mental Health
Laurie Zawertailo, Centre for Addiction and Mental Health

Title: Real-world effectiveness of bupropion and varenicline for smoking cessation: An internet-based randomized controlled trial

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: Both bupropion (BUP) and varenicline (VAR) have been shown in clinical trials to be effective for smoking cessation with end of treatment (EOT) abstinence up to 50%. However, their real-world effectiveness is not known. The purpose of this study was to evaluate the short and long-term effectiveness of bupropion and varenicline for smoking cessation in treatment seeking smokers in a real-world setting using a novel internet-based methodology. we hypothesize that individuals treated with VAR will be more likely to be quit at EOT than those treated with BUP. However, overall abstinence rates will be lower than those observed in standard RCTs.

Methods: Participants were recruited via the internet and enrolled online. If eligible, they were randomized 1:1 to receive a 12 week supply of either BUP (SR 150 mg) or VAR (1mg). Follow-up surveys were conducted at weeks 4, 8 and 12 and 6 months and 12 months to assess 7-Day point prevalence abstinence and 30-day (weeks 9-12) continuous abstinence.

Results: To date there are 857 participants enrolled (n=447 for VAR and n= 410 for BUP). Our recruitment goal of n=500 per group will be met by the end of 2016. Intent-to-treat (ITT) quit rates were similar to that found in clinical trials VAR (44%) vs BUP (28%) at EOT (OR: 1.9; 95% CI: 1.33-2.77). However, they were not significantly different at 6 months (30% vs 28%) and 12 months (28% vs 27%).

Conclusions: These initial findings suggest that the real-world effectiveness of these two pharmacotherapies are similar to what has been shown in clinical trials, thus demonstrating the validity of out methodology for conducting a 'virtual' randomized controlled medication trial. This study provides initial evidence that this is a feasible and cost-effective method for conducting post-marketing real-world effectiveness studies. Findings from the completed study will be presented.

Financial Support: This research was funded by the Global Research Awards in Nicotine Dependence (GRAND) #WS2391913.

Abstract - ID: 216

Author(s):

Michael Hoang **(Presenter)**, Centre for Addiction and Mental Health
Peter Selby, Centre for Addiction and Mental Health
Martin Zack, Centre for Addiction and Mental Health
Laurie Zawertailo, Centre for Addiction and Mental Health

Title: Duration, intensity and frequency of physical activity as predictors of smoking cessation outcomes among treatment-seeking patients

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: Physical activity has been used as an adjunctive strategy for treating tobacco dependence; however evidence of its efficacy for long-term smoking cessation has been mixed. These equivocal findings may be due to the wide degree of variation in the duration and intensity of physical activity among these various studies.

Methods: To attempt to address this, a secondary analysis of data from 23,363 treatment-seeking daily dependent smokers participating in a province-wide smoking cessation program providing nicotine replacement therapy and behavioral counselling through primary care clinics was performed. We evaluated the relationship between physical activity at the time of enrollment (in terms of intensity, duration and frequency) and cessation outcomes (complete abstinence or > 50% decrease in cigarettes per day (CPD)) at 6 and 12 month follow-up. Odds ratios were adjusted for age, gender, socioeconomic status (as determined by education and employment status) and cigarette dependence at baseline.

Results: Participating in a combination of vigorous and light intensity physical activity was associated with both increased odds of quit at 12 month follow-up (AOR = 1.34, 95%CI [1.014, 1.785], p = 0.040) and reduced CPD at 6 month follow-up (AOR = 1.541, 95% CI [1.113, 2.133], p = 0.009). Additionally, there was increased odds of reduced CPD at 6 month follow-up with moderate-vigorous (AOR = 1.794, 95%CI [1.072, 3.007], p= 0.026), light-moderate (AOR = 1.374, 95% CI [1.061, 1.774], p = 0.016), and all three intensities (AOR = 1.356, 95% CI [1.020, 1.804], p = 0.036) relative to being sedentary. No association was found with respect to daily duration or frequency of physical activity and cessation outcomes.

Conclusions: These findings indicate that intensity of physical activity is significantly associated with modifying odds of quit at 12-month follow-up and odds of reduced smoking at 6-month follow-up and that being physical active in a variety of ways improves quit outcomes over being sedentary. Future analysis will examine the effect of physical activity on relapse prevention.

Financial Support: This research is supported by the Ontario Ministry of Health and Long term Care

Abstract - ID: 217

Author(s):

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Title: Circadian disruption during opioid agonist maintenance: Associations with heroin and cocaine use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Circadian disruption—asynchrony between the 24-hour pattern of behavior or physiology and the 24-hour pattern of light and dark—has been associated with poor health. To better understand circadian aspects of substance use disorders, we measured the behavioral circadian rhythms and drug use of opioid-dependent persons. We hypothesized that drug use would be associated with greater circadian disruption.

Methods: Outpatients receiving methadone (n = 15) or buprenorphine (n = 22) maintenance at our treatment-research clinic wore a custom-made light and activity monitor (Daysimeter) 24 h/day for 16 weeks. Circadian disruption was quantified by phasor analysis of daily patterns of light-dark exposure and activity-rest. Participants also carried a smartphone for ecological momentary assessment (EMA) of behavior and emotion. Drug use was measured by EMA self-report and thrice-weekly urinalysis.

Results: Results are reported for participants who provided within-subject data (e.g., positive and negative urinalysis). By both self-report [OR (95% CI): 0.024 (0.007, 0.079), p < .0001] and opiate urinalysis [0.15 (0.026, 0.63), p = .0095], days with heroin use were associated with smaller phasor magnitudes, indicative of greater circadian disruption. Days with self-reported cocaine use were also associated with smaller phasor magnitudes [0.236 (0.087, 0.64), p = .0046], but days with cocaine-positive urinalysis were associated with larger phasor magnitudes [10.86 (2.486, 47.453), p = .0015], indicative of less circadian disruption.

Conclusions: Heroin and cocaine use were associated with differences in participants' behavioral circadian rhythms. More work is needed to understand the differences between cocaine self-report and urinalysis. Considering heroin vs. cocaine urinalysis, the opposite associations with circadian disruption may be related to the direct pharmacological effects of the drugs or lifestyle factors related to their use.

Financial Support: NIDA IRP, NIDA U01DA023822, NIA R01AG034157

Abstract - ID: 218

Author(s):

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Title: Intermittent intake of rapid cocaine injections promotes incubation of drug craving

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Dependence

Aims: A growing literature suggests that a rapid drug onset and intermittent drug intake might each push the addiction process forward most effectively (Wakabayashi et al. 2010; Allain et al. 2015). Prior work shows that rats with continuous access to i.v. cocaine (such that brain levels remain continuously high), rapid drug injections promote relapse following abstinence (Wakabayashi et al. 2010). However, recent observations suggest that cocaine addicts take the drug intermittently so as to produce spiking rather than continuously high brain levels of drug (Beveridge et al. 2012). As the vulnerability to relapse is a key feature of addiction, here we determined how variation in the speed of drug onset influences the risk of relapse using a new intermittent-access self-administration procedure (IntA) that achieves such spiking brain levels of drug (Zimmer et al. 2012).

Methods: Male wistar rats (N=70) were first allowed to self-administer i.v. injections of cocaine (0.25 mg/kg/injection) during 10 sessions. During each session (6 h), cocaine was available in 6-min bins, separated by 26-min time-out periods. Cocaine injections were delivered over 5s in one group, and over 90s in the other. Each injection was accompanied by a light-tone signal (drug cue). One and 45 days after the last IntA session, we gave all rats a single extinction session (6 h) during which they could lever-press but the cocaine reward was no longer given. Immediately following this session, we assessed cue- and cocaine-induced reinstatement of lever-pressing behaviour, a measure of relapse behaviour.

Results: Cocaine intake was equivalent in the two groups during the IntA phase. However, on both days 1 and 45 of withdrawal, the drug cue and cocaine itself (10mg/kg, i.p.) reinstated lever-pressing behaviour only in the 5s-rats. These rats also increased their lever-pressing behaviour between days 1 and 45 (incubation of craving for cocaine).

Conclusions: Thus, exposure to rapidly rising spikes in brain cocaine levels achieved during a rapid drug delivery might facilitate addiction by evoking changes in the brain that lead to relapse and increased drug craving.

Financial Support: Fonds de la recherche en santé du Québec (FRSQ)

Abstract - ID: 219

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Title: Social rank change and dopamine in pigs

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Other (specify)

Other Drug Category: Dopamine system

Topic: Neurobiology

Aims: Dopamine (DA) signaling is central in hypothesized causal paths linking social rank (SR) with later mental/behavioral disturbances, and with drug self-administration. Here, we study whether *change in one's SR* induces DA change.

Methods: A novel pig model ranking-and-re-ranking protocol uses before and after DA and other monoamine (MA) levels in cerebrospinal fluid (CSF). For 2 weeks, 16 recently weaned male pigs were socially housed in 4 groups, with video-recordings for blinded SR assessments (?, ?, ?, ?). Next, all 4 ? were housed together, as were all 4 ?, etc., again with video-recording for blinded SR. Via HPLC, serial CSF MA levels were assessed.

Results: Results disclose a positive relationship linking SR change and post-rank change in CSF DA level but not other MA levels; one unit increase of SR predicts a 17.4 pg/ml increase in CSF DA level (95% CI= 1.2, 33.7).

Conclusions: Our new evidence indicates DA change after SR change. We hope to stimulate new re-ranking protocols in pig and other species. We plan replication with 16 piglets and new data by June 2017.

Financial Support: NIDA T32 & K05

Abstract - ID: 220

Author(s):

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Title: Positron emission tomography imaging of nicotine-induced dopamine release in squirrel monkeys using [18F]Fallypride

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Nicotine/Tobacco

Topic: Imaging

Aims: Nicotine, the principal psychoactive tobacco constituent, is thought to produce its reinforcing effects via actions within the mesolimbic dopamine (DA) system. The objective of the current study was to examine the effect of nicotine on dopamine D2/D3 receptor availability in the nonhuman primate brain with the use of the radioligand [^{18}F]fallypride and positron emission tomography (PET).

Methods: Ten adult male squirrel monkeys were the subjects of the current study. Each subject underwent two PET scans, one with an injection of saline (IV) and one with an injection of nicotine (0.032 mg/kg, IV). The D2/D3 antagonist, [^{18}F]fallypride, was delivered IV at the beginning of each scan and nicotine or saline was delivered at 45 minutes into the scan. ASIPro™ software was used to indicate regions-of-interest (ROI) in specific brain regions and these were used to quantify standard uptake values (SUVs). The SUV is defined as the average concentration of radioactivity in the ROI x body weight/injected dose. Using the cerebellum as a reference region, standard uptake ratios (SURs) [$(SUV_{ROI}/SUV_{cerebellum})-1$] were calculated to compare saline and nicotine effects in specific brain regions.

Results: A significant decrease of SUR values in the caudate, putamen, and ventral striatum was observed during the nicotine, but not saline scans.

Conclusions: Like other drugs of abuse, these results indicate that nicotine administration resulted in DA release in the mesolimbic DA system as evidenced by significant SUR reductions in the caudate, putamen, and ventral striatum following nicotine administration. These findings from a nonhuman primate model provide further evidence that the mesolimbic dopamine system is affected by the use of products that contain nicotine.

Financial Support: The research reported in this abstract was supported by the US Food and Drug Administration/Center for Tobacco Products.

Abstract - ID: 221

Author(s):

Chelsea Brown **(Presenter)**, UCSF
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Title: Effects of NAC Homer2 manipulation on methamphetamine reward in B6 mice

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Genetics

Aims: Homer2 is a glutamate receptor post-synaptic scaffolding protein implicated in methamphetamine (MA)-induced excitatory neurotransmission and addiction-related plasticity, notably within the nucleus accumbens (NAC). The magnitude of MA-conditioned reward is correlated with NAC Homer2 expression in mice, suggesting a role for NAC Homer2 in MA addiction vulnerability. Given this, we aimed to determine a cause-effect relation between NAC Homer2 and MA addiction vulnerability and tested the hypothesis that altering Homer2 expression within the NAC core and shell subregions will influence MA reward/reinforcement.

Methods: We used an adeno-associated viral vector carrying short hairpin RNA (shRNA) against Homer2b to reduce protein expression in the core or shell of adult male C57BL/6J mice (n=57). Place-conditioning assayed initial MA-preference. Operant conditioning examined MA reinforcement and oral intake. Fluorescence microscopy verified placement and viral expression. Data were analyzed using Student's t-tests and analyses of variance on SPSS software.

Results: Intra-core shRNA-Homer2b increased MA CPP, as well as MA reinforcement, but not MA intake. Intra-shell shRNA-Homer2b reduced MA preference in a drug-primed, but not drug-free, state and decreased MA reinforcement at MA low doses.

Conclusions: NAC shRNA-Homer2b effects on MA preference and reinforcement is neuroanatomically selective; Homer2b in the core and shell inhibits and stimulates, respectively, MA reward/reinforcement. Future work probes the role for Homer2 in specific neurobehavioral subcircuits as it relates to addiction vulnerability and intervention.

Financial Support: This work was funded by NIDA grant R01DA039168 (C.D. Bryant, PI; K.K.S., Subaward PI).

Abstract - ID: 222

Author(s):

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Title: Cannabis motives and social anxiety: Effects of race and gender in cannabis use and problems among young adults

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Sex Differences

Aims: Despite documented differences in rates and course of cannabis use by race and gender, a knowledge gap exists regarding roles of gender and race in shaping the contributions of social anxiety (SA) and motives to cannabis use and problems. We examined race and gender in the relationship of SA and cannabis motives to cannabis use frequency and problem severity.

Methods: College students were recruited from 2 northeastern universities (1 all-female) who completed measures online. The sample comprised 227 students (81.02% female; 79.3% 18-22 years of age ; SD=2.71). Cases with missing data (n=57) were excluded. Racial background was: African American (AA)=9.98%, Caucasian=60.08%, Native American/American Indian=0.76%, Asian=12.93%, Multi-Ethnic=8.37%, Other=7.98%, with 14.93% Hispanic/Latino, and 122 (54%) endorsing lifetime cannabis use. Separate hierarchical regression models were constructed for cannabis problems and use frequency.

Results: Age, AA, social anxiety, and motives (enhancement, expansion) had main effects on use frequency. Gender had main effects on use and problems. Two interactions emerged for cannabis use frequency: AA X Expansion Motives (?=0.53, *p*=.02); and AA X SA (?=-0.34, *p*=.03). Three interactions emerged for problem severity: Gender X Conformity Motives (?=0.32, *p*=.01); Gender X SA (?=0.48, *p*=.01); and Conformity Motives X SA (?=0.46, *p*=.03).

Conclusions: annabis use frequency and problems were elevated among males, AAs, and those low in conformity motives and anxiety. Conformity motives may be a target of clinical interventions for cannabis problems. There is also a need to consider race and gender in the development of interventions around motives. Further research is needed to better understand relationships among cannabis use, motives, and race.

Financial Support: NIDA K12-DA-000167

Abstract - ID: 223

Author(s):

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Title: Neural activation during inhibition to smoking cues associated with smoking abstinence

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Imaging

Aims: Poor inhibitory control has been suggested to underlie dependence and relapse in tobacco smokers, though evidence is inconsistent, and it is not clear whether inhibitory control deficits are specific to smoking-related cues. As part of a smoking cessation clinical trial, we investigated the impact of smoking status on neural correlates of inhibitory control to smoking and neutral cues and the relationship between neural correlates of cued inhibitory control and nicotine dependence severity and cessation outcomes.

Methods: Twenty-four nicotine-dependent smokers and 20 matched non-smoking controls completed a Go/NoGo task with smoking and neutral images during functional MRI in a 3T Siemens Trio scanner. Functional scans were acquired using a T2* echoplanar sequence (TR=2s; TE=30ms; flip angle=90°; FOV=24cm; slice thickness=5mm). Associations between BOLD signal during NoGo tasks and nicotine dependence severity scores and abstinence outcomes were analyzed.

Results: Participants were less accurate on NoGo trials, main effect for trial type ($F(3,108)=66.68$, $p < 0.001$). Smokers had less BOLD activation than non-smokers during NoGo trials to neutral and to smoking cues. In smokers, BOLD activation in nucleus accumbens, insula, and anterior cingulate cortex during NoGo trials to smoking cues positively correlated with smoking abstinence and were inversely correlated with severity of nicotine dependence. Those who relapsed had lower inhibitory control activation to smoking cues in the bilateral insula and left anterior cingulate cortex than those who maintained abstinence. No correlations were found between neutral images and smoking-related scores, suggesting that this effect was driven by cue reactivity to smoking images.

Conclusions: Smokers had decreased brain activation during inhibitory control tasks, independent of cue type. Decreased activation during inhibitory control to smoking related cues may reflect potentiated relapse vulnerability.

Financial Support: This work was supported by grants 1K01DA034093 (Jodi M. Gilman) and K24 DA030443 (A. Eden Evins) from NIDA.

Abstract - ID: 224

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Title: Transience, networks and hepatitis C and HIV risk among young persons who inject drugs

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: In the United States, alarming increases in injection drug use (IDU) and HIV and hepatitis C (HCV) incidence are occurring among young persons who inject drugs (PWID) from non-urban communities, a population that in prior decades exhibited low to modest levels of HIV and HCV rates. We hypothesized that PWID with residential transience (i.e., having >= 2 residences in the past year), when compared to non-transient PWID, would differ by sociodemographic, behavioral, and network characteristics.

Methods: We conducted a cross-sectional personal (egocentric) network and geographic study of 164 young (ages 18-30) PWID and collected data on their injection and sexual network members. Most participants were registered members of a large syringe exchange program with five locations in major outdoor heroin and cocaine markets that attract both urban and non-urban drug users. Multivariable logistic and multinomial regressions were conducted and all reported models adjusted for demographic and network characteristics.

Results: Participants (median age=26) were mostly male (65%), non-Hispanic white (71%), and had been injecting drugs for a median of 6 years. Among transients (59% of sample), we identified a highly mobile (median residences=4) sub-group who lived in both urban and suburban areas (cross-over transients) within the past year, who in multivariable analyses, compared to PWID who reported only urban residence(s), were more likely to report receptive syringe sharing (adjusted odds ratio [aOR]=2.03; 95% CI 1.02-4.01), 2 or more sex partners (aOR=5.11; 95% CI 1.52-17.3), injecting in one of the major outdoor drug market areas of Chicago (aOR=6.05; 95% CI 1.24-29.5), and having more suburban network members (aOR=1.95; 95% CI 1.12-3.38).

Conclusions: Because they link suburban and urban networks, cross-over transients may facilitate transmission of HIV/HCV between higher and lower prevalence settings.

Financial Support: This study was funded by a pilot grant award from the Chicago Developmental Center for AIDS Research (Grant#5P30AI082151-04). The funding sources were not directly involved in the collection, analysis or interpretation of the data; in the writing of this abstract; or in the decision to submit the paper for presentation.

Abstract - ID: 225

Author(s):

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Title: The impact of sex, dose and inter-trial interval upon methamphetamine preference of rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Sex Differences

Aims: Substantial individual variation exists in the propensity to select drugs of abuse (cocaine) over a competing reinforcer (food). Further, the distribution of individuals that prefer cocaine over food is sex-dependent, with females exhibiting a higher propensity to forgo food reinforcement to obtain cocaine as compared to males. The aim of the present study was to extend prior findings from cocaine studies to other drugs of abuse such as methamphetamine (METH). First we determined whether there are individual differences in METH versus food choice. Second we determined whether these individual differences were influenced by the following factors: sex, METH dose, type of food pellet administered during operant testing, and inter-trial-interval (ITI).

Methods: Sprague Dawley rats (n=49) are implanted with an intravenous catheter and then trained for METH or food reinforcement on alternating days followed by assessment of reinforcer choice and progressive ratio (0.5, 0.1, 0.2 mg/ kg/infusion METH). We used both high fat pellets and banana-flavored pellets. We quantified the value placed on METH as a reinforcer in relation to the value placed on food, in modulating the motivation a rat expresses for each of the choice items.

Results: In this study, females exhibited higher and more plastic (i.e. dependent) selection between METH over a competing reinforcer across all experimental factors (p'sF(1, 48)= 3.804, p < 0 .05]. In both sexes the percentage of METH preferring rats decreased dramatically as a function of the ITI between 20s and 10min.

Conclusions: Results of this pilot study are consistent with the growing body of clinical and preclinical evidence demonstrating that females exhibit a higher addiction vulnerability for stimulant drugs of abuse. Furthermore, factors such as test parameters of dose and ITI also impact METH preference are important to consider when designing an experiment with clinical translatability and significance. This experiment expands our understanding of the relation between METH preference and individual vulnerability in 4 facets; sex, dose, nature (e.g., palatability) of the competing reinforce and inter-trial interval

Financial Support: Keck Research Grant

Abstract - ID: 226

Author(s):

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Title: The association of learning strategy and delayed recall in adolescents and young adult marijuana users and controls

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Adolescent

Aims: Verbal learning and memory deficits are common in young marijuana (MJ) users (Lisdahl et al., 2014); however, few studies have addressed the impact of learning strategy and executive function on list-learning tasks. This study compared relative use and influence of "higher-order" semantic clustering vs. serial clustering on a trial-by-trial basis during encoding on LDFR in the CVLT-II among adolescent and young adult MJ users and controls. Further, we examined whether inhibitory control was related to learning strategy and resulting LDFR performance.

Methods: 138 demographically matched adolescents (51 MJ, 87 CON) were recruited from the community and administered the CVLT-II and D-KEFS Color Word Interference (CWI) task as part of a neuropsychological battery. An organization strategy ratio (OSR) score was calculated (semantic divided by serial clustering score) for each trial. Repeated-measures ANCOVA was conducted with MJ group, CWI performance (high vs. low), and MJ*CWI predicting OSR across CVLT-II trials. Next, linear regressions were run to examine whether MJ group status, OSR, and CWI performance predicted LDFR score. Alcohol and nicotine use were covariates in both analyses.

Results: MJ use did not predict OSR (p>.05), while faster CWI completion time significantly predicted better OSR (p=.05). Further, OSR at each encoding trial predicted LDFR (p

Conclusions: We found no differences between MJ users and controls in strategy use during encoding trials, but better inhibitory control predicted higher OSR. Further, higher OSR scores during encoding trials predicted better LDFR. Inhibitory control was moderately associated with better LDFR, but did not mediate the relationship between OSR and LDFR. More robust associations between OSR and LDFR were observed as trials progressed, indicating that learning strategy may be a predictor of LDFR, but does not account for the verbal memory deficits previously observed in MJ users.

Financial Support: R01 DA030354-01 NIH/NIDA, PI: Krista Lisdahl, PhD

Abstract - ID: 227

Author(s):

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Title: Influence of treatment-induced changes in smoking-cue reactivity on long-term smoking abstinence

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Imaging

Aims: Smokers demonstrate increased functional magnetic resonance blood oxygen level dependent (fMRI BOLD) response in regions implicated in visuospatial attention and reward when they view smoking-related images, and response magnitude may predict smoking cessation outcomes. We seek to explore the influence of nicotine replacement therapy on smoking-cue reactivity. We hypothesize that participants who achieve and maintain abstinence will demonstrate reduced BOLD responses to smoking cues at end of treatment and at 6 months in the extended visual system; dorsal striatum; anterior and posterior cingulate gyrus; and dorsal and medial prefrontal cortex.

Methods: In a 12-week randomized controlled study, smokers unable to quit two weeks after starting nicotine patch treatment (21 mg/day) received either (A) titrated nicotine patch dosing or (B) 21 mg/day nicotine patch treatment plus breakthrough oral nicotine mouth-spray. Participants completed fMRI scans following overnight abstinence at baseline, end of treatment, and at 6-month follow-up. BOLD response was measured while participants completed a smoking-cue reactivity task, where they passively viewed smoking-related and neutral imagery in a block design.

Results: To date, 25 participants (target enrollment n= 50) have been enrolled (14M;11F, age = 49.0±12.1, FTND = 5.4±1.5, CPD = 19.9±8.2) and 23 baseline, 14 end-of-treatment, and 13 6-month follow-up scans have been completed. Seventeen participants who completed treatment achieved the primary outcome of 4 weeks of continuous abstinence (59% quit rate) and 41% were abstinent at 6-months. Preliminary analysis of scan data from the first 11 subjects indicate signicant decreases in cue reactivity at end of treatment compared to baseline in the precentral gyrus and cuneus only in smokers who were able to quit in the first two weeks using 21 mg patch. We will present additional analyses of fMRI BOLD changes over time in the regions of interest described above.

Conclusions: Initial and treatment-related changes in neural responses to smoking cues may help explain the ability to achieve and maintain smoking abstinence.

Financial Support: This project is supported by unrestricted research funds from CAMH held by the PIs.

Abstract - ID: 228

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Title: Off-label pharmacotherapy in substance use disorders

Abstract Category: Literature Review

Abstract Detail: Human

Drug Category: Polydrug

Topic: Treatment

Aims: Although not supported by strong scientific evidence, off-label use of drugs is relatively common in medical practice. We aimed to assess and grade the strength of evidence of off-label drugs in the treatment of substance use disorders (SUD) and develop a consensus document that can be useful in medical practice

Methods: We carried out a systematic literature review that include meta-analysis,randomized double-blind placebo controlled trials,non randomized controlled trials and observational studies to examine scientific evidence for off-label drugs used to treat five SUD.The level of evidence was established according to Katzman Guidelines. The off-label drugs were classified into two groups: 1)supported with scientific evidence (meta-analysis, randomized controlled trials) and 2) without evidence (uncontrolled trials and anecdotal reports or unfavorable risk-benefit profile

Results: As a result of the review, recommendations were published by Catalan Public Health Authorities. 137 articles were found. Off-label drugs with scientific evidence in alcohol consumption reduction were topiramate and gabapentin; in cannabis withdrawal dronabinol and gabapetin, in cannabis consumption reduction N-acetyl cysteine and gabapentin; in opiates withdrawal buprenorphine and clonidine, in opiates consumption reduction buprenorphine and slow release oral morphine. In benzodiazepine withdrawal valproate, paroxetine and trazodone; in cocaine consumption reduction topiramate, N-acetylcysteine and ondansetron

Conclusions: There is no indication for routine off-label prescription in SUD*, it* may be an option in cases where s*tandard* therapies have failed. This work can *help reduce variability of off-label prescription and* review the level of evidence *that supports clinical practice*.

Financial Support: We don't have Financial Support

Abstract - ID: 229

Author(s):

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Title: Regional cerebral blood flow in buprenorphine-maintained opioid addicts: Associations with cognition, impulsivity, and substance use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Imaging

Aims: We recently demonstrated alterations of metabolite concentrations in prefrontal brain of opioid dependent individuals on buprenorphine that related to neuropsychological deficits and substance use (Murray et al. JART 2016). Research on regional cerebral blood flow (rCBF) in opioid dependence is limited, has used almost exclusively invasive nuclear medicine studies, and suggested generally lower relative CBF compared with healthy controls in frontal, temporal, and occipital lobes. Here, we report on MRI-based cortical rCBF measures in cigarette-smoking OD (sOD) on buprenorphine therapy.

Methods: We used non-invasive arterial spin labeling to contrast absolute cortical perfusion in sOD to that in abstinent smoking alcoholics (sALC) and healthy controls (CON).

Results: 18 sOD on buprenorphine for at least 3 months had reduced their substance use (cocaine, amphetamines, marijuana, alcohol) during the year before study. Their cognitive performance was lower than that of 35 smoking and 29 non-smoking CON, but comparable to that of 20 sALC; sOD had higher self-reported impulsivity than nsCON, comparable to that of sALC and sCON. sOD had *lower* perfusion than sALC and nsCON in insula, lateral orbitofrontal and superior temporal cortices, hippocampus, and putamen. Perfusion was *higher* in anterior cingulate cortex and globus pallidus of sOD compared to the other groups. In most brain regions, sOD had greater age-related perfusion declines than all other groups. In sOD, lower regional perfusion related to greater amphetamine use, greater opiate use and duration, higher self-reported impulsivity and weaker visuospatial skills.

Conclusions: The data demonstrate abnormal perfusion with neuropsychological correlates in sODI, which both may constitute new biomarkers of treatment response and specific targets for behavioral and pharmacological treatment of most opioid addicts on buprenorphine therapy.

Financial Support: R01 AA10788, P50 DA009253, K01 DA24136

Abstract - ID: 230

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Norikazu Kiguchi, Wakayama Medical University
Shinsuke Matsuzaki, Wakayama Medical University

Title: Peripheral pro-inflammatory cytokines participate in chronic morphine-induced hyperalgesia in mice

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Opiates/Opioids

Topic: Behavior

Aims: Accumulating evidence suggests that long-term opioid use paradoxically elicits an increment of sensitivity to noxious stimuli, which is known as hyperalgesia. Although the mechanism of opioid-induced hyperalgesia has been investigated within the brain and spinal cord, there is no report showing the involvement of pro-inflammatory cytokines, including chemokines, in peripheral nerves. On the other hand, we clarified that the pro-inflammatory cytokines in peripheral nerves contributed to chronic pain induced by vincristine or peripheral nerve injury. In this experiment, we elucidated the participation of pro-inflammatory cytokines located on peripheral nerves in chronic morphine-induced hyperalgesia.

Methods: Morphine was injected twice a day for 1 – 10 days in male ICR mice, systemically or peripherally. On the next day after last morphine injection, mechanical hyperalgesia was evaluated by von Frey test. After the evaluation of pain thresholds, sciatic nerve and lumbar spinal cord were collected, and cytokine mRNAs were quantified by RT-PCR.

Results: After morphine treatment (100 mg/kg, s.c., twice a day) for 4 days, pain threshold (g) was decreased, indicating mechanical hyperalgesia. The mRNAs of interleukin-6, CC chemokine ligand-2 and -3 in the sciatic nerve were significantly up-regulated by the chronic morphine treatment. In contrast, these mRNA up-regulations were not observed in the lumbar spinal cord. When the mechanical hyperalgesia was elicited after chronic morphine treatment, spontaneous morphine withdrawal signs, such as body weight loss and corticosterone increase, were not observed. After morphine treatment (10 mg/kg, s.c., twice a day) for 10 days, but not for 4 days, mechanical hyperalgesia was evoked. Moreover, peripheral injection of morphine (surrounding area of the sciatic nerve; 200 nmol, twice a day) for 4 days produced mechanical hyperalgesia.

Conclusions: These results suggest that mechanical hyperalgesia elicited by chronic morphine treatment may be associated with the up-regulation of pro-inflammatory cytokines in peripheral nerves.

Financial Support: JSPS KAKENHI 15K10563

Abstract - ID: 231

Author(s):

Yukiko Washio **(Presenter)**, Christiana Care Health Services/University of Delaware
Neal Goldstein, Christiana Care Health Services/Drexel University
Amy Mackley, Christiana Care Health Services
Matthew Hoffman, Christiana Care Health Services
Robert Locke, Christiana Care Health Services
David Paul, Christiana Care Health Services

Title: Receipt of antenatal steroids and respiratory support among substance-exposed premature infants

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Perinatal

Aims: A major health concern among premature infants is lung development, which can be effectively treated with antenatal steroid treatment for pregnant patients. To examine the likelihood of maternal receipt of antenatal steroid treatment and infant respiratory support (continuous positive airway pressure (CPAP), ventilation, or oxygen support) among NICU infants whose mothers reported cigarette smoking and/or illicit drug use while they were pregnant.

Methods: Secondary data analyses were conducted between 1997 and 2015 for infants of gestational age between 29 and 36 weeks. We conducted descriptive and multivariable analyses to assess the prevalence of each variable and independent contributions of self-reported smoking and drug use with exposure to antenatal steroid and respiratory treatment.

Results: Among 9,388 eligible infants included in the analyses, 17% were exposed to prenatal cigarette smoking and 8% to any illicit drug (heroin: 1%; cocaine: 3%; cannabis: 6%). Less than 1% were diagnosed as NAS. Thirty-four percent were exposed to antenatal corticosteroids treatment, and on average 59% received a respiratory support. Adjusted analyses showed exposure to cigarette smoking and NAS diagnosis were associated with lower likelihood of antenatal corticosteroids treatment (AOR: 0.82 [95%CI: 0.68, 0.99]; AOR: 0.44 [95%CI: 0.24, 0.76]). Prenatal exposure to cigarette smoking was also associated with lower likelihood of receiving a respiratory support (AOR: 0.83 [95%CI: 0.69,1.00]).

Conclusions: Self-reported cigarette smoking and NAS diagnosis were associated with lower likelihood of exposure to antenatal corticosteroids. Though the literature showing long-term adverse outcome in offspring from prenatal exposure to cigarette smoking, cigarette smoking exposure did not worsen the respiratory outcome among NICU infants.

Financial Support: Nothing

Abstract - ID: 232

Author(s):

Shivani Khan **(Presenter)**, University of Florida
Bin Yu, University of Florida
Sadaf A Milani, University of Florida, Department of Epidemiology
Linda Cottler, University of Florida
Catherine Woodstock Striley, University of Florida

Title: Urban, suburban and rural differences in patterns of alcohol, cigarette and marijuana initiation by age among US youth

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Adolescent

Aims: This study aims to assess urban, suburban and rural differences in patterns of risk of initiation for alcohol, cigarette and marijuana use by age using a national sample of US youth.

Methods: Data came from the National Monitoring of Adolescent Prescription Stimulants Study (N-MAPSS) which recruited a sample of 11,048 10 to 18 year olds using entertainment-venue intercept method from 10 US metropolitan areas. The N-MAPSS was a cross-sectional study that examined a broad range of risk factors for prescription stimulant use and misuse among US youth. The assessment also asked about the age participants first used alcohol, cigarettes and marijuana. Using hazards survival models, patterns of risk of alcohol, cigarettes and marijuana initiation were characterized from birth to 18 years of age by each year of age. Urban, suburban and rural were categorized based on population density, city limits and proximity to city limits.

Results: Log-rank tests indicated significant differences in the overall estimated hazards of alcohol and cigarette use initiation by urbanicity. The overall hazard levels for rural and suburban youth were significantly higher than urban youth for both alcohol and cigarette use initiation. There was no difference in the estimated hazards of alcohol and cigarette use initiation between rural and suburban youth. Also, there was no difference in the estimated hazards of marijuana use initiation by urbanicity.

Conclusions: Findings of this study suggest that age patterns of the risk of alcohol and cigarette use initiation vary for rural and urban youth and suburban and urban youth. Prevention resources need to be distributed to reach youth in rural and suburban areas who are at increased risk for early initiation.

Financial Support: N-MAPSS was conducted under contract with Pinney Associates, Inc. and funded by Shire Development LLC and Noven Therapeutics (PI: L.B. Cottler).

Abstract - ID: 233

Author(s):

Sunny Shin **(Presenter)**, Virginia Commonwealth University
Shelby McDonald, Virginia Commonwealth University
Michael Massey, Virginia Commonwealth University

Title: Profiles of adverse childhood experiences and young adults' substance use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Epidemiology

Aims: Adverse childhood experiences (ACEs) such as child maltreatment and household dysfunction have been strongly linked with subsequent substance use, but there is a paucity of empirically-based knowledge on how different patterns of ACEs influences substance use in young adulthood. The aims of this study were to identify latent classes of ACEs and examine the relationship between victimization classes with young adults' substance use.

Methods: Using a community sample of young individuals (N=335; ages 18-25), we performed latent class analyses (LCA) to identify homogenous groups of young people with similar patterns of ACEs. Exposure to ACEs includes 12 childhood adversities including child abuse, neglect, and family-focused adversities. Multiple linear and logistic regression models were used in an effort to examine the associations between ACEs classes and four young adult outcomes such as illicit drug use, hazardous drinking, tobacco use, and psychological symptoms.

Results: LCA identified three heterogeneous classes of young people distinguished by qualitative differences in exposure to ACEs. A poly-victimized class comprised 24% of the sample (n=80) and had high rates of multiple victimization types. An emotional victimization class (16%) was distinguished by high rates of emotional maltreatment and intimate partner violence. Finally, 60% were allocated to a low adversity class. Multiple regression analyses found that compared to those in the low adversity class, young adults in the poly-victimization class reported more tobacco use (odd ratio = 3.75), hazardous drinking (? = 0.34), and psychological symptoms (? = 0.28).

Conclusions: Our findings confirm that for many young people, ACEs occur as multiple rather than single experiences. The results of this research suggest that exposure to poly-victimization during childhood is particularly related to substance use during young adulthood.

Financial Support: This research was supported by NIDA R03-DA030884 and the AMBRF/The Foundation for Alcohol Research to Sunny Shin (PI).

Abstract - ID: 234

Author(s):

Nicholas Peiper **(Presenter)**, RTI International
Angelica Meinhofer, RTI International
Scott Novak, RTI International

Title: Budtender perspectives on shared decision-making in medical cannabis dispensaries

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Policy

Aims: Cannabis dispensary staff called budtenders frequently engage in shared-decision making (SDM) with patients to understand their health needs and help make product choices that maximize relief from chronic illnesses. As SDM about cannabis typically occurs in dispensaries, the primary objective of this study was to investigate perceptions of SDM and service quality among a sample of budtenders currently employed in a medical cannabis dispensary in two large metropolitan areas in California.

Methods: Between June and September 2016, we conducted an internet survey among a targeted sample of budtenders currently working at a medical cannabis dispensary in the San Francisco Bay Area and Greater Los Angeles. Based on these data, we examined the impact of demographics, workplace characteristics, and dispensary practices on the perceived importance of SDM. We also explored 11 barriers to SDM among budtenders and patients.

Results: A total of 159 budtenders completed the survey, 57% of whom reported that SDM was very important. Budtenders who reported SDM as very important were significantly more likely to have public health insurance like MediCal (34% vs. 21%), work in a dispensary with 10 or more budtenders on staff (46% vs. 19%), agree that patients try to follow their advice (85% vs. 65%), trust they will put their medical needs first (91% vs. 70%), and feel they are qualified to offer cannabis advice (93% vs. 68%). They were significantly less likely to have received formal training (47% vs. 68%) and report receiving sales commission (28% vs. 55%), and report time constraints as a barrier to SDM (18% vs. 32%). In multivariable logistic regression, Hispanic race, working with 10+ budtenders, and sales commission emerged as significant predictors of perceived SDM importance.

Conclusions: The dispensary and workplace characteristics may indicate these budtenders engage in organizational behaviors that foster SDM and patient rapport. The counterfactual finding with formal training may indicate that these programs focus on acquiring personal knowledge as a cannabis expert to maximize point-of-sale interactions as opposed to working in a partnership with patients to arrive at a decision together.

Financial Support: This study was supported by an Internal Research and Development grant at RTI International.

Abstract - ID: 235

Author(s):

Mary Stoermann, Medical University of South Carolina
Douglas Glenn **(Presenter)**, Medical University of South Carolina
Kelly Barth, Medical University of South Carolina
Balliet Wendy, Medical University of South Carolina

Title: Study of gender differences in pain in relation to sleep deprivation

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Chronic pain affects approximately 100 million Americans, and often these patients are at increased risk for opioid dependence, depression, anxiety, poor sleep and overall poor functioning. Sleep disturbance is a strong predictor of chronic pain. For patients with chronic pain and related opioid addictions, understanding the role of sleep is essential in providing comprehensive and effective care.

The present study's aim was to evaluate how males and females experience pain both before and after sleep disruption with the hypothesis that women, compared to men, will experience a decrease in pain inhibition after sleep disruption compared to baseline.

Methods: Data was collected from 26 men and 26 women. Participants reported for the study at 8am when the following baseline data was collected: pain laboratory measures and subjective pain measurement scales. Participants returned at 8pm the same day when the following was collected: assessment #1 (visual analogue scale (VAS), RR interval), sleep, eight forced awakenings at half hour intervals, breakfast, assessment #2 (VAS, RR interval) and pain laboratory measurements.

Results: Independent sample *t* tests were conducted to determine if there were significant differences in mechanical pain scores between day one and day two following sleep deprivation. Results indicated that females had higher scores in mechanical pain compared to men, with significantly higher pain scores between day one and day two post sleep with forced awakenings ($p = 0.77$ and $p = 0.002$ in men and women respectively).

Conclusions: Understanding the differing experience of pain between genders is critical in treating those with longstanding chronic pain and often related opioid dependence. In the present study, women have increased pain when sleep deprived compared to men. This finding is statistically significant in laboratory pain measurements in females following sleep deprivation. As women are more likely to have sleep disturbance leading to greater pain experienced, further study should be dedicated to the treatment and prevention of sleep deprivation in women with chronic pain and opioid dependence.

Financial Support: None

Abstract - ID: 236

Author(s):

Victoria Coleman-Cowger **(Presenter)**, Battelle Memorial Institute
Katrina Mark, University of Maryland

Title: Acceptability of hair collection for drug testing among pregnant women

Abstract Category: Program Descriptions

Abstract Detail: Human

Drug Category: Polydrug

Topic: Perinatal

Aims: The aims of this project are to understand the acceptability and feasibility of collecting hair from pregnant women for drug testing. Participant feedback will be incorporated into our larger study to improve acceptability of hair collection among a primarily African-American population.

Methods: Pregnant women will be recruited from two prenatal clinics (one serving Medicaid-eligible patients and one serving privately insured patients) in an urban location for the pilot portion of a larger study comparing and validating substance use screeners to assess prescription drug misuse and illicit drug use. It is expected that approximately 75% of participants will be African American. In January 2017, approximately 40 pregnant women will be enrolled into the pilot study, which includes the collection of 100-120 strands of hair for drug testing. Lessons learned from hair collection will be described, including participant acceptability of the procedure and differences in acceptability by race, socioeconomic status, and drug result status (none vs. any).

Results: This qualitative data will be collected in January 2017 and analyzed in February 2017. We have taken the following preliminary steps to increase acceptability from the outset: 1) demonstrate hair collection process on a doll during consent; 2) have a sample of hair available to help participants visualize 100-120 strands; and 3) allow for the collection of body hair.

Conclusions: Hair collection, particularly among African-American women, may be challenging due to concerns about the process. Lessons learned from this pilot study can inform hair collection protocols for other drug testing studies with pregnant women.

Financial Support: Research reported in this poster was supported by the National Institute On Drug Abuse of the National Institutes of Health under Award Number R01DA041328. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Abstract - ID: 237

Author(s):

Briony Larance **(Presenter)**, University of South Wales
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Michael Farrell, National Drug and Alcohol Research Centre
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Nichola Lintzeris, Drug and Alcohol Services, South Eastern Sydney Local Health District
Timothy Dobbins, National Drug and Alcohol Research Centre
Louisa Degenhardt, National Drug and Alcohol Research Centre

Title: The impact of a potentially tamper-resistant controlled-release formulation of oxycodone: Key findings from the national opioid medications abuse deterrence study

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Other

Aims: Pharmaceutical companies are investing in developing opioid formulations less prone to extra-medical use and diversion. In Australia, a potentially tamper-resistant formulation of OxyContin ® (Reformulated OxyContin®) was introduced in April 2014, followed by a generic brand of (non-tamper-resistant) oxycodone later the same year. The National Opioid Medications Abuse Deterrence (NOMAD) study examined the impacts of these two opioid formulations.

Methods: The NOMAD study components include (1) routine data sources (e.g., opioid sales and Needle-Syringe Program (NSP) data); (2) Illicit Drug Reporting System (IDRS) data; and (3) a prospective cohort of 600 people who regularly tamper with pharmaceutical opioids. The NOMAD cohort was recruited and interviewed just prior to the introduction of Reformulated OxyContin®, and followed up at 3 and 12 months post-reformulation.

Results: Prior to reformulation, 80mg OxyContin® were most frequently diverted/injected in the NOMAD cohort. Post-reformulation, there were declines in OxyContin®/oxycodone use and injection in NOMAD cohort and NSP/IDRS data. Generic oxycodone injection was low in the NOMAD cohort (5%). There was no increase in other substance use or harms in the NOMAD cohort, consistent with available NSP data. Some tampering with Reformulated OxyContin ® persisted at 12 months (27% past month attempts). Overall, Reformulated OxyContin® was viewed as less attractive for tampering/injection.

Conclusions: These are the most detailed data on extra-medical pharmaceutical opioid use and tampering ever collected in Australia. Abuse-deterrent formulations may play a role in reducing the risks of pharmaceutical opioids, but no single intervention can address every aspect of pharmaceutical opioid use and harm.

Financial Support: This study was funded via an investigator-driven, untied educational grant from Mundipharma Australia. The funder had no role in the design, conduct, analysis, interpretation or decision of what/where to publish.

Abstract - ID: 238

Author(s):

Roya Ijadi-Maghsoodi **(Presenter)**, UCLA
Sophie Feller , Semel Institute for Neuroscience and Human Behavior (UCLA)
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Sheryl Kataoka , Semel Institute for Neuroscience and Human Behavior (UCLA)
Donna Washington , VA Greater Los Angeles Healthcare System
Lisa Altman , VA Greater Los Angeles Healthcare System
Lillian Gelberg, UCLA Family Medicine

Title: Trauma, substance use, and mental health problems among homeless veteran parents in Los Angeles: Lessons in stress and resilience

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Behavior

Aims: Family homeless is a public health crisis. Homeless parents experience high levels of trauma and substance use. Homeless veteran families face additional strains of deployments and combat stress. Despite the federal initiative to end veteran homelessness, there is little known on how to best provide services to veteran families. We conducted qualitative interviews to understand the experiences, needs, and recommendations to improve services for this population.

Methods: We conducted in-depth semi-structured interviews with 18 homeless or recently homeless veteran parents (9 mothers, 9 fathers) and 7 providers (total n=25) in Los Angeles. Interviews explored the experiences, needs, and recommendations to improve services in key areas of the family's life, such as mental health and parenting. Interviews were audio-recorded, transcribed, and coded for main themes with in-depth content analysis.

Results: Most parents reported significant mental health problems (depression, post-traumatic stress disorder, and substance use). Substance use was often tied to coping with trauma and stress. Mothers were more likely than fathers to report trauma, including military sexual trauma, and concern for victimization while homeless. Interviews revealed themes of parental stress due to caring for the family, parental strengths, and a need for safe, quality permanent housing and mental health services for the whole family.

Conclusions: Our study is one of the first qualitative studies with homeless veteran parents. Participants voiced significant mental health and substance use problems exacerbated by homelessness, different stressors among mothers and fathers, and evidence of parenting resilience. Our results can inform services for homeless veteran families, including recognizing mental health and substance use treatment needs among parents, providing family services, and improving access to safe, quality permanent housing, in order to best improve housing and mental health outcomes.

Financial Support: NIDA K12DA000357

Abstract - ID: 239

Author(s):

Jerisha Ellerstrand **(Presenter)**, Queensland Centre for Mental Health Research
Janni Leung, Queensland Centre for Mental Health Research
Alize Ferrari, Queensland Centre for Mental Health Research
Whiteford Harvey, Queensland Centre for Mental Health Research
Louisa Degenhardt, National Drug and Alcohol Research Centre

Title: Global prevalence of illicit and prescription opioid misuse

Abstract Category: Literature Review

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: There has been an increase in opioid and prescription opioid misuse in the past decade, particularly in the United States, but this has not yet been quantified. This paper aims to update the data on opioid misuse globally.

Methods: A systematic literature review was performed of Medline, Embase and PsycINFO. Data on the prevalence of illicit and prescription opioid misuse and dependence by country are being extracted. A PRISMA reporting style will be applied. Extracted data will be collated and analysed to determine the patterns of heroin, illicit and prescription opioid misuse and dependence globally.

Results: The search resulted in 61376 citations. After title and abstract screen, 583 articles remain for full-screen review. The United States has the most data available currently on prescription opioids. Preliminary results from NESARC (US) data 2001-2013 reveal that prevalence trends of prescription opioid use disorder have increased from 0.4% to 1.01%. The NSDUH 2011-2013 (US) shows that heroin use among 18-25 year olds was 0.73%, compared to prescription opioids misuse, which was 9.6%. Data analyses are underway and results are expected to be published in late 2017.

Conclusions: This study will provide insight into the comparison of prescription opioid misuse prevalence to illicit opioid misuse prevalence globally by country. It is expected that the prevalence of prescription opioid misuse will be substantial and vary by country. Findings of this study can be used to improve the accuracy of estimating prescription and illicit opioid disease burden. This will better inform prevention, treatment and rehabilitation programs, and direct resources more efficiently and effectively.

Financial Support: Nil

Abstract - ID: 241

Author(s):

Alba González-Roz **(Presenter)**, University of Oviedo, Addictive Behaviors Group
Sara Weidberg, University of Oviedo
Víctor Martínez-Loredo, University of Oviedo, Addictive Behaviors Group
Aris Grande-Gonsende, University of Oviedo
Roberto Secades Villa, University of Oviedo

Title: Association between depressive symptoms and smoking status in individuals receiving behavioral activation treatment

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: Smoking remains particularly high in the population of depression. Depressed smokers are more likely to suffer from negative mood changes after quitting and less likely to succeed than individuals who are not depressed. To date, few studies have examined changes in depressive symptoms among clinically depressed individuals in relation to smoking status. We examined the effect of depression severity on cessation outcomes and whether smoking status (abstinent vs. smoker) is related to depressive symptomatology after receiving a psychological treatment including a Behavioral Activation (BA) component.

Methods: 57 smokers with major depressive disorder (MDD) (n = 35) or depressive symptomatology (n = 22, *M =< /em> 29.18, S.D = 9.60) received 8-week Behavioral Activation Treatment for smoking cessation. Depression was assessed with the SCID-I-CV (DSM-IV-TR) and BDI-II. Chi-squared and t-tests were performed in order to investigate the association between severity of depression and smoking status at 3- months follow-up.* ***Results:*** *A percentage of 43.9% of the total sample was abstinent at 3-months follow-up. Chi-squared test revealed no statistically significant differences in smoking cessation rates at 3-months follow-up as a function of severity on depressive symptoms (mild-moderate vs. elevated) (Chi 2 = .232, p =< /em> .630). Abstinents showed lower depressive symptoms compared to smokers at 3-months follow-up (t (50) = -2.077, p = .043), (M =< /em> 11.40, S.D = 8.87 vs. M = 18.11, S.D = 13.71).* ***Conclusions:*** *Smoking cessation is associated with a decrease in depressive symptoms. These results make a novel contribution to this scientific field by showing that smokers with elevated depressive symptoms achieve smoking cessation without suffering negative mood changes. This study support previous evidence on BA as a promising intervention to ameliorate depression.* ***Financial Support:*** *Spanish Ministry of Economy and Competitiveness (MINECO16-PSI2015-64371-P) and European Regional Development Fund.* Abstract - ID: 242 ***Author(s):*** *Víctor Martínez-Loredo* ***(Presenter)****, University of Oviedo, Addictive Behaviors Group*
Sergio Fernandez-Artamendi, Universidad Loyola Andalucia
Aris Grande-Gonsende, University of Oviedo
Angel García-Pérez, University of Oviedo
Irene Pericot, University of Vermont
Jose Ramón Fernández-Hermida, University of Oviedo ***Title:*** *Alcohol abuse, polydrug use, impulsivity and sensation among adolescents: Two year's follow-up* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Polydrug* ***Topic:*** *Prevention* ***Aims:*** *Impulsivity and Sensation Seeking (SS) are shown as important risk factors for substance involvement. However, the current literature has not clarified whether adolescents with higher levels of these traits are prone to substance abuse, or if this abuse is also altering brain structures that contribute to an increase of impulsive behaviors. We aim to analyze the bidirectional influence along three years of Impulsivity, SS and alcohol abuse among adolescents.* ***Methods:*** *The sample was made up of 1178 Spanish adolescents (Mean age = 12.97, SD = 0.53). Participants were assessed once a year during three years on their self-reported (Barratt Impulsiveness Scale, BIS-11-A, Impulsive Sensation Seeking, ImpSS) and behavioral (Delay Discounting) impulsivity, SS, alcohol related problems (Rutger's Alcohol Problem Index, RAPI) and last month tobacco and cannabis use. Structural Equations Modelling were performed to assess the mutual influence of these variables.* ***Results:*** *The overall models fit fair to good for all the measures (CFI ? 0.95). Our results indicate that some facets of impulsivity are more specifically related to alcohol related problems, and that it is the personality traits that precede further development those problems. Self-reported impulsivity and SS predicted last month polydrug use two years later.* ***Conclusions:*** *This study adds evidence about the predictive power of impulsivity measures on alcohol abuse. Self-reports are more useful to predict alcohol abuse and polydrug use than behavioral tasks. Most importantly, the presence of alcohol abuse seems not to have a significant effect on their levels of impulsivity or SS. These results could be useful when designing treatment and preventive strategies drug involvement among adolescents.* ***Financial Support:*** *This work was supported by the Spanish National Drugs Plan MSSSI-12-2013/131 and by the Spanish Ministry of Economy MINECO-15-PSI2014-56114-P.* Abstract - ID: 243 ***Author(s):*** *Amy Janes* ***(Presenter)****, McLean Hospital, Harvard Medical School*
Jennifer Betts, McLean Hospital, Harvard Medical School
J. Eric Jensen, McLean Hospital, Harvard Medical School
Scott Lukas, McLean Hospital, Harvard Medical School ***Title:*** *Dorsal anterior cingulate glutamate is associated with engagement of the default mode network during exposure to smoking cues* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Nicotine/Tobacco* ***Topic:*** *Imaging* ***Aims:*** *When exposed to smoking cues, nicotine dependent individuals activate brain regions overlapping with the default mode network (DMN), a network of regions involved in internally-focused cognition. The salience network (SN), which includes the dorsal anterior cingulate cortex (dACC), is thought to interact with the DMN and aids in directing attention toward salient internal or external stimuli. One possibility is that neurochemical variation in SN regions such as the dACC impact DMN reactivity to personally relevant stimuli such as smoking cues. This is consistent with emerging evidence suggesting an association between midline cortical glutamate (Glu) and activity in brain regions overlapping with the DMN.* ***Methods:*** *In 18 nicotine-dependent individuals, we assessed the relationship between DMN activation to smoking relative to neutral cues using functional magnetic resonance imaging and dACC Glu as measured by magnetic resonance spectroscopy. This association also was tested in a replication sample of 14 nicotine-dependent participants.* ***Results:*** *Not only was the DMN significantly less suppressed during smoking cue exposure, but also there was a positive association between DMN reactivity to smoking relative to neutral cues and dACC Glu (r = 0.56, p < 0.02). This finding was confirmed in the independent replication cohort (r = 0.64, p < 0.02).* ***Conclusions:*** *The current findings confirm that the DMN is less suppressed when smokers view smoking relative to neutral cues, suggesting that smoking cues engage self-relevant processing. Furthermore, these results indicate that dACC Glu is associated with enhanced DMN engagement when nicotine-dependent individuals are exposed to self-relevant smoking cues.* ***Financial Support:*** *This work was supported by the National Institute on Drug Abuse Grant number K01DA029645.* Abstract - ID: 244 ***Author(s):*** *Marion Coe* ***(Presenter)****, University of Kentucky*
Paul Nuzzo, University of Kentucky
Naama Levy-Cooperman, Altreos Research Partners Inc.
Sandra Comer, Columbia University and NYSPI
Fredrik Tiberg, Camurus
Sonnie Kim, Braeburn Pharmaceuticals
Sharon Walsh, University of Kentucky ***Title:*** *CAM2038 (q1w): Pharmacokinetics and pharmacokinetic/pharmacodynamic evaluation of opioid blockade in humans* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Dependence* ***Aims:*** ***Aims:*** *To characterize the pharmacokinetics of CAM2038, a novel once weekly subcutaneous buprenorphine depot, and evaluate the relationship between buprenorphine (BPN) plasma concentrations and blockade of hydromorphone (HM) in a Phase II multi-center, randomized, double-blind, inpatient study.* ***Methods: Methods:*** *After qualification, 47 participants with opioid use disorder were randomized in a 1:1 ratio to receive weekly CAM2038 injections of 24 or 32mg (Days 0 & 7), with blood samples before & 1, 4, 6, & 8hr after injection. Two 3-day test sessions evaluated pharmacodynamic responses to HM (0, 6 & 18mg, i.m.) with a single randomized dose tested each day (days 1-6 after each injection). Blood samples were collected 1hr before each session and 168hr after the second CAM2038 injection with quantification for BPN and nor-BPN. T-tests were used to explore differences between subjective outcomes at peak and trough BPN concentrations.****Results: Results:*** *Mean BPN C_{max} (ng/mL) after the first and second dose was 3.89 and 4.60 for CAM2038 24mg and 4.77 and 6.58 for CAM2038 32mg. Blockade of HM was robust and observed after each CAM2038 injection. Peak scores (E_{max}) on visual analog ratings (e.g., liking, high) after18mg HM differed significantly (pmax differences from placebo for 18mg HM met the a priori criteria for complete blockade (i.e., < 1 1 point change).* ***Conclusions: Conclusions:*** *CAM2038 produced dose-dependent increases in BPN concentrations with accumulation of BPN from week 1 to week 2 of dosing. Subjective blockade of HM effects was achieved with both the 24 and 32mg doses; however, modest but significant differences in opioid blockade were observed when comparing peak and trough reflecting improved blockade at higher BPN concentrations.* ***Financial Support:*** *This study was supported by research contracts awarded to SLW and SDC from Braeburn Pharmaceuticals. MAC is supported by T32 DA01676.* Abstract - ID: 245 ***Author(s):*** *Sharon Smith* ***(Presenter)****, RenaSci Ltd*
Royston Gray, GW Research Ltd.
David Heal, RenaSci Ltd ***Title:*** *An investigation of the reinforcing effects of diazepam and midazolam in rats trained to self-administer heroin* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Sedative-Hypnotics* ***Topic:*** *Neurobiology* ***Aims:*** *Only a handful of published studies describing the reinforcing effects of benzodiazepines in rats exist. This investigation has explored whether diazepam*

and/or midazolam served as positive reinforcers in heroin-maintained rats. ***Methods:*** *Male, Sprague-Dawley rats were trained to self-administer heroin (15ug/kg/inj) on a fixed ratio (FR3) schedule of reinforcement. After saline extinction, the reinforcing effects of diazepam (1, 3, 4.5 or 10ug/kg/inj) and midazolam (0.3, 1, 1.5 or 3ug/kg/inj) were evaluated on a FR3 schedule in 2hr sessions. When a drug served as a reinforcer (>6 inj/session), a 4hr progressive ratio (PR)/break-point analysis was performed. Results are mean ± SEM.* ***Results:*** *Heroin maintained self-administration in rats (17.6±0.5 inj/session, n=39) at levels significantly greater (p < 0 .001) than saline (3.7±0.2 inj/session, n=39). Diazepam served as a positive reinforcer in 50% (4/8) [10.8±2.7 inj/session, n=4] and 43% (3/7) [8.4±1.3 inj/session, n=3] rats at 3 and 10ug/kg/inj, respectively, and midazolam in 30% (3/9) [10.2±1.8 inj/session, n=3] and 63% (5/8) [8.5±0.7 inj/session, n=5] rats at 1 and 1.5ug/kg/inj, respectively. When the group mean data for all rats were analysed, only diazepam (3ug/kg/inj) [7.0±2.1 inj/session, n=8] was significantly (p < 0 .05) greater than saline. The number of infusions of all doses of diazepam and midazolam were significantly (p < 0 .001) lower than heroin. The break-points for responding (mean lever-presses/inj) for diazepam were 18.9±2.8 (n=4) and 13.0±1.0 (n=3) at 3 and 10ug/kg/inj, respectively. For midazolam, 17.1±2.8 (n=3) and 13.2±0.7 (n=5) at 1 and 1.5ug/kg/inj, respectively. All benzodiazepine break-points were significantly (p < 0 .05) lower than heroin (39.4±6.9, n=10).* ***Conclusions:*** *This study is the first in rats comparing the reinforcing effect of benzodiazepines relative to heroin. Diazepam and midazolam maintained self-administration in some, but not all, heroin-maintained rats suggesting their reinforcing effects are weak in this species. This was confirmed by their low break-points for drug reinforcement.* ***Financial Support:*** *Part funded by GW Pharmaceuticals Abstract - ID: 246* ***Author(s):*** *Danielle Beyer* ***(Presenter)****, University of North Dakota*
Tess Kilwein, University of Wyoming
Alison Looby, University of Wyoming ***Title:*** *"Not for human consumption": An investigation into motives, consequences, and personality factors associated with bath salt use* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Club/Designer Drugs* ***Topic:*** *Epidemiology* ***Aims:*** *Synthetic cathinones, or "bath salts", are designer drugs intended for legal distribution. Bath salt use became a public health concern in 2010, when poison control centers reported a marked increase in adverse medical events resulting from their use. This research examined factors associated with bath salts to better understand motives, consequences, and personality factors associated with use.* ***Methods:*** *Individuals with (n=105) and without (n=417) lifetime history of bath salt use completed an online survey. Participants were 70% men from 38 states ranging in age from 18-59 (M=23.26, SD=7.93).* ***Results:*** *Common motivations for use included to feel high (50.5%), because it was available (42.9%), and for experimentation/curiosity (42.5%), while the most common consequences included rapid heartbeat (58.1%), inability to sleep (41.0%), and anxiety (39.0%). Multivariate tests revealed differences in personality between user groups (F(1,457)=22.16, pF(1,457)=5.947, p=.015, PES=.01), extraversion (F(1,457)=4.414, p=.036, PES=.01), and psychoticism (F(1,457)=78.613, pF(1,465)=15.821, p*F(1,465)=14.477, *p*F(1,465)=11.770, *p*=.001, PES=.03), and experience seeking (*F*(1,465)=37.940, *p*F(1,475)=19.193, *p*F(1,463)=32.812, *p*

Conclusions: These results are among the first empirical investigations and contribute to the understanding of factors associated with bath salt use, which can be used to identify at-risk individuals and develop specific intervention and prevention programs.

Financial Support: University of North Dakota-Department of Psychology University of Wyoming-Department of Psychology

Abstract - ID: 247

Author(s):

Suky Martinez **(Presenter)**, Columbia University Medical Center, New York State Psychiatric Institute
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Adam Bisaga, Columbia University and NYSPI

Title: Effects of pioglitazone, a PPARγ agonist, on the subjective and reinforcing effects of tobacco cigarettes

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Behavior

Aims: In rodents, the peroxisome proliferator-activated receptor agonists, pioglitazone (PIO), reduces nicotine self-administration and reinstatement of drug seeking. Prior to the current study, the ability of PIO to alter the abuse potential of nicotine had not been assessed in controlled, clinical laboratory settings.

Methods: Smokers were randomized to either active (45 mg, n=14) or placebo (0 mg, n=13) PIO maintenance for a 3-week inpatient study. On the 1^{st}-4^{th} test days, participants could self-administer cigarettes using a verbal choice procedure. On the 5^{th}&12^{th} days, participants smoked 10 puffs of their usual brand of cigarettes and completed subjective effects questionnaires, later participants completed a progressive ratio self-administration task. The 8^{th}-11^{th} test days were identical to the 1^{st}-4^{th} with the exception that during one-week de-nicotinized cigarettes were available, and the other week nicotinized cigarettes were available.

Results: Craving for cigarettes was significantly lower in participants maintained on 45 mg of PIO compared to participants maintained on 0 mg PIO, but these effects were only observed when participants had been smoking nicotinized cigarettes during the previous week. PIO maintenance did not alter the reinforcing, positive, or negative subjective effects of nicotine.

Conclusions: The results suggest that PIO may be useful in decreasing craving for cigarettes. The current study did not replicate the robust preclinical findings. As the first clinical investigation for this indication, these data are encouraging and provide a direction for further inquiry.

Financial Support: Financial support provided by NIDA grant DA031022 to Drs. Bisaga and Comer

Abstract - ID: 248

Author(s):

David Heal **(Presenter)**, RenaSci Ltd
Sharon Smith, RenaSci Ltd

Title: Comparison by rat intravenous self-administration of the reinforcing effects of nicotine vs. three C-II drugs

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Nicotine/Tobacco

Topic: Neurobiology

Aims: The reinforcing effect of nicotine was compared with various C-II drugs of abuse, ie heroin, remifentanil and cocaine. Relative reinforcing efficacy was determined by IVSA in rats using a PR schedule of reinforcement.

Methods: Mildly food-restricted, male Sprague-Dawley rats were trained to intravenously self-administer nicotine (30ug/kg/injections [inj]) on a FR5 schedule in 2hr sessions. After saline extinction, nicotine (7.5, 15, 30, 60ug/kg/inj) dose-response testing was performed. When stable (infusions did not vary by >20%/last 3 sessions) and when each drug dose was positively reinforcing (mean >12 inj/session/last 3 sessions), the break-point was determined in a 4hr PR test. Responding for heroin (25ug/kg/inj), remifentanil (15ug/kg/inj) and cocaine (29ug/kg/inj) was assessed with the PR schedule. PR testing in previously dose-response tests had shown the selected doses were highly reinforcing in rats.

Results: All doses of nicotine were positively reinforcing on FR-5 (inj/session±SEM: 18.8±1.7, 75ug/kg/inj, n=6; 19.8±0.3, 15ug/kg/inj, n=8; 19.0±0.7, 30ug/kg/inj, n=8; 18.1±1.4, 60ug/kg/inj, n=7 and 3.7±0.4, saline, n=8; all doses P < 0 .001 vs saline). On PR, the break-points for nicotine were 42.3±10.7, 7.5ug/kg/inj (n=6); 73.4±14.8, 15ug/kg/inj (n=8); 48.8±10.0, 30ug/kg/inj (n=8); 67.2±10.1, 60ug/kg/inj (n=7)). The break-points for heroin (61.8±17.7, 25ug/kg/inj, n=8), remifentanil (48.1±18.2, 15ug/kg/inj, n = 5) and cocaine (65.7±22.2, 29ug/kg/inj, n=10) were not different from the most reinforcing dose of nicotine (0.015 mg/kg/inj).

Conclusions: On a PR schedule, heroin, remifentanil and cocaine were robust positive reinforcers reflecting their status as highly abused drugs in humans. The relative reinforcing efficacy of nicotine was not different from heroin, remifentanil or cocaine. Although nicotine is a legally available, widely used drug, it has the same powerful reinforcing properties in this test as 3 C-II drugs.

Financial Support: No financial support

Abstract - ID: 249

Author(s):

David Heal, RenaSci Ltd
Simon Goddard **(Presenter)**, RenaSci Ltd
Sharon Smith, RenaSci Ltd

Title: A comparison of the physical dependence syndromes produced in rats by morphine and diazepam

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Sedative-Hypnotics

Topic: Tolerance/Dependence

Aims: All new CNS drugs require an assessment of their potential to cause physical dependence on withdrawal. This study compared/contrasted the physical dependence syndromes induced by benzodiazepines and opiates.

Methods: Six groups of 8 male, Sprague-Dawley rats were PO dosed with diazepam 5mg/kg, *bid*; diazepam 10mg/kg, *bid*; morphine 30mg/kg, *bid* or vehicle (*bid*), or IP injected with diazepam 4mg/kg, *bid* or vehicle (*bid*). After a 5-day baseline, drugs or vehicle were given for 21 days, dosing was terminated and rats were monitored for 7 days (withdrawal). Behavioural and physical signs were monitored daily using a single 50-item checklist for both drugs. Bodyweight, food and water intake and temperature were monitored daily.

Results: On-dose, diazepam and morphine produced some common effects, ie subdued behaviour, hunched posture, increased locomotor activity, increased sound reactivity, exophthalmos, and decreases in food and water intake and bodyweight. Unique to diazepam were flat posture, ataxia, slowed movements, erratic respiration, vacuous chewing, ptosis, decreased body tone and increased temperature. Unique to morphine were Straub tail, increased body tone and decreased temperature.

On withdrawal, the physical dependence syndromes were very different. The common features were decreased food intake, piloerection and loss of condition. Unique to diazepam were Straub tail, increased body tone and irritability. Morphine caused initial hypophagia then hyperphagia, hypodipsia then hyperdipsia, bodyweight decrease then regain not seen with diazepam. Other signs selective for morphine were subdued behaviour, hunched posture, decreased body tone, pinched abdomen, "wet-dog" shakes and erratic respiration.

Conclusions: The benzodiazepine and opiate withdrawal syndromes were very different. Importantly, if comprehensive monitoring is used, these drugs can be used interchangeably as internal assay standards.

Financial Support: No financial support.

Abstract - ID: 250

Author(s):

Jane Metrik **(Presenter)**, Warren Alpert Medical School
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Title: Medicinal vs. recreational cannabis use among returning veterans

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Epidemiology

Aims: Although increasing rates of cannabis use and cannabis use disorder (CUD) are well-documented among veterans, little is known about use of cannabis specifically for medicinal purposes in this population. The present study compares veterans reporting cannabis use for medicinal (*n* = 66) versus recreational (*n* = 77) purposes on the following variables: prevalence of posttraumatic stress disorder (PTSD) and major depressive disorder (MDD), CUD and cannabis-related problems, reasons for cannabis use, and physical and mental health-related measures.

Methods: Participants were veterans (*N* = 143; mean [*SD*] age = 30.0 [6.6]; mean [*SD*] deployments = 1.7 [1.1]) deployed post 9/11/2001, recruited from a Veterans Health Administration (VHA) facility, who were past-year cannabis users.

Results: The most frequently endorsed conditions for medicinal cannabis use were anxiety/stress, PTSD, pain, depression, and insomnia. In logistic analyses adjusted for frequency of cannabis use, medicinal users were significantly more likely (*OR* = 3.16) to meet criteria for PTSD than recreational users. Relative to recreational cannabis users, medicinal cannabis also users reported significantly worse physical health (measured by the RAND 36-Item Short Form Health Survey) and poor sleep (measured by the Pittsburgh Sleep Quality Index). More salient sleep motives for cannabis use were endorsed by medicinal relative to recreational users.

Conclusions: Together, findings indicate important differences in sleep, physical and mental health functioning between veterans who use cannabis for medicinal versus recreational purposes. PTSD and sleep problems may be especially relevant issues to address in screening and providing clinical care to returning veterans who are using cannabis for medicinal purposes.

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Abstract - ID: 251

Author(s):

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Title: Juvenile offender's family and friends substance abuse

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Substance Abuse

Topic: Adolescent

Aims: Studies have highlighted the relationship between juvenile substance use and crime, yet limited research has examined how family and friends substance use is related to juvenile offenders substance use and criminal behavior. The current study 1) examines substance use and criminal behavior among Kentucky juvenile offenders by family and friends substance use and 2) identifies correlates of family and friends substance use.

Methods: This study presents data from the Kentucky Department of Juvenile Justice (DJJ) as part of the NIDA JJ-TRIALS cooperative agreement. The dataset includes 512 juveniles referred to the DJJ between October 2014 and October 2016. Bivariate analyses examined differences in demographics, substance use, and criminality for self-reported substance use by family and friends. Logistic regression models identified independent correlates of family and friends who used substances.

Results: About one-third of juveniles reported having a family member with a substance use problem or having a friend with a substance use problem. Those who had a family member or friend with a substance use problem were older, were more likely to report having used alcohol, used illegal drugs, and were more likely to report a current substance use problem. Criminal charges among these juveniles did not vary for either group, but those who reported having a family member or friend with a substance use problem reported more prior adjudications. Logistic regression analyses found that a current substance use problem was positively correlated with a family history of substance use problems (p=.000) as well as having a friend with a substance use problem (p=.000).

Conclusions: Findings support a strong relationship between a juvenile offender's substance use and the substance use by family and friends. Results also suggest a weak relationship between criminal behavior and family or friends substance use. Implications for treatment and prevention will be discussed.

Financial Support: JJ-TRIALS is funded by NIDA in collaboration with SAMSHA and DOJ

Abstract - ID: 252

Author(s):

Sadaf A Milani, University of Florida, Department of Epidemiology
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Catherine Woodstock Striley **(Presenter)**, University of Florida

Title: Increased incoming diversion among users of both non-medical prescription opioids and sedatives compared to individual users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Epidemiology

Aims: Benzodiazepines and prescription opioids and are among the most widely abused drugs, and their combined use can be lethal. This analysis aims to describe patterns of non-medical sedative and non-medical prescription opioid use.

Methods: Data from the Prescription Drug Abuse, Misuse, and Dependence Study, a cross-sectional study focused on current and past prescription drug users in the Midwest, were analyzed. Non-medical use was defined as use of a drug that was not prescribed or in a way other than it was prescribed. Individuals who reported past 12-month non-medical prescription opioid use or past 12-month non-medical sedative use were included in this analysis (n=389).

Results: Of the 389 respondents, 151 (38.8%) reported non-medical prescription opioid use only, 40 (10.3%) reported non-medical sedative use only, and 198 (56.7%) reported both non-medical prescription opioid and sedative use. Among those who reported opioid and sedative use in the past 12-months, more than half (52%) reported use of both drugs at the same time. Individuals reporting both past 12-month non-medical prescription opioid and sedative use were more likely to obtain these drugs through incoming diversion compared to individuals only reporting past 12-month non-medical prescription opioid or sedative use (39.7% vs. 26.1%/20.6%, respectively). They were also younger and had less education compared to individuals only reporting past 12-month non-medical opioid or sedative use ($p < 0 .05$).

Conclusions: Approximately half of the individuals in this sample reported using both sedatives and opioids non-medically in the past year. The large proportion of individuals whose drugs came from diversion (i.e. friends, coworkers, etc.) highlights an important point of intervention, considering the potential dangers of mixing prescription opioids and sedatives. While current efforts are targeting prescribers, prevention efforts should be expanded to include all sources.

Financial Support: The Prescription Drug Misuse, Abuse, and Dependence study was supported by the NIDA Grant (R01DA020791; LB Cottler, PI). Sadaf Milani is funded by the Graduate School Fellowship at the University of Florida.

Abstract - ID: 253

Author(s):

Maylen Perez Diaz **(Presenter)**, Emory University
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Mark Wilson, Yerkes National Primate Research Center

Title: The role of the serotonin 5-HT2C receptor in compulsive and addictive behaviors

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Behavior

Aims: Addiction is a highly prevalent public health issue and individuals can become addicted to several different types of reinforcers, often simultaneously. A switch from random or recreational use of reinforcers, such as drugs or highly palatable foods, to compulsive use is one of the hallmarks of addiction. Thus, compulsivity, which can be defined as a general inability to alter behavior with changing reinforcement contingencies, appears to be a core behavioral feature of an addictive phenotype. However, it is unclear whether compulsivity can be used as a behavioral marker of an individual's tendency to engage in addictive behavior or, conversely, whether engaging in addictive behavior increases compulsivity. Selective 5-HT$_{2C}$ receptor agonists decrease food consumption and effectively reduce self-administration of psychostimulants, but no one has evaluated whether activation of these receptors also reduces compulsive behavior.

Methods: In order to test these hypotheses, we measured compulsivity using a Discrimination Reversal Learning (DRL) task prior to and after 6-month exposure to a highly palatable diet (food group) or methamphetamine self-administration (drug group). In addition, we also determined the effects of the highly selective 5-HT$_{2C}$ receptor agonist WAY163909 (WAY) on compulsivity, food intake and METH intake.

Results: Prolonged exposure to both the highly palatable diet and methamphetamine (METH) led to a significant increase in compulsivity compared to baseline. Moreover, we found that greater food or methamphetamine intake was predictive of larger increases in compulsivity. WAY treatments significantly attenuated compulsivity while improving performance on the task. Similarly, WAY treatments significantly reduced consumption of the highly palatable diet and METH intake.

Conclusions: These reductions in compulsivity, food and METH intake were all blocked by SB242084, demonstrating that the 5-HT$_{2C}$ receptor is necessary for these effects. Our study sheds light on the relationship between reinforcer intake and compulsivity and demonstrates the modulatory role that 5-HT$_{2C}$ receptors play in these behaviors. Thus, our results may inform the search for novel pharmacotherapies for treatment of addiction.

Financial Support: This research was supported by USPHS Grants DA10344 (LLH), DA31246 (LLH), DK096983 (MEW) and P51OD11132 (Yerkes National Primate Research Center).

Abstract - ID: 254

Author(s):

Laura Fanucchi **(Presenter)**, University of Kentucky
Michelle Lofwall, University of Kentucky College of Medicine
Paul Nuzzo, University of Kentucky
Sharon Walsh, University of Kentucky

Title: A prospective, observational study of hospitalized persons who inject drugs with severe infections: Substance use severity, risk behaviors, and motivation for treatment

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Behavior

Aims: To prospectively evaluate the underlying substance use severity, risk behaviors, motivation for treatment, and willingness to enter residential addiction treatment in persons who inject drugs (PWID) hospitalized with complex infections (e.g. infective endocarditis (IE)) requiring intravenous (IV) antibiotics.

Methods: Eligible hospitalized adult PWID with severe infections completed assessments including the ASI-Lite, MINI, TCU-MOTForm, and Risk Behavioral Assessment. Subjects were assessed weekly during the hospitalization, and three times during the 60 days after hospital discharge.

Results: Of the 42 subjects enrolled, the mean age was 34 years, 40% were female, 79% had IE, and most (86%) met DSM-V criteria for opioid use disorder with an average of 10.7 self-reported days of opioid injection in the 30 days before hospitalization. Only 19% accepted discharge to residential addiction treatment. After discharge, 38% completed follow-up study visits and, in this group, the average number of days per month of IV heroin use in the 30 days before hospitalization compared to 30 days after discharge decreased from 8.4 to 0.8 ($p=0.033$). Results were similar for other injected drugs in this group.

Conclusions: The self-reported number of days of injection use prior to hospitalization was lower than expected, and likely reflects that subjects were too ill to obtain and use drugs in the days leading up to hospitalization. PWID hospitalized with severe infections significantly decreased injection use after discharge, which may indicate that the time of acute medical illness is a reachable moment for PWID with untreated opioid use disorders and a key target for intervention. Relatively few participants were willing to enroll in residential treatment after discharge, suggesting that alternative and more varied treatment options are needed.

Financial Support: University of Kentucky College of Medicine, Office of the Dean

Abstract - ID: 255

Author(s):

Lauren Jessell **(Presenter)**, New York University
Laysha Ostrow, Live and Learn
David Cohen, UCLA
Manton Hurd

Title: The psychiatric medication discontinuation/reduction study: Initial findings

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: prescription drugs

Topic: Treatment

Aims: Although our behavioral healthcare systems strive to organize around consumer choice, sparse information exists on harm reduction practices in discontinuation of prescription psychotropic medications. This first-of-its-kind US study reports what helps or hinders discontinuation.

Methods: This participatory research study was conducted by professional researchers and practitioners with lived experience of psychotropic medication use. Data were collected in June 2016 using a self-report web survey, developed based on existing instruments/research. Of 742 respondents accessing the survey, 250 met eligibility criteria (serious mental illness, aimed within past 5 years to fully discontinue 1-2 medications taken for > 9 months).

Results: Participants were 76% female, 87% White (mean age=46.2±13.1 y.). Main diagnoses were: major depressive (64%), bipolar (41%), and psychotic (21%) disorders. Medication use lasted > 9 years for 71%, with 54% fully, and 30.4% partially discontinuing. Most discontinued due to fears about long-term use (74%) and adverse effects (73%). Working with a prescriber (73%) and/or therapist (48%) while discontinuing was not related to achieving full discontinuation (P=0.49 & P=0.43 respectively). Of those engaged with prescribers, 46% rated them as helpful, 23% as neither, and 31% as unhelpful. Among full discontinuers, 82% were satisfied with their decision, only 4% would not recommend doing so; and 16% reported being hospitalized any time after discontinuation, versus 31% of those unable to discontinue (P=.002).

Conclusions: Discontinuation occurred amidst limited perceived support and information. It is vital to increase understanding of how people can safely discontinue psychotropic medications, but avoid negative outcomes associated with lack of information and treatment dropout. This study provides insight into the experiences of those who have achieved their medication goals, which can inform future research into effective patient-centered care. This convenience, but sizable and restrictive sample requires replication, with a concerted effort to recruit minority group respondents.

Financial Support: The project is funded by the Foundation for Excellence in Mental Health Care.

Abstract - ID: 256

Author(s):

Eduardo Butelman **(Presenter)**, The Rockefeller University
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Rachel Kimani, The Rockefeller University
Joel Correa da Rosa, The Rockefeller University
Mary Jeanne Kreek, The Rockefeller University

Title: Relationship between trait impulsivity and maximum lifetime exposure to specific drugs: A dimensional analysis

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Behavior

Aims: Long term behavioral and personality traits such as impulsivity can affect self-exposure to major drugs of abuse across the lifespan. The aim of the study is to examine the relationship of trait impulsivity and maximum lifetime exposure to cannabis, tobacco, alcohol, cocaine and heroin, in a dimensional and transdiagnostic manner.

Methods: In this case-control study, 811 adult participants (n=341 female; n=600 with a DSM IV substance abuse or dependence diagnosis), underwent an interview with a licensed clinician, and completed the SCID-I interview, BIS-11 impulsiveness scale, and KMSK scales to measure maximum lifetime exposure to cannabis, alcohol, cocaine, heroin and tobacco (Kellogg et al., 2003; Drug Alc. Depend 69:137-150). Maximum drug exposure could therefore be measured dimensionally, ranging from no lifetime use (defined as KMSK score=0), to high dose, high frequency and long duration of use. High KMSK scores have good concurrent validity with the respective DSM IV dependence diagnoses for cannabis, alcohol, cocaine and heroin.

Results: BIS-11 Impulsiveness scores were positively and significantly correlated with KMSK exposure scores for each of the drugs under study, after Bonferroni correction. Correlations for females were numerically greater than for males. However, when participants who had never used each drug (i.e., those with KMSK score=0) were removed, the only correlations between BIS-11 scores and exposure scores that retained significance were for alcohol (male and female) and tobacco (female only). For both genders, the lowest impulsiveness score tertile had lower maximum lifetime exposure to alcohol, than the medium and upper tertile (Kruskal-Wallis ANOVAs).

Conclusions: This dimensional analysis of the relationship between trait impulsivity and maximum lifetime drug exposure suggests that 1) For cannabis, cocaine and heroin, greater trait impulsivity may increase the probability of initiation of use, but is not related to the severity of maximal lifetime exposure to these drugs. 2) For alcohol, greater trait impulsivity is positively correlated with greater maximal lifetime exposure.

Financial Support: NIH-NIDA; Adelson Medical Research Foundation and NIH-CATS

Abstract - ID: 257

Author(s):

Erika Pike **(Presenter)**, University of Kentucky
Christina Studts, University of Kentucky
William Stoops, University of Kentucky
Craig Rush, University of Kentucky

Title: A pilot feasibility and acceptability trial of inhibitory control training with cocaine users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Treatment

Aims: Impulsivity is associated with poor treatment outcomes in cocaine users. Training drinkers to inhibit prepotent responses reduces alcohol use. The efficacy and feasibility of applying similar methods has yet to be determined in cocaine users. This study sought to demonstrate the initial feasibility and acceptability of inhibitory control training in cocaine users. We hypothesized: 1) inhibitory control training with cocaine users is feasible; 2) subjects will rate the procedures used in the study as acceptable on the Treatment Acceptability Questionnaire (TAQ).

Methods: Cocaine users completed an inhibitory control training task to cocaine-related images (n=11) or rectangles (n=10) over 2.5 weeks. Feasibility was assessed through performance on the inhibitory control training task and retention in the study. Acceptability was assessed using the TAQ at the last appointment.

Results: Subjects in both conditions responded to approximately 124 of 125 go targets and inhibited responses to 124 of 125 no-go targets on the inhibitory control training task. No differences were observed between groups for number of sessions attended ($t_{19} = 0.28$) with subjects attending, on average, 7 of 8 appointments. No differences were observed between groups for ratings on the TAQ ($t_{16} = 0.26 – 1.25$) with average ratings for overall satisfaction being 83 out of 100.

Conclusions: These results demonstrate the initial feasibility and acceptability of using an inhibitory control training task with cocaine users. Subjects completed the training task with near perfect accuracy and attended nearly all sessions. Subjects also generally felt the approach was acceptable. Future studies should further investigate the feasibility, acceptability, and efficacy of inhibitory control training in treatment seeking subjects because this approach may have promise for reducing cocaine use.

Financial Support: NIH CTSA UL1TR000117; NIDA T32DA035200

Abstract - ID: 258

Author(s):

Kathryn Schwienteck **(Presenter)**, Virginia Commonwealth University, Pharmacology and Toxicology
Matthew Banks, Virginia Commonwealth University
Kim Janda, Scripps Research Institute
Paul Bremer, Scripps Research Institute

Title: Effects of a heroin vaccine in assays of schedule-controlled responding and drug discrimination in rhesus monkeys

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Opiates/Opioids

Topic: Behavior

Aims: Heroin addiction represents a significant and public health issue. The present study tested the hypothesis that a novel heroin vaccine would attenuate the behavioral pharmacology of heroin in rhesus macaques.

Methods: Group 1 (n=4) was trained to respond for food pellets in an assay of schedule-controlled responding under a fixed-ratio (FR) 30. Group 2 (n=5) was trained to discriminate between fentanyl and saline under a concurrent FR 10 schedule of food presentation. In group 1, heroin and oxycodone cumulative dose-effect functions were determined alone and following naltrexone (positive control) pretreatment. In group 2, cumulative fentanyl, heroin, and morphine dose-effect functions were determined alone and after naltrexone pretreatment.

Results: In Group 1, both heroin and oxycodone dose-dependently decreased rates of operant responding. Acute naltrexone pretreatment produced an approximate 8-fold and 6.7-fold shift in the potency of heroin and oxycodone, respectively. Following heroin vaccine administration at weeks 0, 2, 4, and 11, there was a significant 4.3-fold shift in the potency of heroin to decrease rates of operant responding; the potency of oxycodone was not significantly altered.

Conclusions: Results from the assay of schedule-controlled responding provide empirical behavioral evidence of effectiveness and selectivity of a heroin vaccine in rhesus monkeys. Ongoing studies are evaluating the effectiveness of immunopharmacotherapy approaches to alter the abuse-related behavioral effects of heroin in other procedures. These results support further preclinical research evaluating the effects of the heroin vaccine as candidate immunopharmacotherapies for opioid use disorders.

Financial Support: UH2DA041146

Abstract - ID: 259

Author(s):

Julie McCarthy **(Presenter)**, McLean Hospital, Harvard Medical School
Justin Shepherd, McLean Hospital, Harvard Medical School
Scott Lukas, McLean Hospital, Harvard Medical School
Amy Janes, McLean Hospital, Harvard Medical School

Title: Reduced interhemispheric executive control network coupling and increased craving in cocaine users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Imaging

Aims: Resting state functional connectivity is disrupted in cocaine users as seen in prior studies showing that decreased resting state interhemispheric executive control network (ECN) coupling parallels early cocaine relapse. The ECN involves the dorsolateral prefrontal and posterior parietal cortices, and it is associated with cognitive control and exogenous attention. However, it is unclear the extent to which such coupling is related to craving, a frequent predictor of relapse. To investigate this relationship, we hypothesized that reduced interhemispheric ECN coupling reflects increased craving as cocaine users "prepare" for abstinence.

Methods: Thirteen treatment-seeking cocaine users (9 men, 4 women; mean age 51.92 +- 4.31) completed a diagnostic interview, a urine screen for cocaine, the Cocaine Craving Questionnaire – Brief, a T1-weighted anatomical scan, and a resting state fMRI BOLD scan using gradient-echo planar imaging on a Siemens 3T scanner with a 32-channel phased-array head coil. Imaging data were preprocessed in FSL. Time courses were extracted from masked right and left ECN regions, and average correlation values of the interhemispheric ECN coupling were extracted for each participant. The *a priori* relationship between coupling and craving was assessed via one-tailed Spearman's rank order correlation.

Results: There was a significant relationship between greater cocaine craving and reduced RECN-LECN coupling (Spearman's rho = -0.69, p = 0.005), but RECN-LECN coupling was unrelated to other demographic variables.

Conclusions: Our results support the hypothesis that greater craving is linked to *reduced* interhemispheric coupling in the ECN, indicating that reduced functional connectivity in brain networks associated with cognitive control is related to greater craving, which increases vulnerability for relapse of cocaine use. Future research aimed at novel strategies to modulate ECN network coupling may be useful in minimizing relapse rates.

Financial Support: NIDA grants T32DA015036-15; R21DA036047-02; K01DA029645-05

Abstract - ID: 260

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Title: Sex differences in dorsolateral prefrontal cortex dopamine release and the relationship to tobacco smoking treatment outcomes

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Sex Differences

Aims: Sex differences exist in the behavioral and molecular mechanisms underlying tobacco smoking, i.e. men tend to smoke for the reinforcing effects of nicotine whereas women tend to smoke to regulate stress and mood. While the mesolimbic dopamine (DA) system drives the reinforcing effects of tobacco smoking, the mesocortical dopamine system—including dorsolateral prefrontal cortex (dlPFC)—is critical for inhibitory control, which is compromised by stress. Guanfacine, an alpha2-adrenergic agonist, enhances inhibitory control and reduces prefrontal cortical DA release. The goals of this study were to investigate sex differences in amphetamine-induced cortical DA release in tobacco smokers and to examine whether the magnitude of DA release predicts treatment outcomes.

Methods: Twenty-five tobacco smokers (12 females) participated in two same-day positron emission tomography (PET) scans with the DA $D_{2/3}$ radioligand [^{11}C]FLB-457 before and 3 hours after amphetamine administration (0.3-0.4mg/kg PO). After their PET scans, subjects participated in a 3-week guanfacine (3mg PO, daily) trial. At the end of the trial, in order to model the ability to resist smoking, subjects completed a smoking-lapse paradigm following a psychological stressor. We measured time lapsed before the first cigarette. We compared percent change in binding potential (%?BP), an indirect measure of dopamine release, between males and females in dlPFC.

Results: Female smokers showed smaller amphetamine-induced DA release in dlPFC (%?BP=2.60±3.19%) than male smokers (%?BP=18.26±5.91%), p=0.033. In female but not male smokers, smaller amphetamine-induced DA changes were associated with shorter time to delay smoking following a stressor, p=0.026.

Conclusions: Preliminary analyses suggest that female compared to male smokers may have a blunted pre-treatment amphetamine-induced DA response in dlPFC and the more blunted the DA response in females, the greater the inability to delay smoking.

Financial Support: Research was supported by P50DA033945 (McKee), K02DA03175 (Cosgrove), T32 DA022975 (Hillmer), NSF GRFP (Zakiniaeiz) and Gruber Science Fellowship (Zakiniaeiz).

Abstract - ID: 261

Author(s):

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Title: Past 15-year trends in lifetime cocaine use among US high school students

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Adolescent

Aims: Limited research has examined cocaine use among adolescents in recent years. We aim to describe trends in adolescent cocaine use over the past 15 years and identify differences by race/ethnicity and sex.

Methods: Using data from the Youth Risk Behavior Survey (1999-2015), we estimated the biennial prevalence of lifetime cocaine use (LCU) by race/ethnicity and sex among US high school students and conducted trend analyses.

Results: The combined prevalence of LCU (1999-2015) was 5.6%. Prevalence was highest in 1999 (9.5%) and 2001 (9.4%), declined sharply to 4.1% in 2003, and continued to decline slowly until 2009 (2.8%). LCU increased to 6.84% in 2011, then declined slightly until 2015 (5.2%). The combined prevalence of LCU was highest among youth who were American Indian/Alaska Native (10.3%), Native Hawaiian/Pacific Islander (9.2%), Hispanic/Latino (8.4%), and Multi-racial (7.5%). Use was lower among Whites (5.4%) and Asians (4%). Blacks had the lowest overall prevalence of LCU (2.2%). LCU was higher for boys than girls each year in all race/ethnicity strata. LCU trends for Black youth differed from other racial groups. Black girls had a consistently low prevalence of LCU (>2% each year). LCU in black boys has continued to rise substantially in recent years, exceeding 5% prevalence for the first time in 2015.

Conclusions: While adolescent cocaine use is less common that in the 1990s, the rates of have risen in recent years. Given these findings, additional research to explain the resurgence in use overall and among specific subgroup is needed. Special attention must be paid to specific minority groups with particularly high rates of cocaine use. In addition to groups with consistently high LCU prevlances, black boys are an emerging populatin of concern. The problem of youth cocaine use has significant public health consequences for future morbidity and mortality.

Financial Support: This research was supported by T32DA007293 (PI: Johnson) and K01DA031738 (PI: Johnson).

Abstract - ID: 262

Author(s):

Lindsay Standeven **(Presenter)**, Johns Hopkins Hospital
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Title: Trends in cannabis treatment admissions in adolescents/young adults: Analysis of Teds-D 1992-2012

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Treatment

Aims: Evaluate changes in cannabis use patterns, referral source, and treatment setting in adolescents/young adults. We hypothesized an increase in admissions for cannabis use over time in light of decriminalization and legalization trends.

Methods: Data drawn from Treatment Episode Data Set – Discharges (TEDS-D) for adolescents (12-17 years) and young adults (18-24 years) entering treatment 1992-2012 for primary cannabis use (N= 754, 908). Trends and comparisons between groups were analyzed using STATA v 14.

Results: Treatment admissions for cannabis among adolescents/young adults rose sharply from 1992 (n=49,996) to 1997 (n=131,808). From 1992 to 2012, the distribution of ages remained stable, with young adolescents (12-14 years) representing 8-11% of admissions, adolescents (15-17 years) representing 36-43% of admissions, and young adults (18-24 years) representing 43-56%. Polysubstance use was common with >50% reporting 2+ substances on admission. Notably, co-occurring use of alcohol (68% to 41%) and cocaine (17% to 4%) declined, while use of prescription opioids increased (1% to 7%). The majority of referrals came from the criminal justice system (46-58%), with self (14-20%) and community referral (8-14%) making up the remainder. Treatment occurred largely in the outpatient setting (76-85%).

Conclusions: Cannabis use continues to be a significant problem among adolescents and young adults. Changes in polysubstance use patterns, including a notable rise in opioid use, is concerning and may reflect a population with additional treatment needs. The criminal justice system is currently the largest source of treatment referral. As many states begin to legalize cannabis use, referrals from the criminal justice system may decrease. Therefore, additional research and resources may be needed to ensure ongoing access and referral to treatment.

Financial Support: None

Abstract - ID: 263

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Title: Results of a double blind placebo-controlled randomized trial of extended-release naltrexone among HIV+ inmates with opioid dependence

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: AIDS/Immune

Aims: People with opioid use disorders (OUDs) and HIV are concentrated within the criminal justice system (CJS). Upon release from incarceration, drug relapse is common and contributes to poor HIV treatment outcomes, increased HIV transmission risk, recidivism and mortality. The specific aim of this study was to evaluate extended-release naltrexone (XR-NTX) as a means to improve HIV treatment outcomes and opioid abstinence exclusively among persons living with HIV (PLH) released from prison or jail to the community with a pre-incarceration history of OUDs.

Methods: A randomized double-blind placebo-controlled trial was conducted among inmates with HIV and OUDs who were transitioning to the community. Participants were randomized 2:1 to receive 6 monthly injections of XR-NTX or placebo starting one week prior to release and continuing for 6 months post-release. Adherence to anti-retroviral therapy (ART), opioid abstinence and safety data during the 6-month intervention period were analyzed.

Results: Of 93 participants, 95% were minorities; 39% were homeless; 84% had chronic hepatitis C; and 41% had depression. The mean incarceration period was 8.8 months; 75% had prior treatment with methadone or buprenorphine. At time of release, mean CD4 was 423 and 58% had an HIV viral load of ?200 copies/mL. No baseline differences were found between groups. Participants who received ?4 injections of XR-NTX were significantly more likely to be 100% adherent to ART (86% vs. 29%, $p < 0.005$) and abstinent from opioids at 6 months (93% vs. 35%, $p=0.03$), as compared to those who received placebo or ?3 injections of XR-NTX. There were no grade 3 or 4 hepatic events or serious injection site reactions.

Conclusions: Retention on XR-NTX was associated with greater adherence to ART and opioid abstinence among HIV+ inmates with OUDs 6 months post-release to the community. XR-NTX is a potential option for CJS-involved PLH as they transition to the community to reduce opioid relapse and improve HIV treatment outcomes.

Financial Support: National Institute on Drug Abuse (NIDA)

Abstract - ID: 264

Author(s):

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Title: Do cannabinoids have the potential to be opioid-sparing in chronic pain treatment? A systematic review and meta-analyses

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Other

Aims: Cannabinoids when coadministered with opioids may enable reduced opioid doses without loss of analgesic efficacy (i.e., opioid sparing). The aim of this study was to conduct a systematic review to determine the magnitude of the opioidsparing effect of cannabinoids.

Methods: Eligible studies included human or animal studies where the outcome was either analgesia or opioid requirements. We included controlled studies in addition to case reports/case series. We searched Scopus, Cochrane Database of Systematic Reviews, Medline and Embase.

Results: Nineteen pre-clinical and ten clinical studies met the criteria. Seventeen of the nineteen pre-clinical studies found evidence supporting synergistic effects of opioid and cannabinoid co-administration. A meta-analyses of six pre-clinical studies indicated that the median effective dose (ED_{50}) of morphine + delta-9-tetrahydrocannabinol (THC) is 3.6 times lower (95%CI 1.95, 6.76) than the ED_{50} of morphine alone. Meta-analyses of two pre-clinical studies found the ED_{50} for codeine was 9.5 times lower (95%CI 1.6, 57.5) when co-administered with THC. Two small clinical studies of low quality reported reductions in opioid requirements with cannabinoid co-administration. Larger controlled clinical studies reported some clinical benefits of cannabinoids, however rarely reported opioid-dose changes and had mixed findings for pain.

Conclusions: In summary, preclinical studies provide robust evidence of a significant opioidsparing effect. Clinical studies were fewer in number and provided lower quality evidence supporting opioidsparing effects, which warrants further exploration. Prospective high quality controlled trials that specifically measure opioid dose are required to explore the potential of cannabinoids as an adjuvant medication to reduce opioid requirements and improve pain control.

Financial Support: SN is supported by a NHMRC Research Fellowship (#1013803). The National Drug and Alcohol Research Centre at the University of New South Wales is supported by funding from the Australian Government under the Substance Misuse Prevention and Service Improvements Grant Fund.

Abstract - ID: 265

Author(s):

Anastasiya Ferrell **(Presenter)**, University of Florida College of Nursing
Linda Haddad, University of Florida College of Nursing

Title: Applicability of the socioecological model on e-cigarette trends

Abstract Category: Theoretical/Commentary

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Behavior

Aims: The theory analysis was completed in order to investigate the applicability of the Socioecological Model (SEM) in research on electronic cigarette (e-cigarette) trends (e.g., policy, marketing, distribution, perception, prevalence).

Methods: The Google Scholar "cited by" function was used to find articles that cited the 1988 article about the SEM by McLeroy, Bibeau, Steckler, and Glanz.

Results: The SEM was used in a wide range of behavior-modification research. Among studies on behaviors related to tobacco use, the SEM was mainly applied to conventional cigarettes. The SEM factors applied to cigarette trends can be equated to those of e-cigarettes. The policy-level interventions in e-cigarettes are comparable to cigarettes' restricted use and distribution. Following the SEM and prior cigarette-related policies, increased pricing and taxation can be influential factors in prevalence of e-cigarette use. Community programs and anti-tobacco marketing projects have shown success in curbing cigarette use and can be applied to e-cigarette promotion and vaping. Organizational factors, such as tobacco cessation programs and clean air rules at work, have been utilized in reducing cigarette smoking. Application of these factors to e-cigarettes can be influential in lowering rates of vaping and associated social acceptance of e-cigarettes. Studies that utilized the SEM also showed that personal perceptions about cigarettes and social norms on smoking can be influenced by friends and relatives. Maneuvering of these inter- and intrapersonal factors can also help change perceptions about e-cigarettes and reshape social acceptance of vaping.

Conclusions: Similar to interpretations about cigarette trends, the complex interactions within and between the SEM levels can be helpful in understanding and foreshadowing the e-cigarette trends.

Financial Support: No financial support was provided for production of this theory analysis.

Abstract - ID: 266

Author(s):

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Title: Smoking consequences questionnaire: A reevaluation of the psychometric properties across two independent samples of smokers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Mechanisms of Action

Aims: Drug use outcome expectancies are a central construct to psychosocial theories of addictive disorders. In the tobacco literature, the Smoking Consequences Questionnaire (SCQ; Brandon & Baker, 1991) is the tool predominately used to assess this construct. Despite its widespread use, the SCQ has received little psychometric evaluation. In the current report, independent samples from two studies were employed to evaluate the psychometric properties of the SCQ.

Methods: In Study 1, the assumed SCQ structure was examined and modified using data from 343 (32.4% female; M_{age} = 43.7; *SD* = 10.8) adult non-treatment-seeking smokers. In Study 2, the SCQ factor structure proposed in Study 1 was confirmed and the construct validity was evaluated in 508 (47.8% female; M_{age} = 36.9; *SD* = 13.5) treatment-seeking adult smokers.

Results: Results indicated that the four-factor SCQ structure did not adequately explain covariance between items. Instead, results provided evidence for a unique six-factor structure. The six-factor structure also demonstrated measurement invariance across sex and over-time, excellent internal consistency, and convergent and discriminant validity.

Conclusions: Results challenge the traditional four-factor model of the SCQ, and instead, provide evidence for a novel six-factor SCQ structure with strong validity and reliability. Alternate scoring algorithms for the SCQ, including a six-subscale scheme, warrant consideration to ensure optimal measurement precision and construct differentiation in smoking research.

Financial Support: Funding was provided by the National Institute of Drug Abuse (R01-DA026831) and the National Institute of Mental Health (R01-MH076629).

Abstract - ID: 267

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Title: A novel interference peptide disrupts reconsolidation of methamphetamine-associated memory

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Treatment

Aims: Addiction is a chronic relapsing disorder, characterized by compulsion centered on the procurement and use of a drug of choice (i.e. craving). Individuals who have successfully abstained from drug use for extended periods are still susceptible to renewed episodes of drug seeking and abuse, following a single exposure to drug-related environment or a small dose of drug itself. The recurrence of addictive behaviors suggests that addiction may involve mechanisms of the abnormal memory that associated environmental stimuli with drug reward. A small novel peptide named Tat-GluR2$_{3Y}$ blocks the clathrin-mediated AMPAR endocytosis and the expression of LTD so that the establishment of new memory. It has been well studied that systematic injection of Tat-GluR2$_{3Y}$ before the challenge dose of D-amphetamine prevented the D-amphetamine-induced expression of sensitization and the cue-induced relapse to heroin-seeking in animal models, without affecting sucrose-seeking. However, further studies need to be conducted to demonstrate the effects of Tat-GluR2$_{3Y}$ in the drug-related memory and develop the therapeutics of Tat-GluR2$_{3Y}$ for long-term relapse prevention, furthermore, we also need to investigate the practical strategies for clinic management of addictive patients using Tat-GluR2 $_{3Y}$.

Methods: Firstly, we employed the methamphetamine-induced conditioned place preference model to establish the drug-related spatial memory of rats, then the challenge dose of methamphetamine was used to induce the reinstatement of these rats after extinction or drug-free period.

Results: we found that administration of Tat-GluR2A$_{3Y}$ before extinction training significantly blocked reinstatement, this effect was long-term lasted until 2 months later. Also, we found that repeat administration of Tat-GluR2A $_{3Y}$ before challenge blocked the relapse transiently, rather than long-term lasted. However, administration of Tat-GluR2A$_{3Y}$ after extinction did not block the relapse.

Conclusions: Within specific time-window, Tat-GluR2$_{3Y}$ could disrupt reconsolidation of drug-associated memory and prevent reinstatement at least for 2 months. Tat-GluR2A$_{3Y}$ might be a very prospective therapy for long-term relapse prevention.

Financial Support: National key basic research and development 973 Program to Wei Hao(NO.2015CB553504) NSFC to Xiaojie Zhang (NO. 81501108)

Abstract - ID: 268

Author(s):

Alaaeldin Elkoussi **(Presenter)**, Assiut College of Medicine

Title: Toxic effects of solvent inhalants on liver and kidney functions in rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Inhalants

Topic: Adolescent

Aims: To investigate the toxicological effects of " Kolla" , which is a widely abused household glue among street children and adolescents in Egypt, on liver and kidney functions in rats in comparison with toluene, which is also a widely abused toxic solvent inhalant in many countries.

Methods: Two concentrations of "Kolla" (***5000 & 10000ppm***) and toluene (***28225& 56450 ppm)*** were tested after single inhalation for 30 minutes and repeated daily exposure (30 min/day) for 10 days. Changes in serum levels of: alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), urea and creatinine serum levels were studied. Extracted kidney and liver from control and treated animals were used for histopathological examination.

Results: "Kolla" has deleterious effects on the liver and kidneys of rats evidenced by a dose-dependent, remarkable increase in serum liver enzymes including ALT,AST ALP, urea and creatinine. "Kolla" exerted more noticeable effects than the corresponding concentrations of toluene. Histopathological investigation following 10 days of repeated "Kolla" and toluene inhalation in their low concentrations showed no serious pathological changes on liver and kidney. Inhalation of higher concentration of "Kolla" produced mild fatty changes and hydropic degeneration in liver. Higher toluene concentrations produced glomerular hypercellularity in kidney and disorganization of lobular architecture in liver.

Conclusions: Repeated inhalation of "Kolla" and toluene leads to significant increase in serum liver enzymes, urea and creatinine in addition to some histopathological changes. In general, these toxic effects were more noticeable than those of the corresponding concentrations of toluene.

Financial Support: No

Abstract - ID: 269

Author(s):

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Title: Combating craving with contingency management: Neuroplasticity and methamphetamine abuse in South Africa

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Imaging

Aims: Aims and Hypothesis: The United States, Australia and South Africa have a particularly high prevalence of methamphetamine (MA) dependence with its subsequent social and health costs resulting in need for effective treatments. We investigated changes in intrinsic frontostriatal function and underlying neuroimaging correlates in participants who received an 8-week contingency management (CM) intervention. We hypothesized that pre-post changes in performance on cognitive control and impulsivity measures would be associated with differences in the intrinsic functional connectivity of frontostriatal circuitry.

Methods: Methodology: We conducted interim analyses from 7 males and 2 females (projected total of 30) with MA dependence seeking out-patient treatment. We used an escalating CM schedule that provided vouchers for consecutive negative urine samples collected thrice-weekly. At baseline and post-intervention assessment participants received an MRI scan and completed the Stop Signal Task (SST). Changes pre-post CM intervention in whole-brain intrinsic functional connectivity was assessed for dorsolateral prefrontal cortex (DLPFC) and dorsal caudate masks.

Results: Results: Small statistically non-significant improvements were observed on the SST post CM with regards to both accuracy (Cohen's d = 0.19) and improved reaction times (Cohen's d = 0.07). Increased connectivity was observed post CM within the right DLPFC, after correcting for multiple comparisons (voxel alpha = 0.01, cluster extent: 72 voxels), with subthreshold evidence of reduced connectivity between the dorsal caudate and motor cortex.

Conclusions: Conclusion: We present preliminary evidence that contingency management may have a beneficial effect on brain function after an 8-week intervention in methamphetamine dependent patients, this is supported by the significant increase in connectivity within the DLPFC.

Financial Support: Required

Abstract - ID: 270

Author(s):

Radhika Kondapaka **(Presenter)**, The Emmes Corporation
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Robert Lindblad, The Emmes Corporation

Title: Pharmacovigilance in clinical trials of substance use disorder treatments with marketed drugs

Abstract Category: Theoretical/Commentary

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Monitoring study participants' safety is required under good clinical practices (GCP) guidelines and serves to safeguard the well-being of study participants and to ensure scientific integrity. Due to the magnitude of Adverse Events (AEs) collected in substance use disorder (SUD) clinical trials, it is vital to utilize electronic data collection technologies in more thoughtful and innovative ways to streamline collection and enhance the practical application of drug risk assessment and mitigation strategies.

Methods: In NIDA's Clinical Trial Network (CTN) studies with marketed drugs like naltrexone, buprenorphine and buspirone, the safety monitoring strategy takes into consideration the safety profile of these marketed drugs. The safety electronic Case Report Forms (eCRFs) are developed in a thoughtful and systematic way before the start of a trial to enhance data quality, facilitate medical terms' coding, and enable more rapid safety monitoring decisions. Categorizing expected protocol-specific events on predetermined eCRFs can reduce the number of AEs and allow for accurate categorization of large amounts of expected safety data. Expected events, such as opioid withdrawal symptoms, naloxone challenge, naltrexone injection site reactions, and non-fatal opioid overdose, are collected and used to closely monitor the participants and collect data.

Results: In the CTN trials all safety events are assessed, but depending on the study objective, collection in a data system can be based on severity grade (greater than grade 1/mild) and/or causality designation (related) and/or known complications. This strategy significantly reduces the safety reporting burden for clinical sites, streamlines and improves the quality of the collected safety information and facilitates monitoring for safety signals.

Conclusions: This presentation will discuss best practices for utilizing predetermined CRF data collection to facilitate well-organized safety data and optimize the efficiency of the clinical trial pharmacovigilance practices throughout the lifecycle of the SUD trial.

Financial Support: HHSN271201500065C

Abstract - ID: 271

Author(s):

Daisy Thompson-Lake **(Presenter)**, Queen Mary University of London
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Peter Hajek, Queen Mary University of London

Title: Impact of quality of life and distress tolerance on successful behaviour change in separate cohorts of individuals with alcohol use disorder and obesity

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Dependence

Aims: The ability to tolerate higher levels of distress has been associated with aptitude for changing behaviours such as abstaining from cigarettes or substance use. However, no single measure of 'distress tolerance' (DT) has been shown to consistently predict such outcomes. Therefore, whether DT plays a role in successful abstinence remains unclear. To our knowledge no studies have examined the value of DT in predicting success or failure of attempts to stop drinking in people with alcohol use disorder (AUD) and attempts to lose weight in individuals with weight problems (WP).

Methods: We report preliminary results from a study that compared people from the two extreme ends of the 'success continuum'. Specifically, we recruited people with AUD and WP who were highly motivated to change but unable to do so for even a short period of time; and people with previous AUD and WP who have achieved long-term success. We used a battery of measures to investigate quality of life (QoL), social relationships and stressful life events; as well as measures assessing physical and psychological DT and measures of self-reported DT.

Results: Individuals with AUD who have stopped drinking (N=10), and those unable to stop (N=8) were significantly different in social and emotional loneliness (p=.015), however, there were no differences for any DT measure (ps>.3). In people with WP, the successful (N=13) and unsuccessful group (N=40) differed in number of stressful life events (p=.027) and in self-reported DT (pspsp>.08).

Conclusions: Our findings suggest that while self-report may indicate difficulties in persisting with a weight loss attempt, it is likely that the general ability to change behaviour, such as abstaining from alcohol or reducing caloric intake, is more closely related to QoL, social relationships and mood than DT.

Financial Support: UKCTAS

Abstract - ID: 272

Author(s):

Yifrah Kaminer **(Presenter)**, University of Connecticut School of Medicine
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Rebecca Burke, University of Connecticut
Kaitlin Flannery, University of Connecticut

Title: Goal commitment predicts outcome for adolescents with alcohol use disorder

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Treatment

Aims: The adolescent substance abuse commitment (ASAGC) questionnaire is a reliable and valid 2-scale measure (Kamniner et al. 2016) developed to assess an individual's commitment to recovery (i.e., sobriety or abstinence) or to harm/consumption reduction (HR) as a stated treatment goal. The aim of the study was to examine the ASAGC ability to predict alcohol use treatment outcome.

Methods: During sessions three and nine of a 10-week outpatient treatment program, therapists completed the ASAGC for 170 adolescents 13-18 years of age with alcohol use disorders (AUD). The teens also reported on their drinking behavior during a continued care pase and the 3,6, and 12 month folllow-up assessments.

Results: Analysis of Variance results indicated that adolescents who reported no alcohol use had significantly higher scores on the commitment to recovery scale (i.e., sobriety) than adolescents who reported alcohol use. None of the ANOVA models were significant for commitment to HR. When treatment outcome was examined, commitment to sobriety consistently predicted number of drinking days, number of heavy drinking days, and the maximum number of drinks post-treatment. In contrast, commitment to HR did not predict any of the drinking outcomes. These results suggest that the more adolescents were committed to sobriety during treatment, the less they used and abused alcohol after treatment completion.

Conclusions: In addition to the ASAGC's ability to differentiate between commitment to sobriety versus commitment to HR, study findings demonstrate that goal commitment consistently predicts AUD treatment outcome.

Financial Support: NIDA and NIAAA support to Dr. Kaminer

Abstract - ID: 273

Author(s):

Elizabeth Evans **(Presenter)**, US Department of Veterans Affairs
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Title: Gender and race/ethnic differences in the persistence of alcohol, drug, and poly-substance use disorders

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Epidemiology

Aims: To examine gender and racial/ethnic differences in the effect of substance use disorder (SUD) type on SUD persistence.

Methods: Data were provided by 1,025 women and 1,835 men from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) to examine whether gender and race/ethnicity (Non-Hispanic White, Black, Hispanic) moderate the effects of DSM-IV defined past-12 month SUD type (alcohol, drug, poly-substance) on SUD persistence at 3-year follow-up, controlling for covariates. Using gender-stratified weighted binary logistic regression, we examined predictors of SUD persistence, tested a SUD type by race/ethnicity interaction term, and calculated and conducted Bonferroni corrected pairwise comparisons of predicted probabilities.

Results: SUD persistence rates at 3-year follow-up differed for SUD type by gender by race/ethnicity sub-group, and ranged from 31% to 81%. SUD persistence rates were consistently higher among poly-substance users; patterns were mixed in relation to gender and race/ethnicity. Among women, alcohol disordered Hispanics were less likely to persist than Whites. Among men, drug disordered Hispanics were less likely to persist than Whites. Also, Black men with an alcohol or drug use disorder were less likely to persist than Whites, but Black men with a poly-substance use disorder were more likely to persist than Hispanics.

Conclusions: The effect of SUD type on SUD persistence varies by race/ethnicity, and the nature of these relationships is different by gender. Such knowledge could inform tailoring of SUD screening and treatment programs, potentially increasing their impact.

Financial Support: Supported by a Charles F. Scott Fellowship awarded by UCLA to Elizabeth Evans

Abstract - ID: 274

Author(s):

Ileana Pacheco-Colon **(Presenter)**, Florida International University
Samuel Hawes, Florida International University
Jacqueline Duperrouzel, Florida International University
Raul Gonzalez, Florida International University

Title: Does physical activity influence the association between cannabis use and memory?

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Adolescent

Aims: Prior work has found that heavy cannabis use (CU) is associated with deficits in learning and memory. On the other hand, physical activity (PA) has been shown to enhance executive functioning and memory. This study aims to determine whether PA moderates the association between adolescent CU and memory, such that CU leads to greater memory deficits in those who report less physical activity.

Methods: Participants include 400 healthy adolescents (ages 14-17), with most at risk for escalation in CU. Participants were asked to list a sport they participated in, and rate the amount of time they spent engaging in it relative to peers, using the Youth Self Report. The amount of time reported was used as our measure of PA. Frequency of CU was assessed over the last 30 days. Participants completed the California Verbal Learning Test-II as well as the Wechsler Memory Scales-IV Logical Memory and Designs subtests. Composite scores from each of these tests' long delay free recall trials were used to derive a latent construct of 'memory'.

We first examined univariate associations of CU and PA on our latent 'memory' construct in separate regression models in order to examine the independent influence of each of these predictor variables. We then ran a model that included both predictor variables, along with their interaction term, in order to assess whether PA moderates the association between CU frequency and memory.

Results: Past 30-day CU frequency was significantly associated with poorer memory, ß = -.14, $p < .05$. PA was not significantly associated with memory, ß = .04, $p > .05$. The PA x CU interaction was also found to be non-significant, ß = -.01, $p > .05$.

Conclusions: Our results replicate the well-established relationship between greater CU and poorer memory performance. However, PA was not found to influence this association in our adolescent sample. Future studies should include more detailed measures of PA and determine if the lack of associations between PA, CU, and memory performance in our sample is also observed among adults.

Financial Support: Supported by R01 DA031176, R01 DA033156, and CNS-1532061 (PI Gonzalez)

Abstract - ID: 275

Author(s):

Nikki Bozinoff **(Presenter)**, Centre for Addiction and Mental Health
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Title: Access to opioid-agonist therapy among incarcerated people with opioid-use disorder in Vancouver, Canada

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Among incarcerated people with opioid use disorder, inability to access opioid-agonist therapy (OAT) is associated with numerous harms including overdose death. Although OAT is available in correctional facilities in British Columbia (BC), Canada, previous reports indicated difficulty accessing treatment in such settings. Therefore, we investigated the prevalence and correlates of OAT access within correctional settings among incarcerated opioid users in Vancouver, BC.

Methods: Data were derived from three prospective cohorts of people who use drugs in Vancouver between 2005 and 2015. Using multivariable generalized estimating equations, we examined factors associated with access to OAT while incarcerated among participants with opioid use disorder who reported incarceration in the past 6 months.

Results: In total, 563 eligible participants reported a total of 1148 reports of recent incarceration. Of those, 265 (23%) included a report of continuing on OAT and 21 (2%) included a report of new initiation on OAT while incarcerated. In multivariable analysis older age was positively associated with accessing OAT while incarcerated (Adjusted Odds Ratio [AOR] = 1.45, 95% Confidence Interval [CI]: 1.20-1.76). Factors negatively associated with accessing OAT while incarcerated included: recent non-fatal overdose (AOR=0.65 95% CI: 0.43-1.00), daily prescription opioid use (AOR = 0.36, 95% CI: 0.22-0.60) and recent syringe sharing (AOR=0.54, 95% CI: 0.30-0.98) (all $p < 0$ .05).

Conclusions: Access to OAT in correctional settings was low in our sample. Those not accessing OAT while incarcerated were more likely to report recent non-fatal overdose and syringe sharing. These findings underscore the urgent need for improved access to OAT in prisons to prevent harms such as overdose and the transmission of HIV and HCV.

Financial Support: The study was supported by the US National Institutes of Health (U01DA038886), (R01DA021525), and (U01DA038886).

Abstract - ID: 276

Author(s):

Jin Yoon **(Presenter)**, University of Texas Health Science Center
Ilana Haliwa, University of Texas Health Science Center
Jessica Vincent, University of Texas Health Science Center
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Joy Schmitz, University of Texas Health Science Center
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Title: Eye-tracking-based measures of inhibitory control and attentional bias in marijuana SUD and control subjects

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Mechanisms of Action

Aims: Both inhibitory control (IC) deficits and attentional bias (AB) to drug-related cues are associated with increased relapse risk. The current study used eye-tracking methods to compare IC and AB processes in subjects with marijuana (MJ) use disorder (MJSUD) and controls (CNTL).

Methods: Subjects (N = 42 MJSUD, 11 CNTL) first completed a reactivity assessment with 36 visual cues (18 MJ, 18 neutral). The 6 MJ and neutral cues that produced the greatest and least reactivity, respectively, were identified (for each subject) and used for the subsequent eye-tracking task. Cue reactivity was assessed using a composite reactivity score (L2 vector norm) comprised of self-report, pupil diameter, heart rate and variability, and respiration rate and variability. During the eye-tracking task, subjects completed blocks of pro-saccade or anti-saccade trials with the individually-selected MJ and neutral stimuli.

Results: The reactivity assessment identified sets of MJ and neutral stimuli with significantly different composite reactivity scores (MJ cues > neutral cues, $p < .001$). For the eye-tracking test data, IC was defined as greater overall anti-saccade errors across all stimuli. AB was defined as the ratio of MJ-cue anti-saccade errors relative to total anti-saccade errors. Linear models revealed greater IC deficits (MJSUD > CNTL, $p < .001$) and greater AB effects (MJSUD > CNTL $p < .05$). A significant association was observed between composite (L2 norm) reactivity scores and total anti-saccade errors within the MJSUD group only ($r = 0.24$, $p < .001$). When the vector norm scores were deconstructed into individual variables, subjective rating ($p < .005$) and heart rate ($p < .03$) predicted AB outcomes in the MJSUD group only.

Conclusions: The results suggest that the eye-tracking assessment has both sensitivity to IC deficits and specificity to AB effects toward MJ cues. Collectively, the task yields data that may serve as a tool for assessing relapse risk.

Financial Support: Financial support provided by grants from the National Institute on Drug Abuse: 5R21DA034825, P50DA009262

Abstract - ID: 277

Author(s):

Elise Riley **(Presenter)**, UCSF
Priscilla Hsue, UCSF
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Title: Higher prevalence of detectable troponin I among cocaine users without known cardiovascular disease

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Other

Aims: While cocaine use is an established risk factor for acute cardiovascular complications, associations between cocaine use and markers of cardiac injury outside of acute hospital presentation remain poorly characterized. We leveraged advances in cardiac troponin (cTnI) testing to not only assess levels exceeding the 99th percentile (>0.04 ng/mL), indicating myocardial infarction, but also include clinically meaningful lower levels of cardiac injury (cTnI>0.02 ng/mL) among cocaine users and non-users.

Methods: We conducted a case control study to compare cTnI levels by the presence of cocaine among patients presenting for non-cardiac care in an urban safety net hospital. Samples were chosen sequentially among those for which urine drug screens were ordered by providers hospital-wide.

Results: During 2015, 14% of all hospital drug screens ordered were cocaine-positive. Among unique persons providing cocaine-positive (N=100) and cocaine-negative (N=100) samples, 37% were female, 45% were African-American and the median age was 51 years. Detectable cTnI (>0.02 ng/mL) was observed in 21 samples (11%). In adjusted analysis, detectable cTnI was significantly higher in subjects using cocaine (Adjusted OR=2.81; 95% CI=1.03-7.65), but not other drugs. Moreover, there was a significant correlation between concentrations of cTnI and the cocaine metabolite, benzoylecgonine (Spearman Correlation=0.34, $p < 0$ .01]).

Conclusions: Among urban safety net hospital patients, 11% had detectable cardiac troponin, and troponin concentration was significantly correlated with benzoylecgonine concentration. Results suggest that the consideration of cocaine use as not just an episodic exposure leading to acute cardiac events, but also as an ongoing chronic exposure leading to subclinical cardiac injury, may improve risk-stratification and patient outcomes in populations where cocaine use is high.

Financial Support: This study was supported by the National Institute of Drug Abuse R01 DA037012 and K24 DA039780.

Abstract - ID: 278

Author(s):

Yasmin Mashhoon **(Presenter)**, McLean Hospital, Harvard Medical School
Jennifer Betts, McLean Hospital, Harvard Medical School
Stacey Farmer, McLean Hospital, Brain Imaging Center
Scott Lukas, McLean Hospital, Harvard Medical School

Title: Thicker frontal lobe regions associated with impulsivity and craving in smokers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Imaging

Aims: Dynamic neuromaturational refinements in the brain take place throughout adolescence and the early twenties that are associated with improved executive cognitive processing, particularly in prefrontal regions. As nicotine use is typically initiated during adolescence, the current objective was to investigate the impact of chronic nicotine use on frontal lobe cortical thickness in adult smokers relative to healthy non-smokers.

Methods: Five cigarette smokers (aged 33.7 ± 6.7; 3 females) and three non-smokers (aged 28.8 ± 4.5; 0 females) underwent high-resolution magnetic resonance imaging at 3 Tesla. Cortical surface reconstruction and preliminary analyses of frontal cortex thickness were performed using Freesurfer pipelines to measure bilateral anterior cingulate (ACC) and posterior cingulate (PCC) cortices as well as frontal and frontopolar gyri thickness estimates. The Barratt Impulsiveness Scale and Questionnaire on Smoking Urges were used to assess subjective impulsivity and smoking craving.

Results: Cortical thickness was significantly higher in smokers than non-smokers in the left hemisphere (LH) ACC (p?0.05) and mid-PCC (p?0.04) and the opercular inferior frontal gyrus (oIFG; p?0.05) and middle frontal gyrus (MFG; p?0.05). Cortical surface thickness was also higher in right hemisphere (RH) frontopolar gyrus (p?0.05). Thicker mid-PCC correlated with greater reported motor (p?0.05) and total (p?0.03) impulsivity. Furthermore, thicker ACC, mid-PCC, oIFG, and MFG were correlated with greater reported cigarette craving (p?0.05).

Conclusions: While the sample size is currently small, preliminary analyses in this ongoing study revealed significantly thicker frontal lobe regions in adult cigarette smokers, relative to non-smokers. This finding suggests that persistent cigarette smoking during adolescence and young adulthood may have interfered with normal GM maturation and synaptic pruning processes in the frontal lobe, which could affect regulation of executive cognitive function.

Financial Support: DA034028 (YM)

Abstract - ID: 279

Author(s):

Mary Jones **(Presenter)**, United States Drug Testing Laboratories
Joseph Jones, United States Drug Testing Laboratories
Jason Hulen, United States Drug Testing Laboratories

Title: The detection of prenatal marijuana exposure using meconium and umbilical cord: A comparison using matched pairs

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Perinatal

Aims: For several decades, meconium has been the specimen of choice for *in utero* drug detection however there are several limitations such as low availability due to passage *in utero*, delayed passage, or discarded (both intentional and unintentional). Umbilical cord (UC) is rapidly replacing meconium as the gold standard because it is truly a universal specimen, simple single-step collection, and its availability immediately following birth. The aim of this study is to compare the outcomes of matched pairs of meconium and UC for the presence of 11-nor-9-carboxy-D ^{9}-tetrahydrocannabinol (THCA), the principle metabolite of the main psychoactive ingredient in marijuana.

Methods: A retrospective analysis of the testing records for 371 matched pairs of meconium and UC specimens. These specimens were forwarded to USDTL for the routine detection of *in utero* drug exposure between January 2016 and October 2016. All specimens were subjected to fully validated immunoassay initial tests followed by the confirmation of presumptive positives using fully validated gas chromatography-mass spectrometry methods. Specimens that screened and confirmed positive were considered to be true positives.

Results: Of the 371 matched pairs, there were 258 pairs negative for THCA and 85 pairs positive for THCA. Seventeen (17) matched pairs were negative for meconium but positive for UC. Eleven (11) specimens were positive for meconium but negative for UC. Two (2) meconium specimens were rejected for quantity not sufficient and are not included in this analysis. Considering meconium as the gold standard assay, the sensitivity of UC was 88.5%, the specificity was 93.8%, the positive predictive value was 83.3%, and the negative predictive value was 95.9%. The mean concentration of THCA in meconium was 214.68 ng/g ± 293.78 ng/g (median = 102.00 ng/g) and 2040.18 pg/g ± 4294.88 pg/g (median = 743.00 pg/g) in UC. The non-normally distributed results were positively, strongly, and significantly associated (? = 0.624; $p < 0.001$).

Conclusions: This study suggests that meconium and UC are comparable biomarkers for the detection of *in utero* marijuana exposure. Our comparison demonstrated sufficient sensitivity (88.5%) and specificity (93.8%). Although the concentrations of THCA in UC are 2 orders of magnitude less than the concentrations in meconium, there exists a strong and significant association between the concentrations of THCA in meconium and UC.

Financial Support: Funded by USDTL

Abstract - ID: 280

Author(s):

Maureen Reynolds **(Presenter)**, University of Pittsburgh
Ralph Tarter, University of Pittsburgh
Levent Kirisci, University of Pittsburgh
Michael Vanyukov, University of Pittsburgh

Title: Parental substance use, adolescent physical activity, and cannabis use disorder in young adulthood

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Adolescent

Aims: Elevated consumption of abusable substances by youths is associated with low regular exercise and physical recreation (EPR). As sedentary disposition is associated with negative emotions, physically inactive youth may derive the benefit of affective enhancement from the effects of cannabis. Substance use disorder (SUD) is well-known to be aggregated in families, and the transmission of SUD liability is to a large degree accounted for by genetic mechanisms, possibly having a role in both physical activity and liability to SUD. Mediation of the relationship between parental SUD status and the offspring's SUD risk by physical activity could help elucidate these mechanisms.

Aim 1: Does parental SUD predict level of participation in EPR in their adolescent children? Aim 2: Is lower EPR participation spanning 12-22 years of age related to higher frequency of substance use, culminating in cannabis use disorder (CUD) in young adulthood?

Methods: EPR and past month substance use frequency were measured in boys (N=467) and girls (N=186) at ages 12-14, 16, 19 and 22 using the Drug Use Screening Inventory (DUSI-R). SUD in parents and CUD outcome in their children was determined using the Structured Clinical Interview for DSM (SCID). Parental SUD load was measured by the number of affected parents (NAP; 0-2). Path analysis was conducted to model the association between EPR and substance use trajectories spanning from ages 12-22 with cannabis use disorder as the dichotomous outcome at age 22.

Results: NAP predicted the rate of EPR decline in boys spanning 12-22 years of age and predicted an elevated rate of substance use frequency culminating in CUD at age 22. In girls, NAP predicted EPR participation at age 12-14 and, indirectly, the rate of its decline, and was associated with increased substance use, resulting in CUD at age 22.

Conclusions: SUD familial load is related to EPR participation and its changes over time, which are associated with adolescent substance use leading to CUD in young adulthood. These findings indicate that EPR may reflect or influence processes involved in the familial transmission of liability to CUD, and have important ramifications for prevention of CUD and other chronic disorders.

Financial Support: NIH Grant # P50DA005605 NIH Grant # K05DA031248

Abstract - ID: 281

Author(s):

Suchismita Ray **(Presenter)**, Rutgers University
Marsha Bates, Rutgers University
Margaret Haney, Columbia University Medical Center
Aradhana Srinagesh, Rutgers University
Ashley Aya, Rutgers University

Title: An fMRI study to examine recognition memory for cocaine picture stimuli in cocaine smokers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Imaging

Aims: Maintenance of problematic drug use is believed to be influenced by conscious explicit memory processing, such as the processing involved in recognition memory. Several studies have examined recognition memory in drug users, but it is not known whether this memory process becomes biased towards appetitive cues in substance abusing populations, similar to the development of attentional bias. In this functional magnetic resonance imaging (fMRI) study, we examined explicit recognition memory for cocaine and neutral picture stimuli in cocaine users and controls.

Methods: During the study phase of a recognition memory task, 20 non-treatment seeking chronic cocaine smokers (15M;5F) and 17 age matched controls (13M;4F) viewed cocaine and neutral picture cues. During the test phase, participants were instructed to discriminate previously viewed and new cocaine and neutral cues one at a time. BOLD data were collected while participants indicated whether they had seen the cue.

Results: A group level analysis using FMRIB Software Library (FSL) v6.00 revealed that cocaine users compared to controls showed significantly enhanced activation in 10 brain areas (2 significant clusters; cluster sizes = 1677 and 1834 voxels) during correct old/new recognition (d´) of cocaine cues than neutral cues. These enhanced activated areas in cocaine users included drug cue reactivity-related (frontal medial cortex, subcallosal cortex, paracingulate gyrus) and recollection-based (middle frontal gyrus, temporal, occipital) regions. Behavioral data showed that d´ for cocaine cues was significantly greater in the cocaine group compared to the control group; there were no group differences for neutral cues.

Conclusions: Behavioral data show that recognition memory processing in chronic cocaine users is biased towards appetitive cocaine cues. Imaging results suggest that cue reactivity is stronger when cocaine users explicitly recognize a specific cocaine cue.

Financial Support: This research was supported by NIDA grant K01DA029047 and NIAAA grant K24 AA021778.

Abstract - ID: 282

Author(s):

Megan Shram **(Presenter)**, Altreos Research Partners Inc.
Naama Levy-Cooperman, Altreos Research Partners Inc.

Title: Abuse liability assessment of new tobacco products: Application of human abuse potential study methodology and special considerations

Abstract Category: Theoretical/Commentary

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Other

Aims: New tobacco products, including electronic nicotine delivery systems (ENDS), are now subject to specific premarket FDA requirements, including an assessment of abuse liability. Although HAP studies of new chemical entities (NCEs) have been conducted for decades using established methods, the standard HAP design may require modification to more effectively assess the abuse potential of NTPs. Aim: To provide a review of methodology for the clinical HAP assessment of ENDS.

Methods: A review of the methods described in publically available ENDS HAP studies was conducted. The methodology was then compared with those used in HAP studies of NCEs.

Results: The choice of controls (eg, own brand vs unbranded cigarette, nicotine replacement therapy), number and method of exposures, duration of smoking abstinence, and subject selection (eg, amount of experience with ENDS products and level of nicotine dependence) varied substantially across studies, as did the outcome measures and statistical analysis. Subject selection and inclusion of positive and negative controls should be considered in the context of study objectives (eg, likelihood of switching vs relative abuse potential). To reduce variability and sample size requirements, a crossover design should be consistently applied to evaluate the abuse potential of NTPs compared with existing products and, when possible, include an enrichment strategy to enroll subjects who can respond appropriately in the clinical setting. Inclusion of structured vs. ad libitum exposure and evaluation of exposure-response should be considered based on use patterns. In most studies, both withdrawal-alleviating and acute product effects were evaluated using a variety of subjective scales; a core battery of measures which takes into account the nature of tobacco products, ie, consumer products, can be implemented to simplify assessment and interpretation.

Conclusions: Aspects of traditional HAP studies can and should be applied in the abuse potential assessment of NTPs; however, special design considerations may be needed.

Financial Support: No financial support was provided.

Abstract - ID: 283

Author(s):

Daniela Rüedi-Bettschen **(Presenter)**, University of Mississippi Medical Center
Maggie Neal, University of Mississippi Medical Center
Donna Platt, Division of Neurobiology and Behavior Research

Title: In utero exposure to moderate doses of methamphetamine alters sensitivity to the same drug in adults

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Perinatal

Aims: Methamphetamine (METH) abuse during pregnancy is an urgent public health concern, as there is only limited knowledge of its effects on the developing fetus. In the present rat study, we investigated how daily METH self-administration throughout pregnancy affected adult offspring in terms of METH-induced locomotor activity, acquisition of METH self-administration and motivation to obtain METH under a progressive ratio (PR) schedule of reinforcement compared to control offspring from yoked saline dams.

Methods: In utero METH-exposure was achieved via daily 2-hr access to METH self-administration by the dam throughout pregnancy. Effects of a range of doses of METH (0.18 – 3.2 mg/kg, *sc*) on locomotor activity was assessed in offspring at 6 months of age by measuring total distance travelled in activity chambers. Acquisition of METH self-administration and self-administration (0.0125 – 0.2 mg/kg/infusion) under a PR schedule of reinforcement were assessed at 12 months of age.

Results: In locomotor studies, METH-exposed offspring showed significantly greater locomotor activity after high doses of METH compared to controls, but showed similar increases in locomotion after lower METH doses. No differences were evident in baseline locomotor activity. In self-administration studies, METH-exposed offspring acquired self-administration significantly faster than controls. Ultimately, though, METH-exposed and control offspring did not differ in total METH self-administered upon acquisition. While motivation to work for METH under a PR schedule did not differ between the groups for lower doses of METH, METH-exposed offspring earned significantly more infusions at high doses of METH compared to controls.

Conclusions: These results show that in utero exposure to moderate METH doses has long-lasting effects on sensitivity to the behavioral effects of METH. This suggests that even moderate or recreational METH use during pregnancy may increase the susceptibility for METH abuse in exposed offspring.

Financial Support: NIGMS P30GM103328

Abstract - ID: 284

Author(s):

Cathy Reback **(Presenter)**, Friends Research Institute
Jesse Fletcher, Friends Research Institute

Title: Text messaging reduces methamphetamine use and HIV risk behaviors among MSM

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Technology Issues

Aims: Methamphetamine (MA)-using men who have sex with men (MSM) and/or African American/Black MSM continue to exhibit high rates of HIV incidence. A RCT tested the efficacy of text messages to reduce MA use and HIV risks among MSM.

Methods: 286 MSM enrolled in an 8-week, gay-specific, theory-based text-messaging intervention to decrease MA use and HIV risks. Participants were randomized into 1 of 3 arms: a weekly assessment and 5 daily auto messages plus real-time text conversations with PHE (TXT-PHE); assessment plus 5 daily messages (TXT-Auto); assessment only (AO). Follow-up assessments occurred at 8-weeks (84%) and 3- (89%), 6- (86%), and 9-months (91%) post-enrollment.

Results: Participants were mostly non-white (80%), HIV-negative (59%), averaged 42 years (SD=11), and had severe MA use disorder (DSM-V; 64%). Negative binomial panel regressions showed that from baseline to 9-month follow-up, participants significantly reduced days of MA use (IRR_{PHE}=0.49; IRR_{Auto}=0.47; IRR_{AO}=0.44), sex while on MA (IRR_{PHE}=0.41; IRR_{Auto}=0.26; IRR_{AO}=0.34), casual sex partners (IRR_{PHE}=0.43; IRR_{Auto}=0.34; IRR_{AO}=0.28), anonymous sex partners (IRR_{PHE}=0.35; IRR_{Auto}=0.23; IRR_{AO}=0.41), sex work partners (IRR_{PHE}=0.29; IRR_{Auto}=0.13; IRR_{AO}=0.20), and condomless anal intercourse (CAI) with casual partners (IRR_{PHE}=0.36; IRR_{Auto}=0.29; IRR_{AO}=0.23). Only participants in TXT-PHE and TXT-Auto significantly reduced CAI with anonymous partners (IRR_{PHE}=0.33; IRR_{Auto}=0.22), and only participants in TXT-Auto significantly reduced CAI with sex work partners (IRR=0.10). The intervention demonstrated equivalent efficacy across both HIV-positive and HIV-negative participants; superior sexual risk outcomes were observed among racial/ethnic minority participants and participants diagnosed with a severe MA use disorder.

Conclusions: All arms significantly reduced MA use and HIV risks, and outcomes were superior among racial/ethnic minority MSM and those with severe MA use disorder, two extremely high-risk priority populations.

Financial Support: Supported by NIDA grant #R01DA035092

Abstract - ID: 285

Author(s):

Sean Luo **(Presenter)**, Columbia University
Edward Nunes, Columbia University and NYSPI
Lirio Covey, Columbia University
Mei-Chen Hu, Columbia University
Theresa Winhusen, University of Cincinnati

Title: A course of methylphenidate may improve smoking cessation outcome in patients with more severe ADHD: Results from follow-up data from a multi-site randomized controlled trial

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: In a multisite, randomized study (CTN-0029), a 3-month course of osmotic-release oral system methylphenidate (OROS-MPH) improved smoking cessation in a group of patients with higher baseline severity in Attention-Deficit/Hyperactivity Disorder (ADHD). This treatment, however, worsened smoking cessation outcome in the group with lower baseline severity. We want to examine whether this differential treatment effect persisted after OROS-MPH was stopped.

Methods: We conducted a secondary analysis of the follow-up data from that study. Patients were followed for an additional month after stopping OROS-MPH. We tested the hypothesis that OROS-MPH has an effect on abstinence.

Results: In the high severity group (defined as those with ADHD-RS > = 36, n=134), patients who received OROS-MPH had an improved abstinence even after the medication was stopped (48% for OROS-MPH vs. 26% for placebo, OR = 0.37, P = 0.02). In the lower severity group (n=121), there was no difference between abstinence (36% for OROS-MPH and 37% for placebo) at the end of 1-month follow-up period between the two treatment groups.

Conclusions: The beneficial effect of OROS-MPH in initiation of abstinence may last beyond the course of treatment for patients with more severe ADHD, while the harmful effect of OROS-MPH in the lower baseline severity group washes out after the medication is stopped. This differential effect suggests adjunct psychostimulant may have promise in initiation of smoking cessation in patients with high baseline ADHD symptom severity.

Financial Support: Dr. Luo is supported by NIDA 5T32DA007294-23

Abstract - ID: 286

Author(s):

Gabrielle Campbell **(Presenter)**, University of South Wales
Briony Larance, University of South Wales
Suzanne Nielsen, University of South Wales
Teleri Moore, University of South Wales
Courtney O'Donnell, University of South Wales
Louisa Degenhardt, National Drug and Alcohol Research Centre

Title: Patient concerns and help-seeking for problems with opioid medications for chronic non-cancer pain

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Dependence

Aims: This study aims to examine

a. The demographic and clinical correlates associated with problems and concerns of pharmaceutical opioid use in a sample of people prescribed opioids for chronic non-cancer pain
b. Determine whether problems with opioid use are associated with barriers to help-seeking, and
c. Examine attitudes to the medications used in opioid substitution therapy for the treatment of opioid dependence.

Methods: The Pain and Opioids IN Treatment (POINT) study is a large national prospective cohort study of 1,514 persons prescribed strong opioids for chronic non-cancer pain. This study draws on cross-sectional data collected at the 12 month follow-up interviews, n=1,095

Results: Over half the sample (54%) reported 'low' levels of problems with their opioid use, 17% reported intermediate and 29% reported high levels of problems with their opioid medication. Participants who reported intermediate to high levels of problems with their pharmaceutical opioids were more likely to be younger, have more complex physical and health comorbidity, greater pain severity and interference and more current mental health problems, compared with participants who reported low levels of problems with their opioid use.

Further, participants who reported intermediate to high levels of problems with their opioids were also more likely to have recently engaged in aberrant drug-related behaviour and were more likely to be dependent on their medication. Participants with intermediate to high levels of problems were significantly more likely to report that they had worried about their use of opioids and had sought treatment for problems associated with their opioid use compared with those who experienced low levels of problems.

Participants who had heard of methadone (n=583) and buprenorphine (n=197) for the treatment of opioid dependence were asked to rate their agreement with a range of statements describing how they would feel if they were offered the medication. Most commonly, participants agreed with 'Others would think I am a drug addict' (56% methadone, 45% buprenorphine), 'High risk of dying from an overdose' (43% methadone, 33% buprenorphine), and 'It would be swapping one addiction for another' (methadone 39%, buprenorphine 32%), with no differences between medications. Significantly more participants agreed that methadone was 'For heroin addicts only' (33%) than buprenorphine (19%).

Conclusions: People living with CNCP and reported problems with their pharmaceutical opioids had poorer mental and physical health, yet access to AOD treatment services was low. Multidisciplinary interventions for this group are important, including pain and addiction specialists. Treating opioid dependence, and reducing stigma associated with opioid substitution therapy in this group may result in improved physical health, mental health and pain outcomes.

Financial Support: This study received funding from the Australian National Health and Medical Research Council (NHMRC, #1022522)

Abstract - ID: 287

Author(s):

Stephen Kohut **(Presenter)**, McLean Hospital / Harvard Medical School
Bruce Blough, RTI International
Jack Bergman, ADARC - McLean Hospital

Title: Reinforcing effects of l-methamphetamine in nonhuman primates

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Behavior

Aims: Monoamine releasers such as methamphetamine (MA) significantly reduce cocaine use in laboratory studies, and have been forwarded for the management of cocaine use disorder. However, the proven abuse liability of d-MA has limited enthusiasm for clinical application. Of interest, the levorotatory isomer, l-MA, has lesser stimulant effects-possibly due to its lower potency in releasing dopamine or its preferential norepinephrine-releasing properties. The present study evaluated the abuse potential of l-MA by comparing the reinforcing effects of l-MA, d-MA, and cocaine.

Methods: Adult rhesus macaques (N=4) responded for intravenous cocaine, d-MA, and l-MA injections under a fixed-ratio (FR) 10; time-out 30 sec schedule of reinforcement during daily 100 min sessions. After self-administration of vehicle and a range of doses of each drug was studied, two doses – the peak and a dose 0.5-log higher than the peak – were chosen for demand analysis in which the FR requirement for drug delivery was increased across consecutive sessions in an ascending order (i.e. 10, 32, 56, 100, 320, etc).

Results: Results indicate that cocaine, d-MA, and l-MA self-administration under the FR10 schedule followed an inverted-U shaped pattern with peak responding reaching approx. 100 inj/session for cocaine (0.01mg/kg) and d-MA (0.0032mg/kg) and approximate 50 inj/session for l-MA (0.1mg/kg). In demand studies, self-administration of each drug gradually decreased as the FR size was increased. Application of the exponential model of demand to the FR data found that essential value for cocaine and d-MA was significantly higher than that for l-MA.

Conclusions: These data, coupled with our previous findings that l-MA effectively reduces the reinforcing effects of cocaine with apparent behavioral selectivity, suggests that l-MA or other norepinephrine-preferring monoamine releasers may serve as agonist replacement medications for cocaine use disorder with lesser abuse liability than monoamine releasers with more pronounced dopaminergic actions.

Financial Support: NIH DA039306 and DA026892

Abstract - ID: 288

Author(s):

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Title: Scenarios that affect alcohol pharmacokinetics: Exercise and last call

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Behavior

Aims: As part of an effort to engineer alcohol sensing devices for automobiles to reduce drunk driving, blood alcohol levels (BAL) are examined in simulated drinking scenarios to quantify how people absorb, distribute, and metabolize alcohol. Drinking and dancing often occur together, but research on the effects of exercise on BAL is inconclusive: some suggest elimination increases during exercise, but others failed to find a clear link. "Last call" is common at bars, where a final drink is quickly consumed prior to the bar closing and driving home. There are gaps in our understanding of how either scenario impacts BAL and driving abilities. The present research aims to simulate these scenarios in a controlled setting to determine the impact on alcohol pharmacokinetics.

Methods: Healthy social drinkers volunteered to participate in 1 of 3 scenarios: Exercise (n=4), where an elliptical machine was ridden after drinking; Last Call (n=4), where the last 1/3 of the dose was consumed an hour after the first 2/3; and Bolus Drinking (n=4), the control condition, where subjects remained inactive after a bolus dose of alcohol (0.9 g/kg via 40% vodka). Blood samples were collected every 2 minutes. Gas Chromatography/FID was used to quantify BAL.

Results: We observed a higher peak BAL after Exercise than Bolus Drinking (120 mg/dL ± 11.3 vs 109.9 mg/dL ± 15.7), that was achieved at a faster rate (72 vs 82 min). Peak BAL during the Last Call scenario (100 mg/dL ± 28.1) was less than Bolus Drinking, but Last Call subjects hovered around 70 mg/dL until the last drink, which then produced a rapid rise to a higher peak BAL. There were no differences in the alcohol elimination rates during any of the scenarios.

Conclusions: The BAL-time profiles for different scenarios may reflect variability in the absorption and distribution phases of alcohol kinetics, leading to altered peak BAL. The fact that both exercise and the practice of engaging in "Last Call" increase peak BAL has significant public health consequences as they both place individuals at a greater risk for alcohol-impaired driving after leaving an establishment where they were drinking.

Financial Support: Alliance of Automobile Manufacturers

Abstract - ID: 289

Author(s):

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Title: Project engage program evaluation

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Treatment

Aims: We examined self-reported treatment engagement and substance use at 6-month follow-up (FU). It was hypothesized that 30% would still be engaged in treatment and that patients would report less use than at baseline.

Methods: We prospectively enrolled hospitalized patients who accepted SUD treatment and to be called at FU. ASI-Lite, DSM-IV SUD Checklist, CES-D at baseline and ASI-Lite and CES-D at FU were collected between 5/2012-7/2015. Non-parametric methods were used to calculate *p* values and 95% confidence intervals (CI).

Results: Of 319 participants, 222 completed FU; 192 were dependent, with recent use at baseline. Of the 192, 60% were male, 77% Caucasian, 73% had Medicaid/Medicare, 91% scored $\geq$16 on baseline CES-D; 53% were dependent on alcohol only, 32% drugs only, 15% both. Mean age was 43±11. Compared to the patients who did not attend SUD treatment within 90 days of discharge (n=95), 51% of those who attended (49/97) reported $\geq$1 day of treatment in the 30 days prior to FU, versus 34% (32/95; c^2=5.57, *p*=.018). Alcohol only dependent patients reported a decrease in the number of days of use in the 30 days prior to FU compared to baseline (median difference= -15 days; 95% CI: -20; -10). Patients dependent on drugs with/without alcohol (n=90) reported a decrease in drug use, but those who went to treatment in the 90 days post-discharge had a significantly larger decrease (-16 days; 95% CI: -23; -10) than those who did not go to treatment post-discharge (-7 days; 95% CI: -16, -1), *p*=.019.

Conclusions: PE patients with drug dependence who attend post-discharge treatment seem to have enduring benefits in treatment engagement and reduced use at FU.

Financial Support: Carol Ammon Foundation

Abstract - ID: 290

Author(s):

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Title: Body mass index and prevalence of obesity among individuals with substance dependence

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Behavior

Aims: Obesity is a significant public health problem with severe consequences for morbidity and mortality as well as a myriad of social and psychosocial challenges. Data from the CDC's National Health and Nutrition Examination Survey shows that in 2011–2014, the prevalence of obesity (defined as body mass index (BMI)?30kg/m ^{2}) was just over 36% in adults in the U.S. The purpose of this study is to characterize BMI and the prevalence of obesity among individuals with substance dependence, and to examine patterns and differences across specific substances.

Methods: The dataset used was from the 2014 National Survey on Drug Use and Health (NSDUH), which captured substance use by the adult, civilian, non-institutionalized population of the United States. BMI was calculated as a continuous variable based on height (inches) and weight (pounds) variables, and substance dependence was defined based on the DSM-IV for 11 substances: alcohol, cocaine, heroin, marijuana, pain relievers, stimulants, tobacco, hallucinogens, inhalants, sedatives and tranquilizers. Respondents dependent on multiple substances (excluding tobacco) were categorized as having a polysubstance use disorder. All descriptive statistics accounted for non-random sampling using the survey weights.

Results: A total of 2519 adult respondents contributed to this analysis (adjusted N=11,123,524). The adjusted median BMI was 26-27 kg/m^2 for all substances except for heroin (24 kg/m^2), stimulants (25 kg/m^2), and polysubstances (25 kg/m^2). The prevalence of obesity did vary by substance of dependence with rates of 29.9% for pain relievers, 26.5% for alcohol, 22.5% for cocaine, 21.8% for marijuana, 16.5% stimulants and 6.7% for heroin.

Conclusions: These findings provide preliminary evidence that different substances may have divergent potencies in modulation of appetite and weight management. Additional examination of obesity and substance dependence may further advance the understanding of these associations and may inform prevention and treatment efforts.

Financial Support: HHSN271200900034C, HHSN271201500065C

Abstract - ID: 291

Author(s):

Genevieve Yang **(Presenter)**, Yale School of Medicine
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Title: Teen substance use initiation: The role of self-efficacy and knowledge

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Adolescent

Aims: Substance use often starts during adolescence. We sought to determine the impact of substance use refusal self-efficacy and knowledge on substance use initiation.

Methods: In a randomized controlled trial of a videogame intervention targeting risk prevention in 333 teens, we surveyed substance use behaviors, self-efficacy to refuse substance use, and substance use knowledge over 12 months. Those reporting at baseline that they had 'never tried' any of four substances (cigarettes, alcohol, marijuana (MJ), or non-medical use of prescription medications) and providing data at all subsequent four time-points were included in the analysis. Initiators were defined as those reporting any substance use following baseline. Two separate 2-way repeated measures ANOVAs were used to compare self-efficacy and knowledge scores for initiators vs. non-initiators across time-points; the impact of gender and the type of substance that was initiated were evaluated.

Results: The subgroup analyzed (n=187) had the following characteristics, similar to the larger trial cohort:52% male, 85% racial/Ethnic minorities; mean age was 12 years. Fifty-one (27%) participants initiated at least one substance (male=29; female= 22; cigarettes, n=16; alcohol n=30; MJ n=15; prescription drugs n=7). At baseline, there were no significant differences in self-efficacy or knowledge scores in the initiator (n=51) vs. non-initiator group (n=136). However, self-efficacy scores were lower for initiators, compared to non-initiators, when evaluated across all time points ($p < 0$ .03). Self-efficacy score differences were greatest in male (p=0.0015) but not female (p=0.49) MJ initiators ($p < 0$ .001). Baseline substance use knowledge was higher for MJ initiators, compared to MJ non-initiators (p=0.04) although substance use knowledge scores did not differ between initiators and non-initiators across all time-points (p=0.3).

Conclusions: Improving self-efficacy may help prevent MJ initiation among teen boys. Improving substance use knowledge alone may not prevent substance use initiation in teens.

Financial Support: NICHD R01HD062080

Abstract - ID: 292

Author(s):

Lynneice Bowen **(Presenter)**, Medical University of South Carolina
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Title: Effect of 5HT polymorphisms on response to vilazodone for cannabis cessation

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Treatment

Aims: Functional polymorphisms at the 5-HT1A receptor have been linked to increase risk for depression and anxiety as well as decreased response to selective serotonin receptor inhibitors (SSRIs). We explored whether overall cannabis use or the efficacy of vilazodone, a SSRI and partial 5-HT1A agonist, for reducing cannabis use would differ by 5-HT1A receptor genotype.

Methods: Seventy-six cannabis use disordered adults were randomized to receive 8 weeks of up to 40 mg/day of vilazodone (n=41) or placebo (n=35) combined with a brief motivational enhancement therapy intervention and contingency management to encourage study retention. The 5-HT1A receptor genotype for the C(-1019)G polymorphism was typed in 74 of the 76 randomized participants (2 subjects were missing sample data). Cannabis use outcomes were assessed via weekly urine cannabinoid tests (UCTs).

Results: Thirty-five participants (47.3%) were typed as the C/G dysfunctional variant while 39 (52.7%) were typed either C/C (n=20; 27.0%) or G/G (n=19; 25.7%). The overall allele frequencies for the study population were 75 (50.7%) for the C and 73 (49.3%) for the G allele. There was no statistical difference in variant distribution or allele frequencies between treatment groups. When added to the intent to treat (ITT) primary efficacy model, there was no significant difference in the proportion of negative UCTs between those with the C/G variant and those with other variant types [C/G=5.2% vs. C/C,G/G=4.3%; OR=1.17 (0.27-5.11), ? $^2_1$=0.04, p=0.833]. When added to the analysis of available data, results for the effect of genotype on negative weekly UCT were similar to that seen in the ITT analysis [negative UCT %: C/G=9.7% vs. C/C,G/G=7.8%; OR=1.38 (0.33-5.78), $^2_1$=0.04, p=0.660]. Genotype by treatment interactions were also insignificant for both the ITT (p=0.25) and available data (p=0.29) analyses.

Conclusions: There was no significant effect of 5-HT1A genotype on proportion of negative weekly UCT either in the sample as a whole or by treatment group. Interpretation of results is limited by a small sample size and a low proportion of participants achieving abstinence in the sample.

Financial Support: R21DA034089

Abstract - ID: 293

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Title: Treatment outcomes among a cohort of African-American buprenorphine patients: Follow-up at 12- and 18-months

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: To examine long-term health outcomes by buprenorphine treatment enrollment status among a cohort of African American patients.

Methods: This study builds upon data from a randomized trial of counseling services with 300 opioid-dependent African American participants. A subset of trial participants who initiated buprenorphine treatment at outpatient programs were tracked for longer-term follow-up at 12- (n=142; 85% of the subsample pursued for follow-up) and 18-months (n=108; 90% of those pursued). Outcomes were examined by buprenorphine treatment enrollment status at each follow-up point. Study measures included the WHOQOL-BREF (an abbreviated version of the widely used WHOQOL instrument), urine test results, and Addiction Severity Index (ASI) composite scores.

Results: Participants who remained in buprenorphine treatment report significantly (all *p*s M=.85 (*SE*=.25) and *M*=1.13 (*SE*=.30)] and 18-months [*M*=.33 (*SE*=.14) and *M*=1.89 (*SE*=.63)] than those who were out of treatment at 12- (*M*=2.78, *SE*=.91 and *M*=6.58 *SE*=1.87) and 18-months (*M*=3.67, *SE*=1.59 and *M*=7.91, *SE*=3.01). Additionally, those participants still in treatment at 18-months had fewer cocaine positive urines (51% vs. 25%, *p*=.007) and an improved quality of life (*M*=3.94, *SE*=.108 and *M*=3.6, *SE*=.128, *p*=.48) than those not in treatment.

Conclusions: Ultimately, participants who reported being in buprenorphine treatment 12- and 18-months after treatment entry had superior outcomes compared to those who were no longer in treatment.

Financial Support: NIDA: 1RC1DA028407-01, 1R01DA033391-01A1, 1R01DA034258-01

Abstract - ID: 294

Author(s):

Sarah Snider **(Presenter)**, Addiction Recovery Research Center
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Title: Cognitive enhancer modafinil: A pharmacological intervention to decrease behavioral economic demand for alcohol

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Behavior

Aims: The competing neurobehavioral decision system (CNDS) theory posits that substance use disorders are a function of a regulatory imbalance between an executive and impulsive decision system, and correcting this imbalance will improve self-control. Modafinil, a wake-promoting medication and cognitive enhancer, decreases activation in limbic brain regions (decreasing impulsive system control), and increases prefrontal cortex activation (increasing executive system control) thereby increasing working memory, attention, and response inhibition. Moreover, modafinil decreased delay discounting, a measure of self-control, in alcohol dependent individuals, compared to placebo. Our goal was to build on these findings by measuring modafinil's effects on behavioral economic demand for alcohol.

Methods: The present on-going within-subject, placebo-controlled, cross-over design study examines the effects of modafinil on hypothetical purchase of alcoholic beverages. Following a medical evaluation, participants are assigned to either a 200 mg or 400 mg modafinil group (total n=13) wherein they complete a total of three sessions- baseline, drug, and placebo. At each session, participants are asked to report the number of hypothetical drinks they would purchase for an evening socializing from 9pm - 2am at various prices ($0, 0.31, 0.63, 1.25, 2.5, 5, 10, 20, 40).

Results: Non-linear group demand curves generated for both groups (200mg and 400mg), demonstrate that intensity of demand (i.e., total number of drinks purchased at price $0) is significantly lower following modafinil treatment at both doses, compared to their respective placebo conditions ($p < 0 .05$).

Conclusions: The observed reduction in demand for alcohol is consistent with the CNDS theory and previous reports of modafinil acting to reduce self-reported craving for other substances. These preliminary findings suggest that modafinil may exhibit potential as an adjunct pharmacotherapeutic to reduce demand for alcohol, and subsequent overuse, by rebalancing the CNDS.

Financial Support: Research supported by NIH R01 AA021529.

Abstract - ID: 295

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Title: Maternal alcohol consumption during 1st trimester and child internalizing and externalizing problems: A sibling control study

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Epidemiology

Aims: To address whether associations between prenatal exposure to maternal alcohol consumption during 1st trimester and preschool child internalizing and externalizing problems represent a causal or non-causal association, we use a prospective sibling control design, and adjust for 1) likely confounders, 2) hazardous drinking the last 3 months prior to pregnancy and 3) familial factors.

Methods: We used data from the Norwegian Mother and Child Cohort and the Medical Birth Registry of Norway. The study population consists of 16 310 mothers with 33 706 offspring full-siblings. Using the Alcohol Use Disorder Identification Test Consumption, women self-reported on both pre-pregnancy drinking and consumption during the first trimester of pregnancy twice: at gestational weeks 17 and 30. Mothers reported on their children's behavior, responding to items from the Child Behavior Checklist when the children were 18 months, 36 months, and 5 years. We performed regression analyses adjusting for 1) likely confounders, 2) hazardous drinking the last 3 months prior to pregnancy and 3) familial factors.

Results: Maternal drinking during 1st trimester was associated with externalizing problems, and aspects of internalizing problems. However, after controlling for familial factors the effect sizes were close to zero; attention problems (B -0.26, 95% CI -1.54-1.02); aggressive behavior (B -0.21, 95% CI -1.54-1.02); anxiety/depression (B 0.94, 95% CI -0.64-2.52) and somatic complaints (B 1.23, 95% CI -0.75-3.21).

Conclusions: The results suggest no causal effect of moderate to high maternal alcohol consumption during 1st trimester and child externalizing and internalizing behavior problems.

Financial Support: The study was supported by the Norwegian Research Councils program for Health Sciences and Biology (Grant no. 231105).The Norwegian Mother and Child Cohort is supported by the Norwegian Ministry of Health, the Ministry of Education and Research, NIH/NIEHS, and NIH/NINDS.

Abstract - ID: 297

Author(s):

Gary Matyas **(Presenter)**, Walter Reed Army Institute of Research
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Title: Heroin vaccine abrogates nociceptive and locomotive effects of heroin in rodents and induces cross-reactive antibodies to other abused prescription opioids

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: An effective heroin vaccine needs to induce high levels of antibodies that bind heroin and its metabolites with high affinity. Antibody-bound heroin cannot cross the blood-brain barrier, thereby, blocking the effects of heroin. The aim of this study was to develop a stable hapten that induced antibodies with high affinities and protective efficacy from heroin and its metabolites and cross-reacted with other opioids.

Methods: The heroin hapten (6-AmHap) was conjugated to tetanus toxoid. It was adjuvanted with liposomes containing monophosphoryl lipid A and tested in mice and rats for antibody titer and affinity to heroin, its metabolites and other opioids. Efficacy was assessed by subcutaneous (SC) and intravenous (IV) heroin challenge.

Results: The 6-AmHap vaccine reduced heroin-induced antinociception and locomotive behavioral changes following SC and repeated IV heroin challenges in mice and rats. The vaccine elicited very high IgG levels of ~1.2 mg/mL. Competition ELISA demonstrated that 6-AmHap-induced antibodies bound heroin and its metabolites, 6-acetylmorphine (6AM), morphine, morphine-3-ß-glucuronide and morphine-6-ß-glucuronide. Using equilibrium dialysis with UPLC-MS/MS quantification, the K_d values of the antibodies to 6AM and morphine were $\leq$0.5 nM and the % heroin bound was $\geq$90. In addition, 6-AmHap antibodies cross-reacted with abused prescription opioids, hydrocodone, hydromorphone, oxymorphone, codeine and levorphanol.

Conclusions: 6-AmHap is a promising vaccine candidate that may be developed into a therapeutic for heroin and opioid abuse.

Financial Support: This work was supported through a Cooperative Agreement Award (no. W81XWH-07-2-067) between the Henry M. Jackson Foundation for the Advancement of Military Medicine and the U.S. Army Medical Research and Materiel Command (MRMC) and by an Avant Garde award to GRM from the National Institute on Drug Abuse (NIH grant no. 1DP1DA034787-01). The work of JFGA, AEJ, and KCR was supported by the NIH Intramural Research Programs of the National Institute on Drug Abuse and the National Institute of Alcohol Abuse and Alcoholism, NIH, DHHS.

Abstract - ID: 298

Author(s):

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Title: Medial frontal cortex glutathione levels and temperature are increased in GT-tg bigenic mice expressing HIV-Tat protein: A proton MRS study

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Opiates/Opioids

Topic: Imaging

Aims: While brain temperature is considered a stable homeostatic measure, its regulation is critical to maintain normal function. Many drugs of abuse induce inflammation, oxidative stress (OS) and robust metabolic activation, all of which can elevate brain temperature and damage neurons, especially when coupled with fever and/or HIV infection. We used proton magnetic resonance spectroscopy (MRS) of the medial frontal cortex (mFC), an area involved in cognitive control and adversely impacted by drugs of abuse and HIV-Transactivator of Transcription (Tat) protein expression, to assess effects of Tat protein on temperature and OS. Controlled Tat expression in GT-tg bigenic mice potentiates reward for alcohol, cocaine, and opiates.

Methods: Adult male GT-tg bigenic mice (N=30) were treated with saline or doxycycline (100 mg/kg, IP) for 7 days to induce Tat expression. Mice underwent *in vivo* 9.4 Tesla proton MRS of the mFC one day later. Water suppressed and unsuppressed MRS spectra were acquired using a STEAM sequence. LCModel was used to fit water and MRS metabolites including glutathione (GSH), which reflects OS. Resonance frequencies were identified with MNova software. Temperature was calculated by comparing chemical shifts of the temperature-sensitive water resonance to the N-acetylaspartate resonance.

Results: Dox-treated mice expressing Tat exhibited higher temperature ($p=0.04$) and GSH levels ($p=0.0036$) compared to controls. Pearson correlation analysis found a positive association between temperature and GSH levels ($r= 0.51$, $p < 0 .01$).

Conclusions: The data suggest that Tat protein expression increases mFC temperature and GSH. As GSH is the principal endogenous antioxidant, this effect may reflect a compensatory response to Tat-induced OS. The correlation between GSH and temperature suggests that Tat-induced OS may be increasing mFC temperature. Many proteins are sensitive to OS and dysregulation of such proteins could lead to neuronal dysfunction, potentiation of drug reward, or brain injury.

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Abstract - ID: 299

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Title: Electronic- and clinician-delivered screening, brief intervention, and referral to treatment for women in reproductive healthcare centers: A randomized clinical trial

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Technology Issues

Aims: To determine whether SBIRT delivered electronically (e-SBIRT) or by clinician (SBIRT) is superior to enhanced usual care (EUC) for substance misuse and treatment-seeking among women in a reproductive care setting.

Methods: Participants were 439 women who used cigarettes, risky amounts of alcohol, or illicit drugs, or who misused prescription medication. Participants were randomly assigned to 20-min e-SBIRT or SBIRT, based on motivational interviewing, or to enhanced usual care. Co-primary outcomes included days per month of primary substance use and post-intervention treatment/self-help utilization.

Results: Mean (SD) days per month of substance use at baseline were 23.6 (7.8) for e-SBIRT, 23.2 (8.3) for SBIRT and 24.2 (7.7) for EUC, which declined to 19.8 (11.2), 19.4 (11.2), and 22.9 (9.0) respectively at one month, 17.7 (12.0), 18.0 (12.0), and 21.5 (10.5), respectively at 3 months, and 15.9 (12.7), 17.0 (12.5), and 19.2 (11.8), respectively at 6 months. After adjustment for stratification factors (pregnancy and primary drug), estimated declines were greater in e-SBIRT [ß (SE) =0.012 (0.005), p=0.014; Cohen's d = 0.20 at one month, 0.31 at three months, and 0.20 at six months] and SBIRT [ß (SE) = 0.011 (0.005), p=0.037; Cohen's d = 0.17 at one month, 0.21 at three months, and 0.06 at six months) compared to EUC. Treatment utilization did not differ significantly by group.

Conclusions: Both e-SBIRT and SBIRT significantly decreased days of primary substance use but did not affect specialty substance use treatment or self-help utilization.

Financial Support: NIH/NIDA (R01 DA1049398)

Abstract - ID: 300

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Title: Opioid prescribing attitudes and risk mitigation practices in two HIV clinics

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: AIDS/Immune

Aims: Chronic opioid therapy (COT) for pain is common among HIV-infected patients. Recent guidelines from CDC and other agencies provide strategies to mitigate risk, but it is unclear to what extent these guidelines are practiced.

Methods: We analyzed baseline data collected from HIV physicians (MDs) and advanced practice providers (nurse practitioners [NPs] and physician assistants [PAs]) from 2 HIV clinics (Atlanta and Boston) participating in a pragmatic clinical trial of an intervention to improve opioid prescribing. The following variables were assessed: 1) demographic and professional characteristics; 2) confidence and satisfaction with prescribing COT; 3) belief that COT keeps patient engaged; and 4) frequency of guideline-based opioid prescribing practices utilized.

Results: 40 COT providers (28 attending MDs, 4 fellow MDs, 5 NPs, 3 PAs) comprised the sample (29 in Atlanta, 11 in Boston). Mean age (±SD) was 45 (±11) years, 63% were female and 37% were non-white. On a scale of 1-10, average satisfaction and confidence in managing COT were 3.8 (±2.1) and 5.3 (±1.9), respectively; 53% of providers agreed that "COT keeps patients engaged in care." Self-reported routine adherence to guideline practices was: 33% urine drug tests; 25% patient agreements; 8% screening tools for misuse; and 18% prescription monitoring program use. Discussion of drug-drug interactions was routinely done by 63%, and 43% discussed overdose risk. Only 23% of providers had ever prescribed naloxone.

Conclusions: HIV physicians and advanced practice providers who prescribe COT do not routinely follow guidelines for opioid prescribing as set out by the CDC and other professional organizations. Interventions are needed to assist HIV care teams to adhere to guidelines for opioid prescribing.

Financial Support: R01DA037768

Abstract - ID: 301

Author(s):

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Title: Use of and attitudes towards e-cigarettes and conventional cigarettes in a tobacco-using cardiac population

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Behavior

Aims: Continued smoking following a cardiac diagnosis is strongly associated with increased morbidity and mortality. Cardiac patients are generally well aware of the dangers of continued smoking to their health and may be more likely to try products which are marketed as less harmful to their health, such as e-cigarettes. In this study we explored the differences in use of and attitudes towards e-cigarettes and conventional cigarettes between smokers who have and have not reported having a heart attack.

Methods: The sample consisted of 32,028 adults age 18 years of age or older responding to Wave 1 of the Population Assessment of Tobacco and Health, a nationally representative longitudinal cohort study. Questions on use of cigarettes and e-cigarettes, perceived harmfulness of the two products, reasons for use, and likelihood of switching between products were examined between those who had and had not reported having had a heart attack.

Results: Those who reported having had a heart attack were more likely to have been a former established smoker (37.0% vs. 19.7%, $p < 0.001$) or were a current smoker compared to those without heart attack (26.2% vs. 21.2%, $p < 0.001$). Those who had a heart attack were also more likely to believe that smoking/using tobacco is causing/worsening a health problem (75.3% vs. 60.5%, $p < 0.001$) and report being more likely to try a tobacco product that claims to be less harmful (21.21% vs. 16.6%, $p < 0.01$). However, current e-cigarette use does not differ by heart attack status (6.0% vs. 5.5%, $p>0.05$) nor does likelihood of considering switching to an e-cigarette from a conventional cigarette (6.5% vs. 6.2%, $p>0.05$). Similarly, there are no differences by heart attack status in whether e-cigarettes are being used because they might be less harmful than cigarettes (87.5% vs. 82.8%, $p>0.05$). Instead, those with a history of heart attack are more likely to believe e-cigarettes are potentially more harmful than cigarettes (11.0% vs. 7.2%, $p=0.04$).

Conclusions: Those who have had a heart attack are sensitized to the harm of continued smoking and may be seeking out reduced harm products. However, e-cigarettes are not currently viewed as a reduced harm product by this population, instead those who have had a heart attack are actually more likely than others to think e-cigarettes are more harmful than conventional cigarettes.

Financial Support: This research was supported in part by NIH award P20GM103644 and NIDA/FDA award P50DA036114.

Abstract - ID: 302

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Title: Prescription medication misuse and hazardous drinking among national guard soldiers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Prevention

Aims: It is critical to maintain the resilience and readiness of the National Guard, which has been frequently deployed over the past decade. This study examined rates and correlates of hazardous drinking and prescription opioid and sedative misuse among National Guard members.

Methods: Michigan National Guard Members were enrolled during drill weekends, from April 2015 to November 2016, as part of a larger randomized controlled trial. Soldiers were screened for hazardous drinking (HD; AUDIT-C score) and prescription opioid or sedative misuse (POSM; i.e., using for reasons other than prescribed, borrowing from others, or taking more than prescribed). Of those screened (n=1828), 52 (3%) endorsed POMS and 480 (26%) endorsed HD. Multinomial logistic regression analyses were used to compare substance misuse groups: no misuse, HD, and POSM.

Results: Regression analysis showed that soldiers with POSM were significantly more likely to have anxiety (AOR=1.22 CI=1.15, 1.30), use marijuana (AOR=9.33 CI=4.25, 20.48), overdose (AOR=5.06 CI=2.47, 10.37) and have poor health (AOR=2.71, CI 1.27, 5.76) than the non-misusers. The HD group were significantly more likely to have been deployed (AOR=1.30 CI=1.05, 1.66), have anxiety (AOR=1.11 CI=1.08, 1.14), use marijuana (AOR=3.35 CI=2.04, 5.51), and overdose (AOR=1.96 CI=1.30, 2.96) than the non-misusers. When comparing POSM to HD, the POSM group were significantly more likely to have anxiety (AOR=1.10 CI=1.03, 1.16), use marijuana (AOR=2.78 CI=1.35, 5.72), overdose (AOR=2.58 CI=1.30, 5.14) and have poor health (AOR=2.87, CI 1.36, 6.06).

Conclusions: Many military personnel (active duty/reserve) who could benefit from services may be reluctant to seek care because of concerns about their military career. This initial analysis indicates that hazardous drinking and prescription opioid and sedative misuse is related to a number of psychological and health-related behaviors among Guard members. The larger trial will investigate whether web-based brief interventions can reduce substance misuse.

Financial Support: NIAAA 1RO1AA023122-01

Abstract - ID: 303

Author(s):

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Title: Expression of FKBP5 is elevated following chronic cocaine administration

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Neurobiology

Aims: Dysregulation of the glucocorticoid receptor (GR) system has been implicated in both addiction and stress-related disorders. FKBP5 is a co-chaperone of GR and regulates GR sensitivity through an intracellular feedback loop. FKBP5 bound to the GR complex prevents translocation to the nucleus and reduces GR affinity for cortisol. When cortisol does bind, FKBP5 is exchanged for FKBP4, which allows translocation of the GR to the nucleus and downstream transcriptional effects. One consequence of GR activation is an increase in transcription of FKBP5. FKBP5 has been implicated in mood- and stress-related disorders; however, very little is known regarding FKBP5 and addiction. This study investigated gene expression of FKBP5 in the extended amygdala and paraventricular nucleus of the hypothalamus following chronic cocaine administration in the rat.

Methods: Male and female adult Sprague Dawley rats were injected with saline or cocaine (15mg/kg ip) three times per day for 14 days. Brain tissue was collected 30 minutes, 24 hours, or 7 days following the final injection. The central nucleus of the amygdala (CeA), bed nucleus of the stria terminalis (BNST), and paraventricular nucleus of the hypothalamus (PVN) were microdissected and expression levels of FKBP5 were measured by quantitative RT-PCR.

Results: FKBP5 mRNA levels were assessed following chronic cocaine administration. Results were analyzed by two-way ANOVA and compared to saline-injected male controls. FKBP5 mRNA levels were elevated as a main effect of cocaine 30 minutes following the last injection in the CeA (p=.02), PVN (p

Conclusions: While cocaine is known to activate the HPA axis and cause subsequent cortisol release, this is the first demonstration of a cocaine-induced increase in FKBP5 mRNA that persists 24 hours following cessation of cocaine. This increase may play a role in the negative symptoms of withdrawal, such as stress and anxiety. Should this be the case, FKBP5 may become a novel therapeutic target for the treatment of cocaine addiction.

Financial Support: NIDA R01 DA018326, T32 DA007237, P30 DA013429

Abstract - ID: 304

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Title: Neighborhood factors in co-use of cigarettes and cannabis among young adults

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Epidemiology

Aims: Co-use of cigarettes and cannabis is increasingly common (Schaeur et al., 2015) and linked to a greater risk of nicotine dependence than cigarette use alone (Ream et al., 2008; Wang et al., 2016). Younger, lower SES males who use other substances are more likely to co-use (Schaeur et al., 2015). Neighborhood factors have been linked to cigarette (e.g., Landrine & Klonoff, 2000) and cannabis use (e.g., Reboussin et al., 2015; Warner, 2016) separately, but there are no studies of neighborhood effects on co-use.

Methods: Young adult offspring from two birth cohorts reported their substance use (N = 362, M age = 29.6, range = 22-33 years; 60% female, 40% male; 58% Black, 42% White). Neighborhood data were obtained from the 2010 US Census (owner occupied housing) and the 2014 American Community Survey (segregation, poverty, unemployment, public assistance, youth educational level). Neighborhood factors derived from a factor analysis of these variables (SES, youth educational level) were regressed onto cigarette and cannabis use groups.

Results: One-third of the participants had used cigarettes in the past 30 days, 21% had used cannabis, and 10% were co-users. Participants from neighborhoods with higher SES were more likely to be non-users than co-users (AOR = 0.90, CI 0.82-0.98). Participants who did not smoke cigarettes during adolescence (AOR = 0.33, CI 0.12-0.90) and were more educated (AOR = 1.6, CI = 1.2-2.1) were also less likely to report co-use.

Conclusions: The results of this study point to neighborhood SES as an important factor in co-use of cigarettes and cannabis, beyond the effects of well-known individual-level predictors such as adolescent smoking and educational attainment. Young adults who live in neighborhoods characterized by racial segregation, poverty, unemployment, greater use of public assistance and less owner-occupied housing are more likely to co-use cigarettes and cannabis.

Financial Support: NIH R01DA037209

Abstract - ID: 305

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Title: Substance misuse screening in primary care: TAPS Tool vs. ASSIST

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Other

Aims: The TAPS Tool is two-step screening and brief assessment instrument adapted from the NIDA Quick Screen and the WHO ASSIST-Lite to identify primary care patients with substance use problems. This Clinical Trials Network study's secondary aim was to compare the performance of the TAPS Tool with the full version of the ASSIST.

Methods: Participants were 2,000 primary care patients in five medical clinics. They were randomly assigned, in counterbalanced order, to complete the TAPS Tool first either by self-administration or by interview. All participants subsequently completed a series of interviewer-administered measures, including the full WHO ASSIST. The current study evaluated the TAPS Tool using the WHO ASSIST risk categories as the reference standard. Receiver operating characteristics (ROC) analyses were used to identify optimal cut points to maximize sensitivity and specificity.

Results: The interviewer and self-administered TAPS Tools generated similar results. For identifying high-risk use, at a cut-point of 2, the interviewer version had a sensitivity and specificity for tobacco of 0.90 and 0.77 and for alcohol of 0.87 and 0.80, respectively. For illicit substances, sensitivities were $\geq$0.82 and specificities $\geq$0.92. For moderate-risk use, at a cut point of 1, the TAPS Tool had a sensitivity and specificity for tobacco of 0.83 and 0.97, respectively, and for alcohol of 0.83 and 0.74. The sensitivity for marijuana use was 0.71, however it was low for all other illicit drugs and non-medical use of prescription medications, while specificities were 0.97 or higher.

Conclusions: The TAPS Tool identified primary care patients with high-risk ASSIST scores for alcohol, tobacco, and illicit substances, as well moderate-risk users of tobacco, alcohol, and marijuana. Given its favorable performance and greater brevity, the TAPS Tool may be a useful alternative to the full WHO ASSIST.

Financial Support: NIDA

Abstract - ID: 306

Author(s):

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Title: Estimating heroin incidence in males and females using a back-calculation approach: Potential biases and re-calibration approaches

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: Judicially mandated referrals may cause males to outnumber females among patients admitted to drug treatment facilities, with resulting potential bias when studying female-male differences (FMD) in indicator-based epidemiological research. This study aims to estimate heroin incidence for males and females, with constrained bias and re-calibration via adapted Bayes-type simulations based on survey and key informant priors.

Methods: Heroin incidence trends in the United States (US) study population are studied using the Treatment Episode Data Set-Admissions (TEDS-A) & National Surveys on Drug Use and Health (NSDUH) through 2012, as well as key informant survey priors. Hunt's Lag Correction Method (HLCM) is used as an indicator approach to start estimation, from which model-based estimates of FMD are derived. Potential bias in these estimates prompted re-calibration via simulations with survey and key informant priors.

Results: Recent NSDUH estimates now show very modest FMD in heroin incidence, contradicting a robust male excess among heroin treatment admissions. Initial HLCM incidence estimates based on treatment admissions provide clear evidence of two heroin epidemic peaks, in 1969 and in 2012, each with a male excess, but show no FMD during endemic years. We introduce NSDUH priors and also evaluate FMD with re-calibration for hypothesized biases. Our key informant survey, now underway, provides separate priors for updates of HLCM values using an adapted Bayes-type simulation. The re-calibrated FMD estimates are shown.

Conclusions: This study discloses temporal patterns and 'relative heroin incidence rates' from which FMD are estimated. Whereas we do not claim an absolute level of accuracy about numbers of newly incident heroin users, the demonstrably attenuated FMD in recent epidemic years should prompt new thinking about primary prevention, outreach, and treatment resources for females starting to use heroin.

Financial Support: MSU [HHY], NIDA T32DA021129 [SJB], K01DA033346 [QL], K05DA015799 [JCA].

Abstract - ID: 307

Author(s):

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Title: Acceptability of the therapeutic education system in dually diagnosed inpatients

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Any drug

Topic: Technology Issues

Aims: Technology-assisted treatment (TAT) shows promise for innovative assessment, prevention, and treatment of substance use disorders (SUDs). The potential for easy and widespread access to TAT may make it a cost-effective option available for delivery in many settings. To date, there have been no published studies that investigate whether TAT is acceptable and effective in patients with SUDs and other co-occurring psychiatric illnesses (dual diagnosis patients). This under-studied population has well-documented health and service needs.

Methods: Dually diagnosed inpatients were randomized to receive either treatment as usual (TAU) or TAU plus exposure to an Internet-based program, the Therapeutic Education System (TES), which primarily focuses on SUD therapy. Both groups rated satisfaction of their hospital stay, and participants in the TES group were also surveyed on acceptability of TES, including satisfaction. It was hypothesized that the TES group would find their hospital stay more satisfactory.

Results: Preliminary findings (17 TAU, 21 TES) show that both groups had high ratings of satisfaction for their inpatient treatment on a 10-point visual analog scale (TAU: mean 8.75, SD 1.4; TES: mean 8.4, SD 1.2). The TES group also rated their satisfaction with TES highly (mean 8.8, SD 1.5). When asked about the amount of counseling for SUDs received during the hospitalization, 60% of TAU preferred more, while 60% of TES preferred the same amount. When asked about the amount of counseling for other psychiatric problems, these preferences were reversed.

Conclusions: These initial findings support the acceptability of TAT as an adjunct therapy for dual diagnosis patients during hospitalization. Information from this study will help to further develop novel treatment approaches for this vulnerable population in this setting.

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Abstract - ID: 308

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Title: Naloxone training for opioid users: Adherence to protocol and survival rates

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Prevention

Aims: The dramatic rise in fatal opioid overdoses across the U.S. warrants better strategies to combat this tragic consequence of the opioid epidemic. This study investigates the effectiveness of providing naloxone to individuals at high risk of witnessing and experiencing an overdose, and training in the recognition of opioid overdose and how to use naloxone. We hypothesize high victim survival rates and good adherence to the training's overdose response protocol in participants who use naloxone.

Methods: At baseline, all participants are provided naloxone and training. Follow-up visits are scheduled 1, 3, 6 and 12 months post-baseline to assess knowledge retention, participants' current drug use patterns, and naloxone use.

Results: To date, we have enrolled 161 participants. Of our participants, 87% reported past heroin use, and 61% reported past non-medical prescription opioid use. Among heroin users, 91% reported lifetime intranasal use, and 63% reported lifetime intravenous use. Prior to study enrollment, 67% had witnessed a drug overdose (M = 4.7 events), and 33% had experienced an overdose themselves (M = 2.3 events). Thus far, 20% of study participants report naloxone kit use totaling 37 reversals. The overall compliance to overdose rescue procedures taught as a part of the training were as follows: 50% performed rescue breathing when warranted, and 70% contacted emergency medical services. Of the 37 victims, 95% are reported to have survived the overdose event.

Conclusions: Despite varied compliance to overdose rescue procedures, participants reported high victim survival rates across 37 overdose events, suggesting opioid users who receive training will utilize their naloxone frequently and deploy it effectively. This study provides evidence for naloxone as an important tool to make available for opioid users given its significant public health effect.

Financial Support: DA035207

Abstract - ID: 309

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Title: Stereoselectivity in abuse-related neurochemical and behavioral effects of novel synthetic amphetamine isomers

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Club/Designer Drugs

Topic: Mechanisms of Action

Aims: Designer drugs of abuse include amphetamine analogs such as 4-methyl amphetamine (4-MA). Increasing the N-alkyl chain length of 4-MA results in (1) decreased potency at dopamine (DA), norepinephrine (NE) and serotonin (5HT) transporters (DAT, NET and SERT), respectively, (2) a change in activity from substrate to blocker at DAT and NET, and (3) a loss of DAT selectivity and DA-mediated abuse-related effects. 4-MA has a single stereocenter, and the current investigation evaluated stereoselectivity of *in vitro* and *in vivo* effects produced by the *S*(+) and *R*(-) isomers of N-methyl, N-ethyl, and N-propyl 4-MA.

Methods: *In vitro* effects were evaluated in HEK293 cells that co-expressed a monoamine transporter and a voltage-gated Ca^{2+} channel. Drugs that produced transporter-mediated depolarization to open Ca^{2+} channels and increase Ca^{2+} dye fluorescence were identified as substrates, whereas drugs that blocked the Ca^{2+} signal produced by a known substrate were identified as blockers. *In vivo* effects were assessed using an intracranial self-stimulation (ICSS) assay in male Sprague Dawley rats (n=6).

Results: Many nonselective and DA-selective transporter ligands produce an abuse-related facilitation of ICSS, whereas NE- and 5HT-selective drugs only decrease ICSS. As with the racemates, increasing N-alkyl chain length from N-methyl to N-propyl decreased potency, converted DAT and NET substrates to blockers, and decreased DAT selectivity and DA-mediated abuse-related effects. For each 4-MA analog, the *S*(+) isomer was more potent than the *R*(-). Abuse-related ICSS facilitation was produced only by the *S*(+) isomers of N-methyl > N-ethyl 4-MA.

Conclusions: These results illustrate an efficient strategy for preclinical evaluation of designer transporter ligands and extend the range of conditions across which amphetamine analogs have been shown to produce stereoselective effects.

Financial Support: Supported by R01DA033930

Abstract - ID: 310

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Title: Substance use following brief motivational interviewing intervention among women in a reproductive healthcare clinic

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Treatment

Aims: Women are at highest risk for development of a substance use disorder during their reproductive years. We recently evaluated the efficacy of an electronically delivered SBIRT (e-SBIRT) and a clinician-delivered SBIRT (SBIRT) compared with enhanced usual care (EUC) for reducing overall substance use among women recruited from reproductive health clinics. The present study assessed the impact of the SBIRT interventions within three primary substance subgroups, cigarettes, illicit drugs and alcohol.

Methods: This is a secondary analysis from a 3-group randomized trial that tested a 20-min e-SBIRT or SBIRT compared to EUC. For the present study, participants (n=439) were grouped according to their primary substance: cigarettes, alcohol or illicit drugs. Differences in days per month of primary substance use over time between treatment groups were examined using generalized estimating equations, and both linear and quadratic effects of time were modeled.

Results: Cigarettes were the most frequently reported primary substance (n=251), followed by illicit drugs (n=137) and alcohol (n=51). Compared to EUC, SBIRT showed greater initial declines in days per month of cigarette use (ß (SE) = -0.073 (0.029), p=0.012), followed by a greater leveling off (ß (SE) = 0.010 (0.005), p=0.027). Results were similar for the e-SBIRT group, (ß (SE) = -0.058 (0.027), p=0.035) except that the decline in smoking was prolonged (ß (SE) = 0.005 (0.004), p=0.159). E-SBIRT, compared to EUC, showed significantly greater declines in days per month of illicit drug use (ß (SE) = -0.167 (0.085), p=0.0497), followed by an earlier leveling off of use (ß (SE) = 0.026 (0.012), p=0.030). SBIRT followed the same pattern of results but did not reach statistical significance. There were no significant differences in the change in number of days of alcohol use per month between either SBIRT intervention and EUC.

Conclusions: Unlike other SBIRT studies, we found stronger intervention effects for drug use than for alcohol, although the sample size for alcohol was small. Both interventions show promise for cigarettes and illicit drugs.

Financial Support: This work was supported by the National Institutes of Health grants R01 DA1049398; R01 DA034243; and R21 RCA198187.

Abstract - ID: 311

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Title: Sex disparities in substance abuse research: Evaluating 23 years of structural neuroimaging studies

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: alcohol, cannabis, nicotine, opioids, stimulants, and polysubstance

Topic: Sex Differences

Aims: Sex differences in brain structure and clinical course of substance use disorders underscores the need to include women in structural brain imaging studies. Historically, females have been included in substance abuse research at lower rates than males. To increase rigor and reproducibility, NIH has supported the need for research to address sex differences. To this end, we evaluated female enrollment in substance abuse structural brain imaging research and the methods used to study sex differences in substance effects.

Methods: Structural brain imaging studies published through 2016 (n=230) were evaluated for number of participants by sex and substance use status and methods used to evaluate sex differences. Temporal trends in the numbers of participants by sex and substance use status were analyzed. We evaluated how often sex effects were appropriately analyzed and the proportion of studies that found sex by substance interactions on volumetric measures.

Results: Female enrollment increased over time, but remained significantly lower than male enrollment (p = 0.01), with the greatest bias found in alcohol and opiate studies. 79% of studies included both sexes; however, 74% did not evaluate sex effects or used an analytic approach that precluded detection of sex by substance use interactions. 85% of studies that stratified by sex reported different substance effects on brain volumes. Only 33% of studies that examined two-way interactions found significant interactions, highlighting that many studies were underpowered to detect interactions.

Conclusions: Although female participation in substance use studies of brain morphometry has increased, sex disparity persists. Studying adequate numbers of both sexes and employing correct analytic approaches is critical for understanding sex differences in brain morphometric changes in substance abuse and to target treatments specifically for men and women.

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Abstract - ID: 312

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Title: Genome-wide association study of therapeutic opioid dosing identifies a novel locus upstream of OPRM1

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Genetics

Aims: Opioids are very effective analgesics, but they are also highly addictive. Methadone is used to treat opioid dependence (OD), acting as a selective agonist at the μ-opioid receptor encoded by the gene *OPRM1*. Determining the optimal methadone maintenance dose is time-consuming. The development of biomarkers to guide treatment could improve outcomes.

Methods: In methadone-treated OD subjects drawn from a case and control sample, we conducted a genome-wide association study (GWAS) of usual daily methadone dose.

Results: In African-American (AA) OD subjects (n = 383), we identified a genome-wide significant association between therapeutic methadone dose (mean = 68.0 mg, standard deviation (SD) = 30.1 mg) and rs73568641 ($P = 2.8 \times 10^{-8}$), the nearest gene (306 kilobases) being *OPRM1*. Each minor (C) allele corresponded to an additional ~20 mg/day of oral methadone, an effect specific to AAs. In European-Americans (EAs) (n = 1,027), no genome-wide significant associations with methadone dose (mean = 77.8 mg, SD = 33.9 mg) were observed. In an independent set of opioid-naïve AA children being treated for surgical pain, rs73568641-C was associated with a higher required dose of morphine (n = 241, $P = 3.9 \times 10^{-2}$). Similarly, independent genomic loci previously shown to associate with higher opioid analgesic dose were associated with higher methadone dose in the OD sample (AA and EA: n = 1,410, genetic score $P = 1.3 \times 10^{-3}$).

Conclusions: The present results in AAs indicate that genetic variants influencing opioid sensitivity across different clinical settings could contribute to precision pharmacotherapy for pain and addiction.

Financial Support: This study was supported by grants from the National Institutes of Health (NIH) (RC2 DA028909, R01 DA12690, R01 DA12849, R01 DA18432, R01 AA11330, R01 AA017535, MSTP 5T32GM007205-38, CTSA TL1 8UL1TR000142, F30 DA037665, N01-HG-65403, S10 RR19895); a Veterans Affairs VISN1 Career Development Award; the Department of Anesthesiology and Critical Care Medicine at The Children's Hospital of Philadelphia through Children's Anesthesia Associates, Ltd., and by The Children's Hospital of Philadelphia through a grant from the Institutional Development Fund to The Center for Applied Genomics. The funding sources had no role in the design and conduct of the study, or the collection, management, analysis, and interpretation of the data.

Abstract - ID: 313

Author(s):

Erica Peters **(Presenter)**, Battelle Memorial Institute
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Patrick Johnson, California State University

Title: Marijuana and tobacco cigarettes: Estimating their behavioral economic relationship using purchasing tasks

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Behavior

Aims: Although marijuana and tobacco are commonly co-used, the nature of their relationship has not been fully elucidated. Behavioral economics has characterized the relationship between concurrently available commodities but has not been applied to marijuana and tobacco co-use.

Methods: The current research recruited US adults ? 18 years who co-used marijuana and tobacco cigarettes via Mechanical Turk, a crowdsourcing service by Amazon. Participants (N=82) completed an online survey of purchasing tasks assessing hypothetical marijuana or cigarette puff consumption across a range of per-puff prices; two single-commodity tasks assessed these when only one commodity was available, and two cross-commodity tasks assessed these in the presence of a concurrently available fixed-price commodity.

Results: Elasticity of demand for cigarette puffs [? = 0.0055 (95% CI = 0.0028, 0.0082), R2 = 0.98] did not differ significantly from elasticity of demand for marijuana puffs [? = 0.0045 (95% CI = 0.0025, 0.0065), R2 = 0.98] [F(1, 10)=0.05, p=.83]. Elasticity of demand for price-manipulated cigarette puffs was 0.0079 (95% CI = 0.0033, 0.0123; R2 = 0.97), while elasticity of demand for price-constant marijuana puffs was nonsignificant [F(1, 7)=0.19, p=.67]. Elasticity of demand for price-manipulated marijuana puffs was 0.0049 (95% CI = 0.0028, 0.0071; R2 = 0.98), and elasticity of demand for price-constant cigarette puffs was nonsignificant [F(1, 7)=2.48, p=.16].

Conclusions: Results revealed that, in this small sample, marijuana and cigarettes were independent of each other. These preliminary results can inform future studies assessing the economic relationship between tobacco and marijuana in the quickly changing policy climate in the US.

Financial Support: Internal funds from Battelle Memorial Institute

Abstract - ID: 314

Author(s):

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Sherry McKee, Yale School of Medicine

Title: Ovarian hormones are associated with stress reactivity and smoking in human laboratory study

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Sex Differences

Aims: Women have greater difficulty achieving smoking abstinence compared to men, reporting increased subjective craving, negative affect and stress reactivity. Factors related to menstrual cycle phase may have an impact on smoking behavior and treatment outcomes, but results are conflicting. Few studies have examined the impact of ovarian hormones (OR) on smoking behavior. Elucidating the relationship between OH, stress reactivity and smoking behavior is an important next step to better inform treatment for nicotine dependent women.

Methods: In the present study regularly menstruating, female smokers (*n*=25) completed a human laboratory paradigm examining the effect of stress and overnight nicotine deprivation on ad-lib smoking behavior. Stress was induced with a personalized imagery procedure. Participants completed measures of withdrawal (MNWS), craving (B-QSU) and mood (DES) prior to/following stress induction. Ad-lib behavior was evaluated for 60 min; subjective reactivity (CES) to smoking was assessed following the first cigarette. Plasma levels of estradiol and progesterone (evaluated singularly and as ratios; P/E, E/P) were collected at the start of the session.

Results: Results demonstrated that at baseline, E/P was associated with increased withdrawal, decreased positive mood and increased negative mood. Following stress imagery, increased craving for positive reinforcement was associated with estradiol (R^2=0.40) and increased craving for withdrawal relief was associated with E/P (R^2=0.21). Increased smoking during the ad-lib period was positively associated with P/E and craving relief following smoking was negatively associated with estradiol.

Conclusions: Results identify that OH impact withdrawal, craving, affect, smoking behavior and reactions to smoking, likely contributing to the difficulty females experience when quitting smoking. Continuing to clarify these relationships though the evaluation of OH levels will result in improved treatment outcomes for females through the development of enhanced, better-timed interventions and medication response.

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Abstract - ID: 315

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Title: Safety and efficacy of an oxycodone vaccine: Addressing some of the unique considerations posed by opioid abuse

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Among vaccines aimed at treating drug addiction, those targeting opioids present several unique questions and challenges. 1) Opioid overdose is a common complication of abuse, so it is desirable for an opioid vaccine to block the toxic as well as the addictive effects of opioids. 2) It is important that an opioid vaccine not interfere with the action of opioid antagonists used to reverse opioid overdose or treat addiction. 3) Some opioids are immunosuppressive and chronic ongoing opioid use could render these vaccines less immunogenic.

Methods: To assess vaccine impact on opioid toxicity, rats vaccinated with oxycodone conjugated to keyhole limpet hemocyanin subunit dimer (OXY-dKLH) adsorbed to alum or controls vaccinated with dKLH were compared with regard to oxycodone-induced hotplate analgesia and oxycodone-induced respiratory depression and bradycardia.

Results: Vaccination shifted the dose-response curves to the right, representing protection, for each of these endpoints. Naloxone was equally effective in both OXY-dKLH and control groups, providing complete and rapid reversal of respiratory depression. The administration of a long-acting naltrexone formulation during vaccination did not impair vaccine immunogenicity in mice. Similarly, serum anti-oxycodone titers were not altered by continuous morphine infusion during vaccination compared to opioid-naïve controls. Competitive ELISA assay showed negligible or low affinity of immune antiserum for endogenous opioids or opioid antagonists.

Conclusions: These data support the efficacy of vaccination with OXY-dKLH for blocking the toxicity of high doses of oxycodone, while preserving the activity of antagonists used to treat opioid overdose or addiction.

Financial Support: Supported by NIDA grant U01-DA038876

Abstract - ID: 316

Author(s):

Eric Gastfriend **(Presenter)**, DynamiCare Health
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Paul Earley, Principal, Earley Consultancy. LLC

Title: Contingency management technology for routine use in treatment and pilot risk prediction findings

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Technology Issues

Aims: Despite 40 RCTs, only 7% of U.S. providers use contingency management (CM). A fully-automated, scalable, technology may alleviate obstacles by 1) ethically/sustainably managing CM incentives, 2) automatically tracking/reporting data, and 3) providing impending relapse/dropout alerts via machine learning.

Methods: Following a simple online sign-up, the DynamiCare Health™ smartphone platform draws sustainable funding from multiple sources, including patient wage/welfare/disability payments, family allowances, justice system fine reductions and crowdsourcing. The platform can incentivize abstinence (via home saliva/breath/CO testing with selfie video validation), adherence to meds (via selfie) or treatment/self-help sessions (via electronic scheduling and GPS geolocation). Patient text notification is immediate, and funds are transferred onto a recovery debit card that is protective and yields high-resolution data. Prior to CM implementation, we performed initial machine learning back-testing on just the patients' real-world financial transactions to determine if DynamiCare could discern behavioral variables that might predict treatment dropout.

Results: We analyzed real-world spending behavior from patients in U.S. treatment programs (N=31 programs; mostly ASAM Level-3, i.e., residential; or sober living). Patients (N=1,452) with various drug problems voluntarily purchased and used the debit card. Patients and families loaded an average of $342/month onto the card. Multivariate regression analysis (N=90,230 transactions) yielded a new predictor variable: debit card transaction rejections (even for goods or services that are not substance-related). This variable yielded a 73% true positive rate for predicting acute drop-out within the next 24 hours, i.e., a 3.6X improvement in accuracy compared to a 20% rate by chance.?

Conclusions: Although it is supported by considerable efficacy data, contingency management is underutilized. Technology can integrate a variety of tools, which may solve its ethical, administrative, and cost challenges, lifting these burdens from providers at less expense while generating enhanced data for intervention and treatment planning. Research opportunities with such a platform are just emerging.

Financial Support: This study was sponsored by DynamiCare Health, Inc.

Abstract - ID: 317

Author(s):

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Kevin O'Grady, University of Maryland-Psychology

Title: Integration of transcendental meditation into alcohol use disorder treatment

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Alternative Medicine

Aims: This pilot study aimed to (a) establish the feasibility of providing TM training as part of inpatient AUD treatment; (b) compare outcomes of TM to treatment as usual (TAU); and (c) investigate the relationship between meditation frequency and outcome (i.e., "dose-response").

Methods: The study was a quasi-experimental, sequential cohort comparison of TAU vs. TM with 60 adult AUD inpatients (35% female; 60% white; 30 TAU; 30 TM). Participants were assessed at study entry and 3-months post-discharge on stress (Perceived Stress Scale), psychological distress (Kessler-6), craving (Alcohol Urge Questionnaire; Craving Experience Questionnaire), and drinking (Addiction Severity Index-Lite; Quantity/Frequency via Timeline Follow-Back interview; breath testing). Participants in the TM cohort completed training over 5 days in the facility, then were asked to return for 12 weekly follow-up trainings post-discharge.

Results: Findings support the feasibility and acceptability of providing TM in AUD treatment. There was a high rate of return for follow-up training post-discharge (87% returning; 58% of overall scheduled sessions completed), and high uptake of TM, with 81% practicing TM ?25 of the past 30 days at follow-up. The sample as a whole improved on multiple measures, but no differences were found between TM and TAU cohorts. However, greater adherence to TM was significantly correlated with better outcomes across multiple measures. At follow-up, 46% of the TAU cohort reported non-TM meditation in the past 30 days, but unlike in the TM cohort frequency of meditation was not correlated with outcome in TAU.

Conclusions: This pilot study established the feasibility and acceptability of using TM in AUD treatment. The study did not find superior outcomes of TM over TAU on average, but dose-response findings suggest a potential TM-specific (but adherence-dependent) effect. The study can inform future research on using TM in AUD treatment and relapse prevention.

Financial Support: This study was supported by the Peter G. Dodge Foundation and the David Lynch Foundation.

Abstract - ID: 318

Author(s):

Alexandra Mellis **(Presenter)**, Virginia Tech Carilion Research Institute
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Title: Negative income shock narratives reduce valuation of extended, prosocial reinforcers in smokers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Behavior

Aims: Previously, we have shown that a narrative describing negative income shock can narrow the temporal window and increase focus on immediate gratification, as represented by increased rates of delay discounting (or preference for smaller, sooner over larger, later rewards)--a pattern of decision-making also common in smokers. We hypothesized that this decrease in future valuation may accompany a decrease in the valuation of extended, prosocial reinforcers (e.g., volunteering, attending school). Here we test whether a new measure of extended, prosocial reinforcers (EPR) is sensitive to these narratives.

Methods: We developed our EPR measure by presenting N=25 Amazon Mechanical Turk (MTurk) categorization experts with the 360 items of the Pleasant Events Schedule, which lists events which individuals may enjoy. We then presented N=107 daily smokers of at least 10 cigarettes a day from MTurk with either a narrative of negative income shock or a control scenario and assessed their valuation of the 10 items rated as delivering the most long-term, low-intensity, and prosocial rewards. Individuals also completed delay discounting tasks, and were assessed for degree of nicotine dependence using the Fagerstrom Test of Nicotine Dependence (FTND).

Results: The two groups did not differ on self-reported cigarettes smoked per day, FTND scores, and demographics. Those smokers who received the narrative of negative income shock valued EPRs significantly less then the smokers who received a control narrative ($t(105)=2.14$, $p=0.03$). In the negative income shock condition, smokers also discounted delayed reinforcers more steeply than in the control narrative condition ($t(105)=2.75$, $p=0.003$).

Conclusions: Decreased valuation of EPRs accompanies an increase in delay discounting rates in response to narratives of economic scarcity. These findings extend our understanding of a shortened temporal frame of economic scarcity to valuation of particular behaviors or activities.

Financial Support: This research was supported by a grant from the National Institute on Drug Abuse 4R01DA034755-04

Abstract - ID: 319

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Title: The influence of mentholation on usual brand and research cigarettes of varying nicotine content in vulnerable populations

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Behavior

Aims: Menthol is the only cigarette flavoring allowed by the FDA. Research is being conducted to evaluate effects of cigarettes varying in nicotine content as part of a potential policy to lower nicotine content levels. The present study examines differences in effects of cigarette menthol status on acceptability of usual brand and research cigarettes varying in nicotine content.

Methods: Participants were 26 current smokers from three populations vulnerable to smoking dichotomized as menthol (n=11) or non-menthol (n=15) smokers. Across sessions, participants smoked four research cigarettes (Spectrum, 22nd Century Group; mentholated or non-mentholated consistent with usual brand) varying in nicotine content (0.4mg/g, 2.4 mg/g, 5.2 mg/g, 15.8 mg/g) or usual brand cigarette following brief abstinence (CO≤50% baseline level). After smoking, participants completed the Cigarette Purchase Task (CPT) to assess relative reinforcing effects of cigarettes by measuring sensitivity of demand to variations in price, and the modified Cigarette Evaluation Questionnaire (mCEQ) to assess subjective effects. Repeated Measures Analysis of Variance (*p*

Results: Significant interactions of dose and menthol status (*ps*

Conclusions: These results suggest a potentially important difference in reinforcing and subjective effects of mentholated and non-mentholated reduced-nicotine cigarettes in vulnerable populations, which may need to be considered in efforts to evaluate a policy of lowering the nicotine content of cigarettes.

Financial Support: Research reported in this abstract was supported by the National Institute on Drug Abuse and FDA Center for Tobacco Products (CTP) (P50DA036114). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration.

Abstract - ID: 320

Author(s):

Eric Vallender **(Presenter)**, University of Mississippi Medical Center

Title: Comparative mammalian genetics of addiction disorders

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Other (specify)

Other Drug Category: addiction generally

Topic: Genetics

Aims: There is a robust literature on the molecular genetic underpinnings of substance use and addiction disorders that has formed the basis for much of preclinical research. In developing animal models, it is important to formally consider the molecular etiology of disease and ensure construct validity. This study takes a comparative genetics approach to characterizing genetic and selective influences on substance abuse disorders with the aim of better understanding the reward system in mammals.

Methods: Genes associated with substance use and addiction disorders were gathered through literature and database searches. Orthologs from nonhuman mammalian species were identified using reciprocal best hit algorithms followed by manual curation where necessary. Coding sequences were aligned in frame using ClustalW and evolutionary parameters were estimated using PAML. Rates of evolutionary change were compared for primates, rodents, and other mammalian species. Minor allele frequencies and locations of polymorphisms in human genes were also compared to those observed in rhesus macaques.

Results: There is a strong evolutionary conservation of genes involved in substance use and addiction. This is particularly true of genes expressed in the limbic regions of the reward system. Human genetic variation in these genes associated with disease is often paralleled in function in rhesus macaques. This pattern of conservation and parallel functional variation is not observed in other psychiatric disorders.

Conclusions: The evolutionary conservation of the genes in the mesolimbic pathway underlies a high translational validity for animal models of substance abuse. The pattern of common variation observed across species may reflect unique selective pressures on the reward system.

Financial Support: This work is supported in part by GM103328.

Abstract - ID: 321

Author(s):

Sade Iriah **(Presenter)**, Northeastern

Title: Oxycodone addiction: A multimodel magnetic resonance imaging study in response to acute and chronic oxycodone treatment in rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Opiates/Opioids

Topic: Imaging

Aims: Aim These experiments were designed to first characterize the pattern of brain activity in response to a single exposure of oxycodone (OXY) to drug naïve rats during the imaging session and, second, to compare this OXY response to that of rats with a history of drug exposure and demonstrated condition place preference.

Methods: Methods Functional brain activity was assessed with spin echo BOLD imaging in drug naïve, awake rats exposed to OXY (2.5 mg/kg ip) during the scanning session and following four days of twice daily injections of OXY. Rats also received repeated OXY treatments following intraventricular $MnCl_2$ and images acquired using manganese enhanced MRI (MEMRI). In a third study we used diffusion weighted imaging (DWI) and quantitative anisotropy to follow neuroadaptation to repeated OXY. All of the data from the different imaging modalities was registered to a 3D MRI rat atlas with 171 segmented, annotated brain areas.

Results: Results Within 20 min of OXY administration there was a robust increase in both positive and negative BOLD in brain areas high in mu and kappa opioid binding sites. The circuitry of the mesencephalic dopaminergic system (DA) showed little activity to this first exposure of OXY. Rats exposed to repeated OXY presented with conditioned place preference. MEMRI revealed Mn^{++} accumulation in the forebrain limbic system, ventral striatum, accumbens, amygdala and hippocampus with repeated OXY. DWI revealed a pattern of activity that included the limbic cortex, amygdala ventral hippocampal complex, midbrain dopaminergic areas forming a continuum of integrated brain areas sweeping along the ventral surface of the brain curling dorsally through the entorhinal ctx and retrosplenial ctx.

Conclusions: Conclusion The initial exposure to OXY affects multiple areas of the brain but has little effect on the mesencephalic DA system. Continuous exposure promotes drug seeking behavior and activation of DA neural circuitry and a distributed neural network of limbic cortex, amygdala and hippocampus.

Financial Support: There was no financial support for this project.

Abstract - ID: 322

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Title: Substance use facilitates sexual interactions and increases HIV risk in Black South African MSM

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Epidemiology

Aims: A heavy burden of substance use has been observed among black South African men who have sex with men (MSM), with increased sexual risk behavior a potentially detrimental effect. We aim to describe the role of substance use in the lives of black MSM living in South African townships, including their perspectives on how it relates to sexual risk behavior.

Methods: We conducted 90-minute interviews among 20 key informants and 81 black MSM (ages 20–39) living in South African townships. Participant observation was conducted among commercial sites where MSM frequent and MSM friendship circles.

Results: Men described drinking all types of alcohol (beer, cider, wine, liquor) in a variety of settings (bars/restaurants, shebeens, clubs, homes, public spaces). Some men described marijuana use; other drug use was rare. Most men said that they drink a lot, with only a few saying that they drink moderately or not at all. Almost all men drink on weekends (including Thursdays and Sundays). Most men drink to have fun, for disinhibition or to relax, or because they experience problems and stress. Men's responses about the effects of substance use included actual and desired effects. Substance use facilitates sexual partnerships by lowering inhibitions, reducing shyness and increasing courage to approach partners. Substance use increased desire and alters standards for sexual partners. Substance use enables hook-ups with non-gay-identified men. Substance use alters behaviors by influencing the choice of venue for sex, type of sex engaged in (e.g. oral), use of condoms, use of lubricant, and levels of communication. Substance use sometimes promotes behaviors that men later regret. Men's reports were confirmed by key informants and participant observation.

Conclusions: MSM in South African townships described high levels of substance use; this was confirmed by participant observation at multiple times and diverse settings. Substance use often played a critical role in sexual risk behavior. Further research is needed to inform public health efforts to reduce the potential harmful effects of these intertwining epidemics.

Financial Support: This study was funded by the National Institute on Drug Abuse (F31-DA037128; PI: Justin Knox) and the National Institute of Mental Health (R01-MH083557; PI: Theodorus Sandfort, PhD, and P30 MH43520; PI: Robert Remien, PhD).

Abstract - ID: 323

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Title: Mindful attention to drug-cues reduces neural reactivity in reward-relevant brain regions

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Imaging

Aims: Exposure to drug-cues, among patients with cocaine use disorder, triggers mesolimbic activation in brain regions closely tied to motivation and reward. Mindfulness (present-centered nonjudgmental awareness) training can enhance emotion regulation and reduce drug-use for those in recovery. We tested the hypothesis that mindfully attending to drug-cues would reduce the mesolimbic neural response, offering a mechanistic window onto the impact of mindfulness in addiction recovery.

Methods: In the context of a larger ongoing treatment-outcome study, cocaine-dependent patients (n=4) were scanned with event-related BOLD fMRI during exposure to cocaine vs. neutral videos (6 sec), with the instruction to *passively view* vs. *mindfully attend* to cocaine cues. We used SPM8 to contrast mindful >passive viewing cocaine cues. Images were thresholded at 2

Results: Preliminary analysis revealed that our mindfulness condition (vs. passive viewing) had two, complementary actions in the cue exposure task: mindfully attending to drug cues reduced activity in reward-relevant regions, such as the putamen – but increased activity in the dorsal medial and medial orbitofrontal cortex ($p>0.05$, clusters >400 voxels), regions responsible for evaluating and updating stimulus value.

Conclusions: Results demonstrated that mindfully attending to drug-cues attenuated neural reactivity in reward related brain regions associated with drug-motivation – while engaging brain regions involved in the re-appraisal, evaluation and updating of stimulus value. These actions are consistent with the intentions of mindfulness training, and may underscore the potential for mindfulness-based interventions as a complementary approach to preventing relapse and supporting recovery. While these results are preliminary, the mindfulness drug-cue exposure task may be useful for revealing biological mechanisms thought to underlie mindfulness-based treatments, potentially enabling critical 'proof-of-target' validation for these interventions.

Financial Support: P20-GM103653 (Del. Center for Neuroscience Research); Commonwealth of Penn. Dept. of Health (CURE Addiction Ctr. of Excellence: Brain Mechanisms of Relapse and Recovery); NIH/NIDA: RO1 DA10241 (Brain Blood Flow Imaging)

Abstract - ID: 324

Author(s):

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Title: Overdoses on prescribed opioids in Massachusetts, 2013-14

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: Fatal opioid overdoses are attributed commonly to prescribed opioids, rather than diverted or street opioids, like heroin and illicitly-made fentanyl. Among people who died from opioid-related overdose in Massachusetts, we linked overdose toxicology and prescription monitoring program (PMP) records to determine the proportion attributable to *prescribed opioids*.

Methods: Among Massachusetts' residents who died of an opioid-related overdose between 7/1/2013 and 12/31/2014, we analyzed individually-linked opioid toxicology and PMP records. A *prescribed opioid overdose* was defined as the opioid present in toxicology was also dispensed in the month of or the month before. We also calculated the proportion of overdoses for which opioids prescribed in the PMP were not present in toxicology.

Results: Among 1628 Massachusetts' residents who died of an opioid-related overdose, morphine (47%) and fentanyl (33%) were the opioids most commonly present in toxicology, followed by oxycodone (15%), methadone (8.2%), buprenorphine (7.2%), hydromorphone (3.3%), and hydrocodone (2.4%). There were 11% (179/1628) in which at least one opioid present in toxicology was prescribed and 4.1% (67/1628) in which all opioids present in toxicology were prescribed. Only 1.8% (14/759) of morphine and 2.4% (13/537) of fentanyl overdoses were *prescribed opioid overdoses*. Whereas, 34% (82/244) of oxycodone, 22% (29/133) of methadone, 26% (31/118) of buprenorphine, 11% (6/54) of hydromorphone, and 28% (11/39) of hydrocodone overdoses were *prescribed opioid overdoses*. Among decedents with an opioid prescription at the time of overdose, 63% (143/227) of oxycodone, 67% (63/94) of buprenorphine, 78% (39/50) of hydrocodone, and 74% (17/23) of hydromorphone patients did not have the prescribed opioid present in toxicology.

Conclusions: In Massachusetts in 2013-2014, morphine and fentanyl were the most common opioids present on overdose toxicology, but were least commonly prescribed to overdose decedents. Opioids commonly prescribed were often not present on overdose toxicology. Linking overdose toxicology to PMP records can help better attribute overdoses to prescribed opioids, diverted prescription opioids, heroin, and illicitly-made fentanyl.

Financial Support: None

Abstract - ID: 325

Author(s):

Patrick Carter **(Presenter)**, University of Michigan
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Rebecca Cunningham, University of Michigan

Title: Feasibility of an ED-based multi-session remote therapy intervention for drug use and violence

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Behavior

Aims: Aims: This pilot study evaluated the feasibility of a remote therapy intervention (RTI) for substance use and violence among drug-using youth seeking Emergency Department (ED) care for assault.

Methods: Methods: Youth (age 14-24) with assault injuries were approached in the ED; those screening positive for past 6-month drug use were enrolled in an open pilot. The 8 session RTI combined elements of motivational interviewing and cognitive behavioral therapy for substance use/violence (e.g., refusal skills, conflict resolution, anger management), and strengths-based care management to link youth with community resources. The RTI was delivered in-person by a therapist during the ED visit (~35 min) and remotely (e.g., phone) in the 12 weeks following the ED visit. Computerized assessments were completed at baseline, ~weekly prior to therapy sessions, and at a 4-month follow-up. Results were analyzed descriptively and with paired tests (baseline, follow-up).

Results: Results: 20 youth were enrolled in the open pilot trial [*M* age=21; 55% female; 60% African-American; 70% public assistance; 90% past 2-month marijuana use]. The RTI was acceptable and feasible, with 91% enrollment of eligible youth, 100% of enrolled youth completing the in-person ED session, 70% completing ³5 remote sessions, and >80% completing the 4-month follow-up. Participants rated therapy sessions highly, with 80% reporting that it was very/extremely helpful to have post ED phone sessions. Paired comparisons demonstrated a significant decrease in violence (aggression or victimization) prevalence (90% vs. 20%; p < 0 .01), and non-significant decreases in drug use frequency (2.6±1.6 vs. 2.5±2.3), violence frequency (6.2±3.5 vs. 2.7±5.9), and the frequency of drug (9.9±7.1 vs. 7.9±7.1), and violence (2.3±2.2 vs. 0.9±1.3) consequences.

Conclusions: Conclusion: A multi-session intervention for drug use and violence delivered remotely is acceptable and feasible. Based on these initial findings, further study is warranted to determine the efficacy of the RTI on drug use and violence outcomes among at-risk youth. **Financial Support:** CDC 1R49CE002099 and NIDA K23DA039341.

Financial Support: Financial Support: CDC 1R49CE002099 and NIDA K23DA039341.

Abstract - ID: 326

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Title: UMass opioid overdose project: Review of clinical characteristics and healthcare services received in the year prior to death

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Other

Aims: To examine demographic and clinical characteristics of decedents by opioid overdose with and without problematic opioid use (POU) who received health care services within UMass Memorial Healthcare System (UMMHC) one year prior to death.

Methods: 112 of 157 opioid overdoses in the Worcester metropolitan area between 2008 and 2012 had contact with UMMHC services. Electronic medical records were reviewed for clinical characteristics, healthcare services, universal precautions and substance use management. POUs were defined as having documented opioid use disorders or aberrant behaviors. Differences between POU (N=53) and Non-POU (N=59) were examined using X^2 for categorical and t-tests for continuous variables.

Results: The 112 decedents reviewed were Caucasian males (64.3 %) with an average age of 41 years (SD = 11.7). Decedents were last seen in average 94, 100 and 111 days prior in the ED, outpatient and inpatient services, respectively. POUs' main medical problems were opioid use disorders (35.8% vs 0%) and substance use disorders (34% vs 3.4%), whilst Non-POUs' problems were chronic pain (54.2% vs 26.4%) and mental health illness (23.7% vs 3.8%) (X^2=58.6, p < 0 .001). POUs were significantly more likely to have been seen last in the ED (54.7% vs 44.1%), inpatient (11.3% vs 3.4%) and psychiatry (13.2% vs 6.8%), whereas Non-POUs were seen in Primary Care (16.9% vs 9.4%) and surgical/subspecialties (28.8% vs 11.3%) (X^2 = 9.6, p < 0 .05). 71.7% of POUs had opioid prescriptions with a Total Dose Morphine Equivalent 165.4 mg/day (SD=282.7) in comparison with 28.3% of Non-POUs that had 55.6 mg/day (SD=117.7) (t = 6.9, p < 0 .001).

Conclusions: POUs are a recognizable group with high risk of death by opioid overdose with clear therapeutic management that can improve within healthcare systems. Different intervention strategies should be developed for identifying and treating Non-POUs to reduce their risk of death.

Financial Support: Division of Addiction Psychiatry, Department of Psychiatry UMass Medical School.

Abstract - ID: 327

Author(s):

Matthew Enkema **(Presenter)**, University of Washington
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Sarah Bowen, Pacific University

Title: Patterns of cannabis use, related problems, and readiness to change among young adult college students

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Behavior

Aims: Cannabis use and misuse is a growing public health concern, especially as availability, prevalence of use and problematic use have all increased, coinciding with the recent change in legal status of the drug in many states. Although prevalence of problematic cannabis use is on the rise, and cannabis misuse behaviors have negative mental and physical health consequences, readiness to change among people who report cannabis-related problems is unclear. The aim of the current study is to report on associations between frequency of use, related problems, and readiness to change. Based on findings in the alcohol literature, we hypothesize that frequency of use and cannabis-related problems will both be positively associated with later stages of change, with the largest effect being at the action stage.

Methods: The present study used cross-sectional data (N=253) from students at the University of Washington to investigate associations between average days of cannabis use per week during the last month, and cannabis related problems (CUDIT-R), as well as the Readiness to Change Questionnaire for Cannabis (RCQ-C). Three models were used, regressing days of use and cannabis-related problems on the three subscales of the RCQ-C (Pre-contemplation, Contemplation, Action).

Results: Findings revealed that frequency of use and cannabis related problems were both associated with each of the three readiness to change outcomes. However, in the combined models, the unique variance accounted for by frequency of use was only significant for action (Beta = -.173). Meanwhile, cannabis related problems were associated with pre-contemplation (Beta = -.288), contemplation (Beta = .758) and action (Beta = .511).

Conclusions: Cannabis related problems may be a more related to readiness to change than is frequency of use. Additionally, the relationship between use, problems, and stage of change may not be simple or linear. Further research is needed to identify how readiness to change is associated with actual use and change in use over time.

Financial Support: Financial support for the current research was provided by the National Institutes of Health; the National Institute on Drug Abuse. (F31DA042503 PI: Enkema)

Abstract - ID: 328

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Title: Illness narratives of female substance users from an Indian urban slum: A clinical and social perspective on presentation and rehabilitation

Abstract Category: Theoretical/Commentary

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: The Indian society is slowly coming to terms with the problem of substance use among its women. Here we demonstrate cases of 2 female opioid users and discuss their unique presentation and approach to their treatment.

Methods: We selected cases of 2 female substance users seeking treatment from the community clinic. Their clinical details, management plan and impact of interventions was recorded for the purpose of presentation after taking their consent.

Results: Case 1: S is a 23-year-old woman residing in an urban resettlement colony, with a family history of opioid use who started chasing heroin at age 16 and subsequently began intravenous heroin use at age 17 years. She was deserted by her husband and lived on the streets. When she came for treatment she was diagnosed with HIV-AIDS infection. The treating team faced many challenges: immuno-compromised status, poor financial condition, lack of employment opportunities, no family support, social exclusion, presence of a drug using peer group and easy availability of heroin in the slum. The treatment goals were to ensure compliance to antiretroviral therapy and opioid substitution therapy, social mainstreaming, meeting extra-treatment needs, and providing psychosocial support. **Case 2:** Indian women in urban communities often abuse opioid analgesics by getting old prescriptions refilled. M, a 27-year-old housewife, was prescribed tapentadol on a PRN basis for heel pain. She began to get refills on the initial prescription and her use increased to 100 pills a day within a year. Her husband brought her for treatment when she started neglecting household work. Managing the substance use disorder was challenging, as the couple were not ready to accept that her pain could be psychosomatic and that she is addicted to tapentadol. Treatment goals were: tapering off tapentadol, treating the chronic pain and psycho-education of the family about addiction and psychological basis of pain.

Conclusions: Female substance users can be better understood if their drug use behavior is seen in the backdrop of their family dynamics, existing support systems and the adverse events that they have had to deal with. An exploration of cases of these two women demonstrates that the traditional model of management of substance use disorder will need constant improvisation to meet the needs of a female substance user.

"Supported by: no external agency has supported this work in any manner. "

Financial Support: None

Abstract - ID: 329

Author(s):

Alexander Sherwood **(Presenter)**, University of Kansas
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Title: Modular total synthesis approach towards salvinorin A-inspired designer opioids

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Opiates/Opioids

Topic: Chemistry

Aims: The natural product salvinorin A is the prototypical non-nitrogenous opioid receptor ligand and has atypical pharmacology compared to classical morphine-derived opioids. Drugs inspired by and built upon this natural product scaffold yield valuable probes for understanding opioids and are potentially capable of circumventing some of the known abuse liabilities associated classical alkaloid opioids. As such, an adaptable total synthesis approach of designer opioids based upon the salvinorin A scaffold is desirable and potentially valuable for the development of analgesics with reduced abuse liability and drug abuse pharmacotherapies.

Methods: Our total synthesis approach permits functionality to be introduced deliberately within the molecules with the goal of systematically exploring their activity by *in vitro* studies at opioid receptors and ultimately in animal models of pain and addiction. We have designed molecules able overcome potential shortcomings in salvinorin A, such as rapid metabolism, so that they may be useful for clinical pharmacotherapies. The desired chemical scaffolds have been accessed by a straightforward approach to bisenone 14-membered macrolides that are capable of undergoing a transannular Michael reaction cascade to assemble the tricyclic neoclerodane core representative of salvinorin A.

Results: The compounds produced provided access to otherwise unattainable molecular features on salvinorin A by semisynthesis on plant-derived material. The tricyclic neoclerodane core has been synthesized with manipulations targeting key features that are required for activity and an array of salvinorin A inspired structures was accessed.

Conclusions: A modular synthetic protocol capable of accessing salvinorin A inspired compounds that are otherwise inaccessible by semisynthesis has been demonstrated. The compounds produced are being evaluated for activity at opioid receptors and in animal models with the goal of developing clinically relevant analgesics with reduced abuse liability and drug abuse pharmacotherapies.

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Abstract - ID: 330

Author(s):

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Title: Efficacy of heroin and oxycodone vaccines for reducing opioid distribution to brain over a range of drug doses in rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Heroin or oxycodone abuse occurs over a wide range of drug doses and these drugs can be administered via several different routes of administration. The current study addressed the ability of the heroin vaccine M-KLH (morphine hapten conjugated to keyhole limpet hemocyanin) or the oxycodone vaccine OXY-KLH to reduce drug distribution to brain over a range of i.v. drug doses and, for oxycodone, after s.c. administration as well.

Methods: Rats immunized with M-KLH or control vaccine (KLH) received an i.v. bolus dose of heroin 0.26 or 2.6 mg/kg. Rats receiving the higher heroin dose were pretreated with naloxone because this heroin dose otherwise causes fatal respiratory depression.

Results: Vaccination with M-KLH increased retention of heroin or its metabolites in serum after either heroin dose but reduced heroin distribution to brain only after the lower heroin dose. Vaccination also protected against respiratory depression in the lower heroin dose group. Rats vaccinated with OXY-KLH or KLH received oxycodone 0.22 or 2.22 mg/kg (the molar equivalent of the heroin doses listed above) and showed similar results, with reduced oxycodone distribution to brain in only the lower dose group. However, when oxycodone 2.3 mg/kg was administered by the s.c. route vaccination reduced oxycodone distribution to brain by 44%. After s.c. doses of 0.42 or 0.85 mg/kg, oxycodone distribution to brain was reduced by over 65% by vaccination.

Conclusions: This study shows that the ability to reduce drug distribution to the brain of both vaccines is reduced with higher drug doses and rapid i.v. administration, but that efficacy is considerably greater when drug absorption is slower. The data help define how best to use these vaccines in humans, and suggest that the OXY-KLH vaccine may be particularly effective for orally abused oxycodone.

Financial Support: Supported by NIDA grants U01-DA038876 and R01

Abstract - ID: 331

Author(s):

R. Kathryn McHugh **(Presenter)**, McLean Hospital
Linda Valeri, McLean Hospital
Margaret Griffin, McLean Hospital
Roger Weiss, McLean Hospital

Title: Longitudinal associations of pain and craving with opioid use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Both pain and craving are associated with near-future (i.e., next week) opioid use in longitudinal studies of adults with prescription opioid use disorder. However, studies have not considered these variables simultaneously, and thus their relative association with opioid use, including potential redundancy or interaction, remains unclear. The aim of this study of adults with prescription opioid use disorder was to examine (1) whether the association between craving and opioid use was moderated by the presence of chronic pain at baseline, and (2) whether pain severity and craving were independent predictors of opioid use.

Methods: This is a secondary analysis of a NIDA Clinical Trials Network randomized clinical trial (N=354) of buprenorphine with or without counseling for prescription opioid use disorder. We utilized longitudinal data to examine whether craving at each week was associated with opioid use in the following week. This was examined using a logistic regression model controlling for known predictors of outcome, presence of chronic pain, opioid use in the previous week, and the chronic pain by craving interaction. We then used the same approach to examine whether continuous severity of pain and craving independently (or interactively) predicted opioid use over time among those with chronic pain at baseline (N=148).

Results: Craving was significantly associated with subsequent week opioid use (OR=1.17, 95% CI=1.11, 1.22), with no main effect of chronic pain or chronic pain by craving interaction. Among those with chronic pain, both pain severity (OR=1.09, 95% CI=1.01, 1.17) and craving (OR=1.16, 95% CI=1.09,1.24) independently were associated with opioid use. There were no significant interactions between pain and craving, pain and time, or pain, craving, and time.

Conclusions: These results suggest that opioid craving is an important marker of risk for opioid use among those with and without chronic pain. Among those with chronic pain both current pain severity and craving independently are associated with subsequent opioid use, highlighting both of these factors as potential therapeutic targets for improving outcomes.

Financial Support: DA022288, DA015831, DA035297

Abstract - ID: 332

Author(s):

Mark Greenwald **(Presenter)**, Wayne State University
Eric Woodcock, Wayne State University
Leslie Lundahl, Wayne State University
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Jeffrey Stanley, Wayne State University

Title: Effects of N-acetylcysteine on drug seeking and frontocortical glutamate in cocaine abusers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Behavior

Aims: In rodent studies, chronic cocaine exposure decreases corticostriatal basal glutamate (GLU) transmission. N-acetylcysteine (NAC) is a cystine pro-drug that promotes xCT and GLT-1 function to equilibrate perisynaptic GLU levels and activates pre-synaptic $mGluR_{2/3}$ receptors. This clinical study determined whether maintenance on oral NAC vs. placebo reduces drug seeking and alters brain GLU and glutamine (GLN) levels in cocaine abusers.

Methods: In this placebo-controlled, within-subject crossover design, each subject was maintained 1 week (Sat-Fri) on NAC (1200-mg TID; 3600-mg/day) and 1 week on placebo (TID) in counterbalanced order while living on an inpatient unit. Subjects without contraindications underwent brain scans on day 3 (Mon) of each treatment to assess GLU levels in anterior cingulate cortex (ACC) and medial prefrontal cortex (mPFC) using *in vivo,* short TE, single-voxel [2.0x1.5x1.5 cm^3], ^1H MRS at 3T. On each of the next 4 days the subject could work on an 11-trial choice progressive ratio schedule to earn 10-mg units of IN cocaine vs. money ($0.50 or $1.50, varied across sessions) 15 min after cocaine vs. placebo priming dose (110- vs. 4-mg, varied across sessions).

Results: 12 subjects completed the behavioral procedures. Cocaine breakpoint was higher with cocaine priming, Ms=3436 vs. 2093 (p=.003; $?^2$=.56), and lower money alternative, Ms=3592 vs. 1937 (p=.009; $?^2$=.48). NAC decreased cocaine-primed breakpoint (Medication x Priming p=.035; $?^2$=.35) but not overall breakpoint (p=.11; $?^2$=.22). Across conditions, cocaine breakpoint reliably correlated with screening self-report of naturalistic cocaine purchasing time. 8 of the 12 subjects completed ^1H MRS imaging; data quality was acceptable for 7 subjects. During NAC vs. placebo, ACC GLX (GLU+GLN) level was significantly lower, Ms=13.94 vs. 15.86 (p=.035; $?^2$=.55) and GLU non-significantly lower, Ms=10.70 vs. 11.77 (p=.085; $?^2$=.41), with less effect on GLN (p=.16; $?^2$=.30). Placebo-condition (3 days abstinent) ACC GLU levels positively correlated with screening self-report of number of weekly cocaine purchases (r=.97) and lifetime cocaine quit attempts (r=.94). mPFC GLX, GLU and GLN levels were not altered by NAC.

Conclusions: Oral TID NAC dosing significantly reduces cocaine-primed drug seeking (relapse-like behavior) and ACC GLX (mostly GLU) levels.

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Abstract - ID: 333

Author(s):

Jane Acri **(Presenter)**, NIDA
Nathan Appel, NIDA, DTMC

Title: Safety interactions of potential cocaine treatment medications: Example of a dopamine D3 antagonist

Abstract Category: Program Descriptions

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Other

Aims: This presentation describes toxic effects of cocaine that may be exacerbated by a treatment medication taken before using cocaine, as might occur in a "slip" or relapse, and the FDA-required evaluations that are needed to insure that new chemical entities are safe in the presence of drugs of abuse. Most cocaine-related deaths in humans involve cardiovascular effects that include hypertensive crisis, sudden cardiac death, and stroke, while in rodents, cocaine lethality is preceded by convulsions.

Methods: Rodent studies are designed to determine whether lethality caused by high doses of stimulants, opiates, or alcohol will be potentiated by the treatment drug by measuring convulsions and deaths. Cardiovascular studies using telemetered dogs or monkeys (depending on the non-rodent species used for toxicology) examine whether cocaine's stimulatory effects on hemodynamics will be further increased (or possibly decreased) by the treatment drug. Future interaction studies are being designed to evaluate direct cardiac effects, such as QT interval and ST deviation, as well

Results: Results of tests with GSK598809, a selective dopamine D3 receptor antagonist will be used to illustrate the potential cardiovascular risks of compounds efficacious in preclinical models of cocaine use disorders.

Conclusions: These studies highlight the importance of considering effects of compounds that may have actions in the periphery in addition to their efficacy in preclincial models of cocaine use disorders.

Financial Support: NIDA employee

Abstract - ID: 334

Author(s):

Lee Anne Cannella **(Presenter)**, Lewis Katz School of Medicine at Temple University
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Title: Dexamethasone attenuates the enhanced rewarding effects of cocaine following experimental TBI

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Behavior

Aims: Clinical studies identify traumatic brain injury (TBI) as a risk factor for the development of cocaine dependence. Our recent pre-clinical studies support this claim, showing enhancement of the rewarding effects of cocaine in mice sustaining moderate controlled cortical impact (CCI) injury during adolescence. These studies were performed to determine whether pro-inflammatory activity in the nucleus accumbens (NAc) mediates enhanced cocaine-induced CPP in adolescent mice sustaining moderate CCI-TBI.

Methods: We tested the efficacy of dexamethasone (Dex), an anti-inflammatory corticosteroid, to attenuate augmentation of the behavioral response to cocaine observed in CCI-TBI animals using the conditioned place preference (CPP) assay.

Results: Our data reveal robust glial activation in the NAc following CCI-TBI and a significant increase in the cocaine induced CPP of untreated CCI-TBI mice. Furthermore, our results show that Dex treatment following CCI-TBI attenuates the cocaine place preference of injured animals without producing aversion in the CPP assay. Our studies also found that Dex significantly reduced the expression of select immune response genes including *CCL2* and *ICAM-1*, returning their expression to control levels, which prompted additional investigation of the inflammatory response following Dex treatment post TBI.

Conclusions: Our findings indicate that anti-inflammatory agents, such as Dex, may be effective in normalizing the rewarding effects of cocaine following CCI-TBI. This suggests that corticosteroids offer promising therapeutic targets potentially sparing the development of chronic neuroinflammation in regions associated with the reward circuitry such as the NAc.

Financial Support: NIH/NIDA: F32 DA041282, T32 DA007237, P30 DA013429-16; NINDS: R01 NS086570-01; Shriners Hospital for Children: 85110-PHI-14.

Abstract - ID: 335

Author(s):

Gregory Collins **(Presenter)**, University of Texas Health Science Center
Charles France, University of Texas Health Science Center

Title: Effects of lorcaserin and buspirone, administered alone and in combination, on cocaine self-administration in rhesus monkeys

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Behavior

Aims: Stimulant abuse is a serious public health issue for which there is no effective pharmacotherapy. One strategy to reduce the time required to get a candidate medication into the clinic has been to repurpose drugs already FDA-approved for other indications for the treatment of stimulant abuse. Recent studies suggest that lorcaserin (Belviq®; a serotonin 2C receptor agonist) and buspirone (Buspar®; a dopamine D3/D4 receptor antagonist) can reduce cocaine self-administration in rhesus monkeys, however, these effects have been modest.

Methods: Because these two drugs have potentially complementary mechanisms of action, the current study evaluated the effectiveness of combinations of lorcaserin and buspirone, mixed at fixed ratios of 3:1, 1:1, and 1:3 (relative to each drugs ED50), to reduce responding for 0.032 mg/kg/inf cocaine under a progressive ratio schedule in four rhesus monkeys (2 male and 2 female). Dose addition analyses were used to determine if the effects of the drug combinations differed from those predicted for an additive interaction between lorcaserin and buspirone.

Results: When administered alone, lorcaserin and buspirone both inhibited responding in a dose-dependent manner. A similar dose dependent inhibition of cocaine self-administration was observed with each of the fixed dose combinations of lorcaserin and buspirone; however, all three of the lorcaesrin:buspirone combinations were more potent than predicted for an additive interaction suggesting that lorcaserin and buspiroine exhibit a supra-additive interaction with regard to their capacity to inhibit the reinforcing effects of cocaine.

Conclusions: Together, these results indicate that a combination therapy containing a mixture of lorcaserin and buspirone might be more effective than either monotherapy at reducing cocaine abuse.

Financial Support: Supported by grants from the National Institute on Drug Abuse [U01 DA034992 and K05 DA017918] and by the Welch Foundation [Grant AQ-0039].

Abstract - ID: 336

Author(s):

Elizabeth Doncheck **(Presenter)**, Marquette University
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Title: Brain region and mechanism underlying 17beta-estradiol-potentiated reinstatement of cocaine-seeking behavior in female rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Sex Differences

Aims: Aim: Although peak physiological levels of the ovarian hormone estrogen correspond to enhanced relapse vulnerability in female cocaine addicts, the underlying mechanisms are not well understood.

Methods: Methods: Female rats were catheterized and underwent intravenous cocaine self-administration (0.5 mg/kg/0.2 mL infusion) during daily 2hr sessions. Once rats displayed stable intake for 10-14 days on a fixed-ratio 4 schedule, they underwent extinction training. Upon reaching criterion (< 1 5 lever responses/2hr session), rats were surgically ovariectomized (OVX) and subjected to reinstatement tests in a counterbalanced randomized order.

Results: Results: We find that OVX females given proestrus-levels of estrogen (E2) exhibit potentiated reinstatement of cocaine seeking in response to an ordinarily subthreshold dose of cocaine (1.25 mg/kg, ip; $p < 0.01$; $n = 5$). Prelimbic cortical (PrL) E2 microinfusions are sufficient for the potentiation effect (PrL; $p < 0.05$; $n = 5$). As PrL output drives drug seeking, and endocannabinoids (eCB) both disinhibit PrL projections and are mobilized by E2, we hypothesized that E2 acts through PrL eCB mobilization. Although we find intra-PrL cannabinoid receptor-type 1 antagonism suppresses E2-potentiated reinstatement ($p < 0.05$; $n = 7$), whole-cell voltage clamp recordings from female PrL pyramidal neurons reveal that E2 enhances presynaptic glutamate release ($p < 0.05$; $n = 11$) but has no effect on inhibitory neurotransmission ($n = 7$).

Conclusions: Conclusions: These results indicate that E2-enhanced relapse vulnerability in females involves the PrL eCB system, and that E2 enhances PrL excitatory neurotransmission. Investigations are underway to determine how these mechanisms may be intertwined.

Financial Support: Financial Support: Supported by NIH Grant DA038663 to Mantsch & Hillard.

Abstract - ID: 337

Author(s):

Kathryne Van Hedger **(Presenter)**, University of Chicago
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Title: Brain activation during methamphetamine-paired cues in humans

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Imaging

Aims: Cues previously paired with psychoactive drugs elicit conditioned responses in human drug users. For example, pictures of drugs or drug paraphernalia typically induce cravings and may increase drug seeking behavior. Few studies, however, have examined the acquisition of conditioned drug responses in humans.

Methods: In this study, we examined acquisition of conditioning to initially neutral audio-visual stimuli (i.e., nature scenes with appropriate soundtrack) paired with methamphetamine (MA; 20 mg oral) or placebo in healthy young adults. Participants completed four conditioning sessions followed by a post-conditioning fMRI scan. During two conditioning sessions they received MA (20mg), and experienced one audio-visual stimulus 30 minutes after drug administration. During the other two sessions participants received a placebo, which was paired with a different stimulus. We tested conditioned responses to the stimuli using both behavioral indices (ratings of behavioral preference, liking, and attentional bias) and brain activity (fMRI).

Results: We hypothesized that stimuli paired with MA would induce a behavioral preference, increased liking, and attentional bias compared to stimuli paired with placebo. We also expected that MA paired stimuli would activate brain areas associated with attention and reward. We found that the MA-paired cue did not increase behavioral preference, liking or attentional bias in our current sample (N=42). Preliminary fMRI analyses indicate that while MA-paired stimuli did not increase brain activity in areas typically associated with attention and reward as hypothesized, we did find relatively increased activation for MA-paired stimuli compared with placebo-paired stimuli in visual cortex, auditory cortex, and right supramarginal gyrus.

Conclusions: This is the first study to demonstrate acquisition of conditioning of brain activity of healthy, sober participants after pairings of an initially neutral stimulus with oral methamphetamine. It represents an important step toward understanding the mechanisms of cue-conditioning.

Financial Support: Applying for Early Career Investigators Travel Award

Abstract - ID: 338

Author(s):

Alia Al-Tayyib **(Presenter)**, Denver Public Health
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Title: HCV in social networks of young adults who misuse prescription opioids and heroin

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: The intertwining prescription opioid and heroin epidemics are a significant public health problem in the United States. Consequently, incident hepatitis C virus (HCV) infections have increased with increasing injection drug use. We sought to describe the prevalence of HCV infection in the networks of youth and young adults who misuse prescription opioids and heroin.

Methods: Persons between the ages of 15 and 24 were recruited using respondent-driven sampling, a peer-referral sampling methodology. Persons were eligible to participate if they were currently misusing prescription opioids or were currently using heroin after a period of prescription opioid misuse. Participants completed an interviewer-administered behavioral survey and were offered rapid tests for HCV and HIV infections. Participants also completed a social network assessment of persons who were involved in their life in a significant way during the past month.

Results: Between October 1, 2015 and August 1, 2016, a total of 63 participants were recruited. Approximately 73% were male, 70% were white, and 73% were homeless. Mean age was 22.1 (SD=1.7). A total of 61 participants were tested for HCV, of whom 23 (38%) were infected. Of those infected, 6 (26%) were unaware of their HCV infection. We did not identify any HIV infections. The majority (92%) had already transitioned to injection drug use. Among the 58 who had transitioned to injection, mean age at first misuse of prescription opioid was 15.2 (SD=2.3), mean age at first heroin use was 18 (SD=2.7), and mean age at first injection was 18.9 (SD=2.6).These 63 participants provided information on 423 network members. Approximately 45% of named network members were persons with whom the participant injected.

Conclusions: The prevalence of HCV infection and risk of ongoing transmission was high in this relatively young sample of persons who use opioids. Prevention efforts that target youth who misuse prescription drugs before they have transitioned to injection drug use are urgently needed.

Financial Support: K01DA036452 (Al-Tayyib)

Abstract - ID: 339

Author(s):

Roger Weiss **(Presenter)**, McLean Hospital
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Title: Association between mutual-help groups and abstinence among prescription opioid-dependent patients, with and without agonist treatment, during 42-month post-treatment follow-up

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: In the multi-site CTN Prescription Opioid Addiction Treatment Study (POATS), participants receiving agonist treatment had significantly better opioid use outcomes during the main trial and at 18-, 30-, and 42-month follow-up. However, many participants abstained from opioids in the month prior to the month 18 (37%) and 42 (50%) assessments, respectively, far higher than in the main trial (< 1 0%); 80% of those in agonist treatment abstained at months 18 and 42. This exploratory analysis examined factors related to successful outcomes in those not receiving agonist treatment.

Methods: A total of 338 of 653 original POATS participants entered the Long-term Follow-up Study, consisting of 45-60 minute phone interviews by McLean Hospital staff18, 30, and 42 months post-randomization.

Results: At each follow-up assessment, at least half of the study participants self-reported opioid abstinence (50-64%) in the past month, regardless of whether they were currently in treatment for opioid use disorder. Most (61-66%) reported treatment for opioid use disorder in the past month; for example, at month 18, 32% were in agonist treatment, 23% were attending mutual-help groups, and 13% were in counseling. The association between mutual-help attendance and opioid abstinence varied by agonist treatment: among those not in agonist treatment, mutual-help attendance was significantly associated with opioid abstinence ($?^2(1)=4.98$-5.78, p values=.02-.03 at the 3 follow-up assessments); however, among those in agonist treatment, mutual-help attendance was not associated with opioid abstinence ($?^2(1)=0.28$-1.75, p values=.18-.59 at the 3 follow-up assessments).

Conclusions: It was common for patients to seek agonist treatment after the treatment trial, and those in agonist treatment were more likely to be opioid-abstinent at long-term follow-up. Mutual-help attendance appeared to be associated with opioid abstinence, but that association was statistically significant only in the absence of opioid agonist treatment.

Financial Support: NIDA grants UG1DA015831, K24DA02288, and K23DA035297

Abstract - ID: 340

Author(s):

Marquis Maynard **(Presenter)**, Temple University Lewis Katz School of Medicine
Lee Anne Cannella, Lewis Katz School of Medicine at Temple University
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Servio Ramirez, Lewis Katz School of Medicine at Temple University

Title: Pathologic changes in the NAc post experimental TBI and susceptibility to the rewarding effects of a subthreshold dose of cocaine following brain injury

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Behavior

Aims: Traumatic brain injury (TBI) is an important public health problem in the U.S. Chronic comorbidities seen in TBI patients is the development of a substance use disorder. Previously we found that moderate TBI during adolescence increased susceptibility to the rewarding effects of cocaine during adulthood. Here we investigated whether TBI during adolescence enhances the effects of a subthreshold dose of cocaine. Furthermore, pathologic findings reveal that the blood-brain barrier (BBB) status, in areas where the reward pathway is located, appears altered. The implication of BBB changes post brain injury, as part a component of neuroinflammation, may explain how the rewarding effects of cocaine may shift as a consequence of TBI.

Methods: Experimental TBI was performed using a controlled cortical impactor set to induce a moderate or mild TBI in 6 week old, adolescent or 8 week old, young adult male C57BL/6 mice. Drug seeking behavior was assessed using 2.5 mg/kg cocaine in the CPP assay two weeks after injury. Histology and gene expression assays were used for pathologic indices.

Results: Moderate TBI during adolescence, but not during young adulthood, augmented place preference shift indicative of enhanced sensitivity. Additionally we detected increased expression of immune response-associated genes in the prefrontal cortex and disrupted tight junction protein expression in vessels from the cortex and nucleus accumbens of TBI animals.

Conclusions: Our studies suggest that TBI during adolescence may enhance the abuse liability of cocaine in adulthood. In addition, the rewarding effects of cocaine could be lower as a result of brain injury. Moreover, key pathologic findings such as BBB changes in areas of the reward pathways support the notion that neuroinflammation may contribute to how rewarding effects of cocaine post-TBI are affected.

Financial Support: T32 DA007237, NIH/NINDS R01 NS086570-01

Abstract - ID: 341

Author(s):

Jamie Gauthier **(Presenter)**, Boston University School of Medicine
Kyle Mabry, Boston University School of Medicine
Kathleen Kantak, Boston University School of Medicine

Title: Impact of environmental enrichment on context dependency of cocaine-cue extinction learning for relapse prevention

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Treatment

Aims: Extinction (EXT) training reduces responses to drug cues, but is rarely effective as a standalone treatment for relapse due to context dependency of EXT learning. Recently, we showed that brief interventions of environmental enrichment (EE) facilitated cocaine-cue EXT and inhibited reacquisition of cocaine self-administration, with all sessions occurring in the same drug-paired environment. To be of use for relapse prevention in clinical populations, EE would need to facilitate EXT in a novel (non-drug) environment.

Methods: Groups of rats self-administered 0.3 mg/kg cocaine for ~45 daily sessions under a second-order schedule, then underwent 3 weekly 1hr EXT sessions (no cocaine, but cues presented contingently) prior to 15 daily reacquisition sessions to measure relapse to cocaine self-administration. Group 1 (control) underwent self-administration, EXT and reacquisition in the same drug-paired environment (context A) without EE (n=10). Group 2 was treated identically, but received EE during EXT (n=8). Group 3 underwent self-administration and reacquisition in context A, but received EXT in a novel environment (context B) with EE (n=8). EE consisted of two 4hr periods occurring 24hr before + immediately after each EXT session and took place in a separate arena, allowing for social interaction, cognitive stimulation and physical exercise.

Results: EE facilitated EXT learning, whether conducted in context A or context B ($p < 0.05$). As observed previously, combining EE with EXT in context A inhibited cocaine relapse for 12 sessions ($p < 0.05$). However, when EE was combined with EXT in context B, rats relapsed immediately, as observed in the control group.

Conclusions: EE facilitated cocaine-cue EXT regardless of the context used for training. However, EE exposure could not overcome the context dependency of EXT learning for cocaine relapse prevention. Adjunct pharmacotherapy may be required for EE to prevent cocaine relapse long-term if EXT training takes place in a novel context, such as in a clinic setting.

Financial Support: Internal Funds

Abstract - ID: 342

Author(s):

Gregory Sahlem **(Presenter)**, Medical University of South Carolina

Title: Repetitive transcranial magnetic stimulation can be safely and feasibly applied to the dorsolateral prefrontal cortex of non-treatment-seeking heavy cannabis users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Treatment

Aims: Cannabis use disorder (CUD) is a common condition with few treatments. Several studies have found that the application of repetitive transcranial magnetic stimulation (rTMS) to the dorsolateral prefrontal cortex (DLPFC) results in decreased cue-elicited craving in substance use disorders. To date there are no published studies attempting to use rTMS in CUD, and subsequently we completed this trial to determine if rTMS could be feasibly delivered to a group of CUD participants.

Methods: Methods: We performed a double-blind, sham controlled, crossover trial. A single session of active rTMS (Figure of eight coil, Left DLPFC, 10 Hz, 110% rMT, 5-Seconds on, 10-Seconds off, 4000 pulses), or sham rTMS was delivered during a validated cannabis cue paradigm. Participants then completed the other condition one week later. We measured craving using the Marijuana Craving Questionnaire (MCQ).

Results: Results: 18 non-treatment seeking CUD participants were recruited from the community, 16 of whom completed the trial (3 Women, Average age: 26 ± 6.9; Retention rate: 89%). All trial completers tolerated 110% rMT. There was a reduction in the MCQ purposefulness subscale when participants received active rTMS as compared to when receiving sham rTMS; (13.8 ± 1.2 SEM to 11.9 ± 0.8 SEM Active; 14.3 ± 0.8 SEM to 13.8 ± 0.8 SEM Sham; T=2.5, DF=43, p=0.016). There was a numeric reduction in MCQ-Total score when receiving active compared to sham rTMS; (42.4 ± 3.2 SEM to 38.2 ± 2.0 SEM Active; 43.5 ± 2.4 SEM to 40.4 ± 2.0 SEM Sham; T=1.1, DF=43, p=0.287).

Conclusions: Conclusions: TMS can be safely and feasibly delivered to CUD participants, and treatment is well tolerated. A single session of treatment may result in decreased cue-elicited craving, though further study is needed to determine this definitively.

Financial Support: K12DA031794-04 K24DA038240-01

Abstract - ID: 343

Author(s):

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Title: Does electronic cigarette propylene glycol and vegetable glycerin ratio influence nicotine delivery, subjective effects, and puff topography?

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Behavior

Aims: The influence of electronic cigarette (ECIG) liquid solvents propylene glycol (PG) and vegetable glycerin (VG) on ECIG acute effects is unknown. This study examined the effect of ECIG liquid PG:VG ratio on nicotine delivery, subjective effects, and user puff topography.

Methods: Twelve ECIG-experienced ? 12-hour nicotine-abstinent participants used a 3.3 V "eGo" ECIG with a dual-coil cartridge (1.5 ?) and 18 mg/ml nicotine liquid in four sessions differing only by liquid PG:VG ratio (2:98, 20:80, 55:45, 100:0). Blood was sampled and subjective effects were measured before and after 2, 10-puff ECIG-use bouts (30s interpuff-interval); puff topography was measured during each bout.

Results: After bout 1, mean (SD) plasma nicotine concentration, in ng/ml, was 8.3 (6.7) in the 2PG:98VG condition, 9.1 (9.2) in the 20:80 condition, 12.2 (12.5) in the 55:45 condition, and 10.0 (4.4) in the 100:0 condition. Nicotine delivery was significantly greater in the 55:45 condition relative to the 20:80 (*p*p?.06). Scores for subjective items from the Hughes-Hatsukami withdrawal scale assessing "anxious", "craving", "concentration", "drowsy", "impatient", and "urge" were reduced after ECIG use but did not differ across PG:VG ratio. "Throat hit" from the General Labeled Magnitude scale was greatest in the 100:0 condition. Participants took significantly longer puffs in the 2:98 condition (5.58s) relative to all other conditions (*p*s

Conclusions: PG:VG ratio influenced nicotine delivery, user puff topography, and one ECIG-sensory experience measure. ECIG-induced suppression of nicotine abstinence effects did not differ by PG:VG ratio. Learning more about liquid solvent ratios and other factors that influence ECIG nicotine delivery and subjective effects is relevant to predicting abuse liability, understanding toxicant exposure, and informing product standards and other regulatory action.

Financial Support: P50DA036105; F31DA040319

Abstract - ID: 344

Author(s):

Elise DeVito **(Presenter)**, Yale School of Medicine
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Noah Konkus, Yale University
Huiping Zhang, Yale University
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Title: Atomoxetine in abstinent cocaine users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Treatment

Aims: The present study aimed to investigate the cognitive, subjective, and physiological effects of acute doses of atomoxetine (ATX), a norephinephrine transporter inhibitor, in abstinent individuals with cocaine use disorders (CUD). As no pharmacotherapies are approved for CUD treatment and cognitive impairments in CUD have been linked with poorer clinical outcomes, ATX shows theoretical potential as a treatment for CUD based on its efficacy as a cognitive enhancer in other clinical populations and impact on addictive processes in preclinical and human laboratory studies.

Methods: In this randomized, double-blind, crossover study, abstinent individuals with CUD (N=39) received placebo, 40 and 80 mg ATX, over three sessions. Measures of attention, response inhibition and working memory; subjective ratings of medication effects and mood; and heart rate and blood pressure were collected. Analyses assessed dose-dependent effects of ATX and whether dose-dependent ATX effects were modulated by a functional single nucleotide polymorphism (SNP) variation (3081(A/T)) in the gene that codes for the norepinephrine transporter (*SLC6A2*), or sex.

Results: In a dose-sensitive manner, ATX significantly affected physiological, subjective drug effects, mood and cognitive measures. ATX modestly increased heart rate and blood pressure. In terms of subjective drug effects, the higher ATX dose increased 'dysphoria', both doses increased 'stimulatory' and 'negative' effects, while the lower dose increased 'feel good' effects. The lower dose of ATX reduced ratings of 'fatigue' on a mood questionnaire. Finally, both doses improved discriminability performance on a cognitive task (Immediate Memory Task (IMT)). Sex modulated ATX's subjective drug, mood and cognitive effects. Treatment-by-sex interactions showed more positive ('euphoria') and less negative ('dysphoria', 'sedation') subjective drug effects in women relative to men in response to the medication versus placebo. ATX reduced negative mood ratings ('fatigue', 'depression') in men while increasing them in women, relative to placebo. ATX improved cognitive task performance in men but not in women. Genetics (*SLC6A2*-3081) also modulated ATX's physiological, subjective drug, mood and cognitive effects wherein individuals homozygous for the AA allele, which is associated with higher norepinephrine transporter function, were generally more responsive to potentially therapeutic effects of ATX. AA individuals reported reduced subjective tension, and performed better on cognitive task (IMT discriminability) on atomoxetine relative to placebo, while individuals with a T allele did not. Individuals with a T allele reported positive drug-like (e.g., 'stimulant-like') effects of lower dose atomoxetine relative to placebo, while those homozygous for the AA allele did not.

Conclusions: These preliminary findings suggest ATX in abstinent cocaine users may be more effective in individuals with AA genotype, relative to T-carriers, and in men, relative to women.

Financial Support: Veterans Administration Mental Illness Research, Education and Clinical Center (MIRECC) and National Institute on Drug Abuse (NIDA) grants P50-DA12762 and K02-DA-021304.

Abstract - ID: 345

Author(s):

Albert Garcia-Romeu **(Presenter)**, Johns Hopkins University School of Medicine
Frederick Barrett, Johns Hopkins School of Medicine
Matthew Johnson, Johns Hopkins School of Medicine
Roland Griffiths, Johns Hopkins School of Medicine

Title: Developing psilocybin as a potential pharmacotherapy: Identifying optimal dosing parameters

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Club/Designer Drugs

Topic: Treatment

Aims: To determine the appropriate psilocybin dosing protocol (weight-adjusted vs. absolute) for peak efficacy in clinical trials for substance use and mood disorders.

Methods: Data were pooled from 4 studies in which participants were administered 30 mg/70 kg psilocybin (*N* = 141). Data on participant age, weight, BMI, absolute dose, and subjective drug effects were examined using Spearman's rank correlations and multiple regression analyses.

Results: Although weight-adjusted dose was the same for all volunteers (30 mg/70 kg), absolute dose administered varied over a 2.3-fold range (21 to 49 mg) because the body weights varied over this same range (109 to 250 lbs). Correlation and multiple regression analyses found no significant associations between absolute dose and intensity of drug effects, or between absolute dose and scores on validated measures of mystical and challenging experiences. Furthermore, the occurrence of challenging experiences as judged independently by study guides did not appear to be related to absolute dose.

Conclusions: These analyses found that weight-adjusted doses of psilocybin did not result in a skewed distribution of subjective effects scores. Higher absolute doses of psilocybin administered to heavier individuals were not associated with more mystical or challenging effects, or greater intensity of drug effects. Thus, these data suggest use of weight-adjusted doses up to 30 mg/ 70 kg may be optimal for future clinical trials administering psilocybin.

Financial Support: Heffter Research Institute, Beckley Foundation, NIDA R01DA003889

Abstract - ID: 346

Author(s):

Jayme McReynolds **(Presenter)**, Marquette University
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Title: Glucocorticoid-endocannabinoid interactions in the prelimbic cortex mediate stress-potentiated reinstatement of cocaine seeking

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Neurobiology

Aims: Stress, when it does not directly reinstate, can potentiate reinstatement of cocaine seeking when paired with low-dose cocaine. This effect is corticosterone (CORT)-dependent and CORT, systemic or intra-prelimbic (PL), is sufficient to potentiate reinstatement. CORT likely interacts with the endocannabinoid (eCB) system in the PL as stress increases PL eCB production in a CORT-dependent manner. Here we investigated PL CORT-eCB interactions and the resulting effect on corticoaccumbens pathway activation.

Methods: Male SD rats self-administered cocaine (14 x 2 hrs/day) followed by extinction and reinstatement testing. Involvement of PL CB1 receptor activation, through 2-AG, was assessed using site-specific delivery of drugs to either activate/inactivate the system prior to reinstatement tests. CORT was bath applied to PL slices to test effects on inhibitory neurotransmission. Finally, corticoaccumbens pathway activation was examined using a retrograde tracer and double-label immunohistochemical approach following reinstatement.

Results: Intra-PL CB1R antagonist or DAGL inhibitor (reduces 2-AG) blocked CORT-potentiated reinstatement (p

Conclusions: These findings support the hypothesis that CORT acts in the PL, through eCB-mediated inhibition of GABA, to increase activation of the corticoaccumbens pathway and potentiate cocaine seeking.

Financial Support: NIH grant DA038663 (to JRM, QSL, CJH)

Abstract - ID: 347

Author(s):

Ravi Nahata **(Presenter)**, Central VA Healthcare System
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Jeff Thostenson, University of Arkansas for Medical Sciences
Alison Oliveto, University of Arkansas for Medical Sciences

Title: Survey of treatment preferences for opioid use disorder

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Opioid use disorder (OUD) continues to be a serious public health problem, particularly with the dramatic rise in abuse of prescription opioids (POs). Long-term maintenance treatment strategies with long-acting opioid agonists methadone (MTD) or buprenorphine (BUP) may not be preferred treatment among OUD patients. Whether opioid antagonist naltrexone (NTX) treatment following opioid detoxification would be acceptable to these individuals is also unclear. This survey gathered preliminary information on the initial feasibility of using injection NTX therapy in opioid users.

Methods: One hundred opioid users undergoing a health screen to determine initial study eligibility for an ongoing study completed a 5-minute survey that included demographics, drug use and treatment history and treatment preferences.

Results: Of the 100 respondents (36% female, 8% minorities, aged 34.5$\pm$11.4 yrs), 26, 16, 16, 1 and 0 reported prior treatment episodes of detoxification, BUP, MTD, oral NTX and injection NTX, respectively. Ninety and 71% were interested in participating in a study involving oral and/or injection NTX treatment, respectively. Reasons for not wanting to try injection NTX included fear of needles (n=13), side effects (n=7), lack of pain relief (n=12) and cost (n=3). A significantly higher percentage of those with episodes of prior opioid agonist treatment were interested in injection NTX relative to those without prior episodes (88.5% vs 64.9%; Chi^2=5.2, p < 0 .03). Those preferring injection NTX therapy showed a higher level of interest in this therapy (3.08$\pm$1.01 vs 1.62$\pm$1.35; Rank Sum p < 0 .0001) and a lower degree of interest in BUP treatment (2.96$\pm$0.93 vs 3.38$\pm$0.90; Rank Sum p< 0.03) than those not preferring injection NTX.

Conclusions: These preliminary results suggest that those with prior opioid agonist treatment episodes are more likely to consider injection NTX therapy, suggesting it may have utility as a second-line treatment for OUD.

Financial Support: Supported by NIDA grants R21DA035325 and R01DA039088.

Abstract - ID: 348

Author(s):

An-Li Wang **(Presenter)**, University of Pennsylvania
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Victoria Fairchild , University of Pennsylvania
Catherine Aronowitz, University of Pennsylvania
Daniel Langleben , University of Pennsylvania

Title: Aversiveness enhances memory of cigarette warning messages

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Policy

Aims: In 2009, the Food and Drug Administration (FDA) published a Final Rule requiring implementation of graphic warning labels (GWLs) comprised of a textual warning and an image depicting the negative health consequences of smoking, on cigarette packs. However, tobacco companies' successfully argued in court that the images included in GWLs were too aversive and encroached on their 1st Amendment rights. The court sided with tobacco companies and delayed the implementation Previous studies show that GWLs rated high on the emotional reaction (ER) scale, had greater impact on brain response and were better remembered in adult smokers than these low on ER. We tested the extent to which emotional salience of the pictorial component of the GWL contributes to the memorability of the warning messages.

Methods: In an ongoing study, seventy-eight non-treatment-seeking smokers (36 females, 29.99 ±10.33 years old, 13.83 ±8.13 cigarette per day, Mean ±SD) were randomly assigned to either High ER or Low ER groups and viewed their respective GWLs (same text warning paired with images rated either High or Low ER) for 4 weeks. Recall of images and textual statements and urine cotinine levels were assessed at the beginning (Week 1) and the end of the study (Week 6). Self-reported desire to quit and self-efficacy were measured at Weeks 1, 3, 5 and 6.

Results: Text warnings were better remembered when paired with high ER images. After 4-week recurrent exposure, recall of GWL images was improved while recall of GWL text remained unchanged. Remarkably, the High ER group remembered images better than text messages while the Low ER group remembered text messages better than images. Subjects' desire to quit smoking increased over time. Better performance in recalling GWL images in the 1 session predicted lower cotinine level after 4-week.

Conclusions: These results indicate that emotional salience of images in GWLs enhances the memorability of the text warning messages. These data provide an experimental platform for further research and implementation of science-based labeling and marketing of tobacco products.

Financial Support: NIDA R01 DA036028

Abstract - ID: 349

Author(s):

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Title: Substance use is associated with increased risk-taking behavior in heavy drinking veterans with posttraumatic stress disorder

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Neurobiology

Aims: Alcohol use disorder (AUD) and Posttraumatic Stress Disorder (PTSD) are highly prevalent among Veterans and associated with a wide variety of neurobehavioral harm. Substance use is also common among Veterans and can affect neurocognitive functioning, particularly in domains of executive control. However, little is known regarding the effects of substance use on executive function in Veterans with AUD and PTSD.

Methods: We assessed 79 (4 female) heavy drinking (Timeline Followback) Veterans with AUD (SCID) and PTSD (PTSD Checklist [PCL]) screening into 2 RCTs of topiramate treatment. We compared subjects with positive vs negative urine drug tests at study entry on the following domains of executive function: decision making (Iowa Gambling Task), choice impulsivity (Delay Discounting), risk taking (Balloon Analogue Risk Task), and motor impulsivity (Stop Signal Task), using random-intercept linear mixed models.

Results: Veterans were 51.3 ± 11.8 years old and had a PCL total score of 55.4 ± 13.5. Veterans with positive urine drug tests at study entry consumed more standard alcoholic drinks per week ($F(1,75)=5.65$, $p=.02$), had more heavy drinking days per week ($F(1,60)=7.92$, $p < 0.01$), and exhibited greater risk-taking ($F(1,36)=8.31$, $p < 0.01$) in the week prior to randomization compared to subjects with negative urine drug tests.

Conclusions: These findings suggest that heavy drinking Veterans with PTSD and co-occurring non-alcohol substance use may be prone to greater risk-taking behaviors than those without non-alcohol substance use. Interventions targeting remediation of executive dysfunction may help increase executive control over high risk behavior. Future studies should consider the potential moderating effects of co-occurring non-alcohol substance use on risk-taking behavior in longitudinal AUD treatment studies.

Financial Support: W81XWH-11-2-0245, W81XWH-12-2-0137

Abstract - ID: 350

Author(s):

Rubin Khoddam **(Presenter)**, University of Southern California
Junhan Cho, University of Southern California
Adam Leventhal, University of Southern California

Title: Diminished alternative reinforcement as a mechanism linking adolescent conduct problems and substance use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Adolescent

Aims: The current study hypothesized that teens who report more behavioral problems at baseline would be more likely to engage in fewer alternatively reinforcing activities (e.g. substance-free, healthy activities) at a 12-month follow-up and that these activities would subsequently be associated with increases in substance use at a 24-month follow-up.

Methods: To examine this hypothesis, 3,396 high school students in Los Angeles, CA were administered three annual surveys assessing for conduct problems, alternative reinforcement (e.g. school clubs, dating, volunteering), and multiple substance use outcomes, including alcohol, marijuana, cigarettes, and a composite any substance use variable.

Results: Results indicated that conduct problems significantly predicted a binary past six-month any substance use outcome (?= .266, $p < .0001$) as well as an ordinal past-30 day frequency outcome (?= .278, $p < .0001$). These results indicated that higher levels of conduct problems were associated with higher levels of substance use. The influence of conduct problems on any substance use was significantly mediated by alternative reinforcement for both past-six month use (indirect effect, ?= .011, $p < .01$) as well as past-30 day use (indirect effect, ?= .010, $p < .0001$). When examining substance-specific associations, indirect influences of conduct problems through alternative reinforcement were significant only for marijuana use in past six-months (indirect effect, ?= .015, $p < .0001$) and past 30 days (indirect effect, ?= .022, $p < .0001$). Although diminished alternative reinforcement did not significantly mediate the association between conduct problems and cigarette or alcohol use, results were trending towards significance for past-six month alcohol use (indirect effect, ?= .006, $p = .11$) and past 30-day cigarette use (indirect effect, ?= .009, $p = .079$). It may be that with increased power and more substance use involvement over the course of high school, these findings will prove to be more robust, particularly given the significant findings across the any substance use outcomes.

Conclusions: Overall, results point to the potential impact alternative reinforcers has on longitudinal substance use outcomes. Tailoring prevention efforts for adolescents that provide greater access to alternative activities and teach teens to derive greater levels of pleasure from such activities may thwart the development and progression of substance use later in adolescence.

Financial Support: NIDA Supported - F31-DA039708 and R01-033296

Abstract - ID: 351

Author(s):

Michael Gatch **(Presenter)**, UNT Health Science Center
Sean Dolan, University of North Texas
Michael Forster, UNT Health Science Center

Title: Serotonergic street drugs, inactive "fillers" or potential recreational compounds

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Club/Designer Drugs

Topic: Behavior

Aims: The serotonergic compounds 5-(2-aminopropyl)benzofuran (5-APB), 6-(2-aminopropyl)-2,3-dihydrobenzofuran (6-APDB), 3-trifluoromethylphenylpiperazine (TFMPP), 1-(3-chlorophenyl)piperazine (mCPP), and dibenzylpiperazine (DBZP), the inactive metabolite of benzylpiperazine (BZP), have increasingly been found in seized Ecstasy tablets. The benzofurans ("Benzofury") are well-known to be abused, although the piperazines have been considered to have little abuse liability. The purpose of this study was to test whether 5-APB, 6-APDB, TFMPP, mCPP, and dibenzylpiperazine (DBZP) produced discriminative stimulus effects similar to those of Ecstasy, hallucinogens, and/or psychostimulants.

Methods: 5-APB, 6-APDB, TFMPP, mCPP, and DBZP were tested for substitution in separate groups of rats trained to discriminate MDMA, DOM or methamphetamine from vehicle.

Results: 5-APB, 6-APDB and TFMPP fully substituted for the discriminative stimulus effects of MDMA. mCPP partially substituted (71%). 5-APB and 6-APDB partially substituted for DOM (53-67%). 5-APB and TFMPP partially substituted for methamphetamine (52-77%). DBZP produced no drug-appropriate responding up to doses that completely suppressed responding.

Conclusions: The benzofurans 5-APB and 6-APDB and the piperazines TFMPP and mCPP may produce subjective effects similar enough to Ecstasy that their inclusion in street drugs will maintain illicit use. The benzofurans also have some hallucinogen-like effects, and 5-APB and TFMPP have some psychostimulant-like effects, so may have wide appeal for recreational use. DBZP on its own likely will not maintain recreational use.

Financial Support: Supported by NIH N01DA-13-8908.

Abstract - ID: 352

Author(s):

Michael Forster **(Presenter)**, UNT Health Science Center
Michael Gatch, UNT Health Science Center

Title: Cannabinoid-like effects of five synthetic compounds

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Marijuana/Cannabinoids

Topic: Behavior

Aims: A new generation of novel cannabinoid compounds have been developed as marijuana substitutes to avoid drug control laws and cannabinoid blood tests. BB-22, FUB-PB-22, 5F-AMB, NM2201, and MAB-CHMINACA were tested for in vivo cannabinoid-like effects to assess their abuse liability.

Methods: Locomotor activity in mice was tested to screen for locomotor depressant effects and to identify behaviorally-active dose ranges and times of peak effect. The discriminative stimulus effects of the five compounds were tested in rats trained to discriminate ?^{9}-tetrahydrocannabinol.

Results: BB-22, FUB-PB-22, 5F-AMB, NM2201, MAB-CHMINACA produced dose- and time-dependent depression of locomotor activity. Each compound fully substituted for the discriminative stimulus effects of ?^{9}-THC, although MAB-CHMINACA produced an inverted u-shaped dose effect, with the highest dose producing only 34% THC-appropriate responding and substantial suppression of response rate.

Conclusions: All 5 compounds produced behavioral effects similar to ?^{9}-THC, which suggests that these compounds will have substantial abuse liability in common to other controlled synthetic cannabinoid compounds. MAB-CHMINACA may have a similarly narrow dose window in recreational users, which may limit its use.

Financial Support: Supported by NIH N01DA-13-8908.

Abstract - ID: 353

Author(s):

Elias Klemperer **(Presenter)**, Vermont Center on Behavior and Health
John Hughes, University of Vermont

Title: Study characteristics account for the majority of variance in clinical trials of medications for alcohol use disorders: A meta-analysis

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Other

Aims: Heterogeneity among clinical trials' findings is common and can make determining a treatment's true effectiveness problematic. Identifying study characteristics that predict outcomes should help accurately interpret findings. In this paper we focus on study characteristics as predictors of outcomes in clinical trials of medications for alcohol problems.

Methods: Our meta-analysis included 47 randomized controlled trials of naltrexone and acamprosate with abstinence as the outcome. Data were initially extracted for 28 study characteristics, 2 medication descriptors and 3 dependent variables (percent abstinent in placebo conditions, percent abstinent in medication conditions and effect size). General linear models were used to determine the extent to which study characteristics explained the variability among the three study outcomes. Trials using different medications were combined to increase power. Medication and dosage were included as covariates.

Results: In a series of multivariate analyses, trials with a greater difference in placebo vs medication dropout rate (t=4.2, p2=0.65). Placebo conditions from trials with fewer study sites (t= -2.6, p2=0.36). Medication conditions with smaller sample sizes (t= -2.4) had more abstinence and accounted for a small amount of the variance in absolute outcomes of medication conditions (R^2=0.22).

Conclusions: Study characteristics account for the majority of variance among clinical trials' findings; i.e., for more of the variance than the medication effect. Our findings suggest that trials should report and meta-analyses should examine study characteristics in order to accurately interpret results of clinical trials.

Financial Support: T32 DA 7242-23 from the National Institute on Drug Abuse

Abstract - ID: 354

Author(s):

Carolina Villamil Grest **(Presenter)**, University of Southern California
Hortensia Amaro, ISC School of Social Work
Jennifer Unger, University of Southern California

Title: Cultural predictors of intimate partner violence perpetration and victimization in Latino emerging adults

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Adolescent

Aims: Intimate partner violence is prevalent in emerging adulthood. We examined longitudinal associations of bidirectional (both perpetration and victimization) violence, key cultural variables (acculturation and traditional gender roles), known risk factors such as substance use (alcohol, marijuana and tobacco), depression and covariates (childhood abuse and witnessing parental violence) and the perpetration and victimization of intimate partner violence. We hypothesized higher U.S.-oriented acculturation and lower Hispanic-oriented acculturation and endorsement of traditional gender role attitudes are associated with intimate partner violence victimization and perpetration.

Methods: Project RED is a longitudinal study of acculturation patterns and substance use among Latino adolescents from Southern California. We examined acculturation; traditional gender roles; use of alcohol, marijuana, and tobacco; and depression in high school as predictors of intimate partner violence perpetration and victimization among Latino emerging adults (n=823; 58% female).

Results: Results from a logistic regression analysis indicate important gender differences in intimate partner violence outcomes for Latino emerging adults. More traditional gender role attitudes were significant for psychological (OR=1.16; 95% CI=1.03, 1.29) and physical (OR=1.28; 95% CI=1.09, 1.49) intimate partner violence perpetration among male Latino emerging adults. Higher U.S. acculturation predicted physical intimate partner violence perpetration (OR=3.15; 95% CI=1.13, 8.76) among young men. Among Latinas, high school alcohol use predicted psychological perpetration (OR=1.67; 95% CI=1.34, 2.09) and victimization (OR=1.57; 95% CI=1.26, 1.96) in emerging adulthood.

Conclusions: Findings have implications for developing gender- and ethnic-relevant intimate partner violence interventions for Latino adolescents and emerging adults. Further, the bidirectionality of psychological violence is a critical target for interventions addressing conflict resolution and healthy communication in relationships.

Financial Support: None.

Abstract - ID: 355

Author(s):

Jennifer Lorvick **(Presenter)**, RTI International
Barrot Lambdin, RTI International
Megan Comfort, RTI International
Alex Kral, RTI International

Title: Accumulated criminal justice system involvement and mental health outcomes among women who use illicit drugs: Latent class analysis

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Other

Aims: Mental health morbidities are common among women in the criminal justice (CJ) system, particularly those with substance use histories. Among people who use drugs, engagement with the CJ system often involves a lifelong series of arrests, incarceration and periods of community supervision. We used latent class analysis to assess whether mental health outcomes differ by accumulated lifetime CJ system exposure among women who use illicit drugs.

Methods: We conducted a community-based, cross-sectional survey of women who use heroin, methamphetamine, crack cocaine and/or powder cocaine (N=631) in Oakland, CA from 2012-2014. We identified patterns of accumulation of involvement with the criminal justice system using latent class analysis (LCA), a multivariate method that assumes an unobserved categorical variable that divides a population into a small number of mutually exclusive and exhaustive latent classes.

Results: The final model specified three classes of CJ involvement: low, medium and high. Higher levels of CJ system involvement were associated with a greater likelihood of having a mental health diagnosis (p for trend

Conclusions: These findings show that a greater accumulation of lifetime CJ system exposure is correlated with a higher prevalence of mental health morbidities among women who use illicit drugs. Latent class analysis is a promising method to capture the effects of accumulated experiences with the CJ system.

Financial Support: NIMHD grant #R01MD007679

Abstract - ID: 356

Author(s):

Noa Krawczyk **(Presenter)**, Johns Hopkins Bloomberg School of Public Health, Department of Mental Health
Kenneth Feder, Johns Hopkins Bloomberg School of Public Health
Brendan Saloner, Johns Hopkins Bloomberg School of Public Health

Title: Racial and ethnic disparities in opioid agonist treatment for opioid use disorder in a U.S. national sample

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Opioid Agonist Treatment (OAT) is considered best practice for the treatment of opioid use disorders. However, most people who seek treatment do not receive medication as part of their treatment regimen. This study aimed to evaluate whether there are racial and/or ethnic disparities in OAT receipt among those entering treatment for opioid use disorders in publically-funded treatment facilities in the U.S.

Methods: This study analyzed 98,303 opioid treatment episodes from the 2014 Treatment Episode Data Set, a national database of publically funded substance use treatment episodes. Multivariate logistic regression was used to assess whether different racial and ethnic groups had differential odds of receiving OAT as part of their treatment regimen, while adjusting for a range of socio-demographic, treatment and geographic characteristics. Interaction terms were used to assess if this association was modified by whether clients were in treatment primarily for heroin or other opioids.

Results: Unadjusted results revealed that clients of all racial/ethnic groups had higher odds of OAT receipt than White clients. After adjusting for all other covariates, Black and Hispanic clients still had higher odds of receiving OAT than White clients, but no differences were evident among other racial/ethnic groups. This effect was modified by opioid type: Among those in treatment for heroin, Black and Hispanic clients were more likely to receive OAT than White clients, but no racial/ethnic disparities were evident among clients primarily in treatment for other opioids.

Conclusions: White opioid users may be especially lacking in OAT receipt, particularly among those in treatment for heroin use. Disparities may be explained largely by rural/urban differences and socio-demographic variables related to proximity and access to OAT services. Urgent efforts are needed to expand medication-assisted treatment to areas and populations newly affected by the opioid epidemic.

Financial Support: T32-DA007293 (PI: Johnson)

Abstract - ID: 357

Author(s):

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Title: Reward/punishment learning and the subjective effects of oxycodone in recreational opioid users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Behavior

Aims: Sensitivity to reward and punishment may be altered in opioid users and related to the risk of an opioid use disorder. This pilot study examined the association between reward/punishment learning, the subjective effects of Oxycodone (Oxy) and naturalistic opioid use, in recreational opioid users.

Methods: Thirteen recreational, nontreatment-seeking, non-dependent opioid users with normal mood (mean BDI-II=3.3) were assessed with a computerized Reward/Punishment Learning task (RPLT), on which their classifications of abstract stimuli were probabilistically followed by wins (on reward trials) or losses (on punishment trials) of money (25?/trial). Twelve of these participants then received oral Oxy (escalating dosing of 30 mg total or single dosing of 40 mg total) and repeated measurements of its subjective effects under controlled laboratory conditions. The association between RPLT performance (% optimal responses), and naturalistic opioid use and selected subjective measures (peak effects on mood, drug rating, and analgesia via the Cold-Pressor Test [CPT]) were assessed with Spearman rank order correlations. The subjective laboratory data were examined separately for each dosing protocol (n=6 each) due to the differing subjective effects of Oxy ($p < 0$ .05).

Results: Following 30 mg Oxy, responses on the reward trials of the RPLT (reward learning) was correlated with latency to pain perception during the CPT ($r = 0.94$, $p < 0$ .01). Responses on the punishment trials (punishment learning) was inversely correlated with the stimulating effects of Oxy and drug liking ($r's > -0.90$, $p's < 0$ .05), as well as correlated with the daily amount of recent naturalistic opioid use in the overall sample ($r=0.57$, $p=0.06$). RPLT performance was unrelated to subjective effects ($p>0.05$) following 40 mg Oxy.

Conclusions: Under a cumulative dosing procedure, participants with relatively higher: 1) reward learning experienced relatively greater analgesic effects of Oxy, and 2) punishment learning experienced relatively decreased positive subjective effects of Oxy; and vice-versa. Overall, punishment learning was associated with the reported daily amount of naturalistic opioid use. These findings suggest a potential intriguing relationship between reward and punishment sensitivity and opioid effects/use in recreational users that should be studied further.

Financial Support: P50 DA09236 (PI: HD Kleber; Project PI: SD Comer)

Abstract - ID: 358

Author(s):

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Title: The effect of medical marijuana laws and regulations on prevalence of marijuana use and cannabis use disorder

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Epidemiology

Aims: Most U.S. states have now passed medical marijuana laws (MML), with great variation in regulations between programs impacting rates of enrollment. We investigated for increases in rates of marijuana use, heavy use, and cannabis use disorder among adolescents and adults while categorizing MML as either medicalized or non-medical based on program regulations.

Methods: We used data from the U.S. National Survey of Drug Use and Health (NSDUH) restricted use data portal aggregated at the state level from 2004-2013 to compare all 50 states, excluding DC (N=67,500/year). Our primary exposure was enactment of state-level MML coded using five levels (No MML, Before MML-Medicalized, Before MML – Nonmedical, After MML-Medicalized, After MML-Nonmedical). Outcomes included; 1) Past-month marijuana use; 2) Heavy marijuana use (>300 days/year); and 3) Cannabis Use Disorder. Multilevel linear regression models were used to model each outcome and included state level random intercepts and adjusted for state-level covariates.

Results: Among adults 26+ years of age living in MML states with non-medical programs, there were significant increases in past-month marijuana use from 4.95-6.50% (1.55%, $p < 0.01$) after MMLs were passed. Similarly, prevalence of heavy marijuana use (i.e. >300 days/year) increased among individuals ages 26+ in states with non-medical programs, from 13.58% to 17.14% (3.56%, $p < 0.01$). However, no associated increase in the prevalence of cannabis use disorder was found during the study period (p=0.25). Our findings do not show increases in prevalence of marijuana use among adults in states with medicalized (highly regulated) programs. There were no increases in adolescent marijuana use following MML passage, irrespective of program regulation

Conclusions: Accounting for variation in state MML and medical marijuana program regulations rather than the mere passage of MML may better determine the impact of key aspects of program regulation on rates of marijuana use and cannabis use disorder.

Financial Support: Funding: T32 DA007294-22 (Levin); R01DA037866 (Martins).

Abstract - ID: 359

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Title: Understanding opioid overdoses in New Hampshire: A national drug early warning system rapid epidemiological study

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: New Hampshire has experienced a significant increase in both public health and law enforcement indicators related to fentanyl and other opioids. Between 2010 and 2015 heroin-related deaths have increased 168% and fentanyl-related deaths by 1,629%, the highest per capita rate in the United States. To address the escalation in overdose deaths, more information is needed on the trajectory and patterns of opioid and fentanyl use. This rapid epidemiological study investigates opioid consumers' drug-using practices and perspectives to inform policy in tackling the fentanyl overdose crisis.

Methods: Thirty-three opioid users from six counties in New Hampshire each completed a brief demographic survey and qualitative semi-structured interview. Interviews focused on drug-using practices and perspectives, including trajectory of use, fentanyl-seeking behaviors, and experiences with overdose.

Results: Seventy percent of interviewees had knowingly used fentanyl within the past six months and 52% had reported at least one lifetime overdose. Analyses of an initial nine transcribed interviews revealed that opioid use initiation was attributed to three contextual variables: severe injuries warranting chronic opioid prescriptions, depression in adolescence, and parental substance use. Users typically started with prescription opioids, shifted to heroin when pills became harder to find or their prescriptions were discontinued by their doctor, and then actively sought fentanyl despite the known risk of overdose.

Conclusions: The majority of opioid consumers in New Hampshire are not overdosing due to accidental ingestion of fentanyl, despite conjecture to the contrary. Policy targeting effective prevention and interventions earlier in the trajectory of use may more effectively address the fentanyl overdose crisis in New Hampshire.

Financial Support: NIDA U01DA038360-Z0717001 (PI: Wish; Sub PI: Marsch)

Abstract - ID: 360

Author(s):

David Andrew Tompkins **(Presenter)**, Johns Hopkins University School of Medicine
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Title: Discounting of delayed pain-related and monetary outcomes in chronic pain patients

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Behavior

Aims: The aim of this study was to examine the association of delay discounting of both monetary and pain-related outcomes with risk of opioid misuse in a convenience sample of chronic pain patients (CPP) recruited from an outpatient pain treatment clinic.

Methods: CPP (N=18) completed an anonymous in-person survey that assessed pain, opioid misuse propensity (Screener and Opioid Assessment for Patients in Pain–Revised; SOAPP-R) as well as four series of delay discounting (DD) tasks that assessed hypothetical rewards and punishments: the extant Monetary Choice Questionnaire (MCQ) and modified MCQ that assessed monetary losses, as well as the Pain Relief Choice and Additional Pain Choice Questionnaires. Based on the MCQ, these latter two questionnaires assess choices between an immediate short duration of pain relief versus a longer duration of pain relief, or between an immediate short duration of additional pain versus a longer duration of additional pain. For the DD tasks, the outcome was proportion of self-control choices selected (out of 27). CPP (N=8) were considered high risk for opioid misuse if SOAPP-R total score was $\geq$18. Descriptive analyses were performed for DD tasks by SOAPP-R score, as the study is ongoing.

Results: CPP were mostly female (61%), evenly split between African-American and Caucasian, and had a mean age of 51 years (+/- SD 16). CPP at higher risk for opioid misuse reported greater mean number of painful locations (6 vs. 3.5) and painful conditions (5.5 vs. 4), greater pain catastrophizing scale scores (33 vs. 17), but had lower self-reported current pain severity (6 vs. 7.2) on the Brief Pain Inventory, all compared with CPP with lower risk for opioid misuse. On DD tasks, CPP with higher risk for opioid misuse discounted future monetary losses to a greater extent compared to CPP at lower risk, but the proportions of self-control choices were similar between SOAPP-R groups on the other DD tasks.

Conclusions: CPP recruited from an outpatient pain treatment clinic that are at higher risk for opioid misuse appear to discount future monetary punishments rather than future rewards, compared with CPP at lower risk for opioid misuse.

Financial Support: NIDA K23 DA029609, R01 DA032363, K24 DA023186

Abstract - ID: 361

Author(s):

Jason Goldstick **(Presenter)**, University of Michigan
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Title: Age trajectories of the association between violence exposure and past-30-day substance use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Epidemiology

Aims: Violence exposure is consistently associated with substance use, but this link is not homogeneous across the population and may be developmentally dependent. We seek to estimate how the association between violence exposure and past 30-day substance use varies with age.

Methods: A cohort of students at high risk for high school dropout in Flint, Michigan (at baseline: n=850, 51% female; average age = 14.8, 80% African American) were measured at seven time points roughly spanning ages 14 to 23. We examined the associations between four validated measures of violence exposure (observed violence, fear of neighborhood violence, violence victimization, and violence perpetration) and past 30-day alcohol and marijuana use frequency. We used varying coefficient regression models to estimate how the link between violence exposure and past 30-day substance use varied as a function of age. Separate models were fit for marijuana use and for alcohol use. All models controlled for individual demographic variables and accounted for within-individual correlations using random effects.

Results: Violence perpetration showed a large positive association with both alcohol and marijuana use (both $p < .001$), but this effect did not vary by age in either case. Fear of violence was unassociated with marijuana use across ages and became increasingly associated with alcohol use as a function of age ($p < .05$). The positive association between observed violence and marijuana use increased with age, plateauing at age 19 ($p < .001$), while its association with alcohol use increased linearly with from age ($p < .001$), rather than plateauing.

Conclusions: Our results suggest that a) the propensity for substance-use-based coping with violence exposure generally increases with age; and b) alcohol appears to partially supplant marijuana with regard to substance-use-based coping at older ages.This evidence suggests possible developmental components underlying the handling of stress incurred by exposure to violence and/or age-specific settings where substance use occurs. Interventions that focus on older emerging adults and alcohol users with programs that address both substance use and violence exposure may be the most sensible use of resources.

Financial Support: NIDA R03 DA 039003 (PI: Goldstick) NIDA R01 DA 035811-03 (PI: Zimmerman)

Abstract - ID: 362

Author(s):

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Title: Inhibiting the insula in smokers: Preliminary results using rTMS and fMRI

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Mechanisms of Action

Aims: Most cigarette smokers are unable to quit; a major reason for persistent smoking is craving. The insula plays a role in cigarette craving, both in animal and human studies. Repetitive transcranial magnetic stimulation (rTMS) targetting superficial targets has been partially successful in decreasing craving; however, few studies have targeted deeper structures. We hypothesized rTMS targeting the right anterior insula (RAI) in smokers would (1) reduce nicotine craving, (2) reduce brain activity in response to cigarette cues, and (3) increase resting connectivity between RAI and networks implicated in craving and control of craving, including the salience, default mode, and executive control networks.

Methods: 11 non-treatment seeking smokers (n=5 sham TMS and n=6 inhibitory rTMS) moderately dependent on nicotine (FTND = 5.8 ± 1.8) were recruited into a single-blinded controlled trial. We collected craving measurements, task-based fMRI using a cigarette craving-cue paradigm, and resting state fMRI on a 3T MR system. Participants were studied before and after a single 20 minute session of 1 Hz rTMS targeting the RAI. Whole brain analyses were cluster corrected at $p_{FWE} < 0.05$, $p_{Voxelwise} < 0.005$.

Results: *Behavior*: Compared to sham, rTMS demonstrated a non-significant reduction in self-reported craving (-29%± 26% versus -2%± 24% sham, $p=0.128$).

Cigarette cue-task-based fMRI: Compared to sham, rTMS caused significantly decreased BOLD activity in bilateral premotor, sensorimotor cortex.

Resting-state seed-based connectivity: Compared to sham, rTMS caused increased RAI connectivity with default mode and executive control network areas.

Conclusions: Inhibitory rTMS of the RAI in smokers is feasible and results in decreased cigarette craving-cue activity in premotor/sensorimotor cortices, which may reflect decreased cognitive readiness to act upon cravings. Increased resting state connectivity between salience, default mode, and executive control networks after rTMS implicates these circuits in craving and craving mitigation. These findings suggest that the insula may play an important role in modulating the balance of craving or action selection.

Financial Support: NIH/NIDA F32 DA041011, RSNA R&E Foundation Grant RR1620, CCTSI Grant M-15-81

Abstract - ID: 363

Author(s):

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Title: Sex differences in default mode network suppression during exposure to smoking cues in nicotine-dependent individuals

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Sex Differences

Aims: Women are particularly vulnerable to develop and maintain nicotine addiction, which may be due to sex differences in processing smoking-related cues. While sex differences in brain regions implicated in cue reactivity have been investigated previously, the current work focuses on the default mode network (DMN). This network is implicated in self-referential processing and is commonly suppressed during tasks requiring external focus. Nodes of this network typically react to smoking cues, giving rise to the hypothesis that smoking cues engage self-relevant processing in nicotine dependent individuals. Whether DMN reactivity to smoking cues differs between men and women is unknown.

Methods: Using functional magnetic resonance imaging (fMRI), we investigated DMN reactivity to smoking cues and neutral cues in nicotine-dependent men (n=14) and women (n=18). Smoking cues included images of people smoking, people holding cigarettes, or cigarettes alone. Neutral cues were matched for content and included people, hands, or objects such as pens or paintbrushes. Beta weights from the DMN were extracted using a previously published region of interest. All study procedures were approved by the McLean Hospital institutional review board.

Results: Women showed increased DMN suppression to the smoking > neutral cue contrast (p=0.01) compared to men.

Conclusions: As DMN suppression is associated with greater attention to external stimuli, our findings could reflect greater attention to smoking cues in women compared to men. Greater suppression of the DMN in women could also result in the need for greater suppression of self-referential thoughts during exposure to smoking cues. These sex-specific neural processing patterns may give insight into the neural mechanisms regulating sex biases in nicotine dependence.

Financial Support: NIDA K01DA029645 (ACJ); NIDA T32DA015036-15 (KMD)

Abstract - ID: 364

Author(s):

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Title: The reinforcing and subjective effects of opioids in opioid users with and without chronic pain

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Behavior

Aims: Previous studies have suggested that the abuse liability of prescription opioids may differ as a function of the presence or absence of pain. The purpose of this study was to determine whether the reinforcing and subjective effects of prescription opioids are different in opioid users with and without chronic pain.

Methods: Participants received sublingual buprenorphine (BUP; 4 mg twice daily) throughout a 5-week inpatient stay. During separate laboratory sessions, subjective and reinforcing effects were measured after administration of orally administered placebo (PBO; 0 mg), oxycodone (OXY; 120 mg), and morphine (MOR; 360 mg). Each subject received all 3 doses using a within-subjects design. Doses were randomized and administered under double-blind conditions.

Results: Participants (n=26) who met criteria for opioid use disorder completed the study: 13 had chronic pain (baseline pain score: 6.5±0.8) and 13 did not have pain (baseline pain score: 1.8±0.3). Pain scores significantly decreased in both groups after maintenance on buprenorphine (3.0±0.7 ($p < 0.01$) and 1.0±0.0 ($p < 0.05$) in the pain and no pain groups, respectively). Among the participants with no pain, MOR produced a small, but significant decrease in pupil diameter compared to PBO ($p < 0.05$, 2.3 vs 2.7 mm). When asked to choose among the three options, opioid users without pain chose: MOR 46.2% of the time, OXY 29.2% of the time, and PBO 24.6% of the time. Opioid users with pain chose: MOR 41.5% of the time, OXY 26.2% of the time, and PBO 32.3% of the time. There were no significant differences in drug self-administration either within or between groups. Positive subjective effects (e.g., "Liking," "High," "Good Effect") did not differ among the drugs or between groups.

Conclusions: Because the effects of MOR and OXY were completely blocked by BUP, it was not possible to determine whether chronic pain alters the abuse liability of these commonly abused opioids. However, these data do suggest that sublingual BUP was an effective analgesic and produced robust blockade of the pharmacodynamic effects of these high oral doses of MOR and OXY.

Financial Support: This study was supported by NIDA grant R01DA016759 to Dr. Sandra Comer.

Abstract - ID: 365

Author(s):

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Bruna Brands, Health Canada

Title: Acute effects of cannabis on verbal memory in young adults: Relationship to tobacco use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Behavior

Aims: Recent research has suggested that concurrent cannabis and tobacco users may be less impaired in memory tasks than users of cannabis alone; however, tobacco use is infrequently considered in studies of the neurocognitive effects of cannabis. The purpose of this study was to examine the acute effects of smoked cannabis on verbal memory and to determine if current tobacco use was related to these effects.

Methods: Data were obtained from a double-blind, placebo-controlled, 2:1 randomized clinical trial examining the acute and residual effects of a single smoked dose of cannabis on driver behaviour and neurocognitive functioning. Regular cannabis users (1-4 days per week) aged 19-25 with a valid driver's license were recruited (active n=67, placebo n=31). Verbal memory was measured using the Hopkins Verbal Learning Test – Revised (HVLTR), and yielded five main outcome variables: immediate recall, delayed recall, verbal learning, percent retained, and recognition memory. Tobacco use was coded as a categorical variable (current daily use, current occasional use, no current use) derived from a self-report questionnaire.

Results: Participants were predominantly male (71%) and smoked cannabis an average of 2.6 days per week. Approximately 10% were daily tobacco smokers, 16% occasional smokers, and 71% non-smokers (3% did not answer). A series of ANCOVAs (with baseline performance as a covariate) revealed a significant effect of cannabis on immediate recall ($p=0.014$), delayed recall ($p=0.041$), verbal learning ($p=0.005$), and percent retained ($p=0.009$), but not recognition memory ($p=0.226$). Two-way ANCOVAs (tobacco use by condition, baseline performance as a covariate) did not reveal any relationships between current tobacco use and outcome measures.

Conclusions: Smoked cannabis impaired measures of verbal memory in a sample of young-adult regular cannabis users. Current tobacco use was not related to any of the outcomes.

Financial Support: Canadian Institutes of Health Research

Abstract - ID: 366

Author(s):

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Title: Acute and residual effects of cannabis on simulated driving performance of young adults

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Behavior

Aims: Although driving under the influence of cannabis (DUIC) is an increasingly common phenomenon among young adults, little is known about the residual effects on driver behaviour. This study examines the acute and residual effects of smoked cannabis on simulated driving performance of young adults.

Methods: Data were obtained from a double-blind, placebo-controlled, randomized clinical trial that recruited regular cannabis users (1-4 days per week) aged 19-25 with a valid driver's license (active n=67, placebo n=31). Measures of simulated driving performance were collected before and after a single dose of smoked cannabis (12.5% THC vs. placebo). Blood samples (for quantification of THC and metabolites) and Visual Analogue Scale (VAS) measures were collected prior to, and over a period of 48 hours after, drug administration. The active group was divided into high THC and low THC groups by median split. Outcome measures were analyzed by means of a two-way mixed ANOVA.

Results: Significant or marginally significant group by time interactions were observed for VAS "drug effect" and "drug high" ($p < 0.001$) and for all four measures of speed: overall mean speed ($p=.079$), overall mean speed under divided-attention condition ($p=.004$), mean speed on a straightaway ($p=.025$), and mean speed on a straightaway under divided-attention condition ($p=.023$). These effects were not significant at the residual time points. Standard deviation of lateral position (SDLP) during a straightaway was impaired in the high THC condition compared to placebo ($p=.012$) and this impairment was significant at the residual time points.

Conclusions: Simulated driving performance of young adults was impaired by a single smoked dose of cannabis. Little evidence was seen for residual effects 24 and 48 hours after use.

Financial Support: Canadian Institutes of Health Research

Abstract - ID: 367

Author(s):

Joseph Jones **(Presenter)**, United States Drug Testing Laboratories

Title: The association between medical marijuana law and maternal marijuana use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Perinatal

Aims: Marijuana is the most common illicit drug of abuse among pregnant women and its use has been associated with a number of negative neurobehavioral outcomes such as altered neural functioning, emotional deficits, behavioral deficits, low academic achievement, and increased risk of substance misuse. Current trends of societal norms concerning marijuana use are easing and many states are adopting various levels of relaxed marijuana policies. The purpose of this study is to evaluate whether there is an association between the allowance of medical marijuana and maternal marijuana use. This study will evaluate the prevalence and extent of maternal marijuana use in states that allow medical marijuana and states that do not allow medical marijuana

Methods: This secondary analysis of a large national database, the 2014 National Survey of Drug Use and Health, will evaluate the responses of pregnant women to questions concerning past month, past year marijuana use, and the level of marijuana use while controlling for age, income, race/ethnicity, education, and marital status.

Results: There were 758 pregnant respondents. There were 452 women that lived in a state where medical marijuana was not allowed and 306 women in a state where it was allowed. In the states where medical marijuana was not allowed 26 (5.8%) reported past month use and 68 (15.0%) reported past year use. Of the 306 women that lived in a state where medical marijuana was allowed, 22 (7.2%) reported past month use and 54 (17.6%) reported past year use. The prevalence of past month and past year maternal marijuana use was higher in states where medical marijuana was allowed but that difference was not statistically significant (?2 = 0.636 and 0.915, respectively and p = 0.425 and 0.339, respectively). However, Of the 68 women who reported past year marijuana use that lived in a state where medical marijuana was not allowed, 25 (36.8%) were classified as heavy users (> 100 times/year). Of the 54 women who reported past year marijuana use that lived in a state where medical marijuana was allowed, 29 (53.7%) where classified as heavy users. Pearson Chi-square analysis revealed that this was a marginally significant association with ?2 = 3.501, p = 0.060.

Conclusions: This study suggests that the presence of a medical marijuana law does not provide a statistically significant increase in the prevalence of maternal marijuana use but an increase in heavy users was observed.

Financial Support: None

Abstract - ID: 368

Author(s):

Leonie Duehlmeyer **(Presenter)**, University of Melbourne
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Rob Hester, University of Melbourne

Title: Neural mechanisms of impaired learning from errors in dependent smokers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Imaging

Aims: We aimed to elucidate 1. the neural mechanisms underlying learning from errors in dependent smokers compared to controls, 2. the impact of varying magnitudes of reward and punishment on learning from errors, 3. whether feedback has a greater impact on behavioral adaptation when the reward is a monetary gain as opposed mere avoidance of loss and if this is exacerbated in smokers.

Methods: Using an associative learning task, we investigated differences in error correction rates for number-location pairs in dependent smokers compared to controls. We administered two versions of the task: One assessed the effect of varying monetary feedback values in an MRI scanner, the other one assessed the presence of monetary reward as opposed to mere avoidance of monetary loss for correct performance.

Results: Two group (Smoker, Control) by two magnitude condition (5c, 50c) repeated measures ANOVAs examined within-subject factors feedback type and magnitude of feedback on the between subject factor of smoking group: While smokers recalled locations that were rewarded with a higher value (50cents) 11% more than lower rewarded locations (5cents), but did not correct higher punished locations more, controls exhibited the opposite pattern. Neither smoking group preferred locations rewarded with 50cents over those rewarded with avoidance of loss (0cents). We found lower activation of the insula and the anterior cingulate cortex in smokers during feedback presentation of highly punished locations.

Conclusions: The results suggest that smokers have poorer learning from errors when the feedback is negative. High rewards reinforce smokers' behaviour stronger than low rewards, whereas controls make no distinction. These findings should be incorporated into the design of anti-smoking therapies, where the appeal to quit smoking is incentivised through reward rather than avoiding punishment.

Financial Support: Australian NHMRC Grant

Abstract - ID: 369

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Title: Cigarette smoking and cognitive function in Chinese male inpatients with schizophrenia: A comparison of heavy and light smokers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Other

Aims: Despite higher smoking rate in schizophrenic patients than the general population, few studies have explored the relationship between dose of smoking and cognitive function in Chinese patients with schizophrenia. This study investigated the relationships between dose of smoking and cognitive deficits in Chinese schizophrenic patients.

Methods: 436 male inpatients meeting DSM-IV criteria for schizophrenia were enrolled in the study. The patients completed a detailed cigarette smoking questionnaire, the Fagerstrom Test for Nicotine Dependence (FTND), and the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS). The patients also were rated on the Positive and Negative Symptom Scale (PANSS) and the Abnormal Involuntary Movement Scale (AIMS).

Results: 39.7% of the sample were heavy smokers defined by greater than ten cigarettes per day. RBANS total score, Visuospatial/Constructional and Delayed Memory indices showed significantly higher performance for heavy smokers than light smokers. Heavy smokers showed significantly lower score in PANSS negative symptom subscale and PANSS total score than light smokers. Multivariate regression analysis showed that years of education and age at first hospitalization were independently associated with the RBANS total score, that FNTD and years of education were independently associated with Language index of RBANS, and that years of education, age at first hospitalization, and PANSS total score were independently associated with Immediate Memory index of RBANS.

Conclusions: The heavy smokers with schizophrenia had a lower level of negative and general symptoms and a better level of cognitive performance, except for language, compared to light smokers. This may suggest the effect of smoking is dose-dependently beneficial in schizophrenic patients.

Financial Support: None.

Abstract - ID: 370

Author(s):

Keosha Bond **(Presenter)**, NYU Rory Meyers College of Nursing
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Title: Exploring factors related to uptake of oral pre-exposure prophylaxis among Black women with substance use problems

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Both alcohol and drug

Topic: Prevention

Aims: Black women account for 13% of all new cases of HIV infection and nearly two-thirds of all women newly diagnosed in the United States. Black women with substance use problems (BWSU) face heightened risks to HIV due to individual, social, and structural factors including being embedded in social-sexual networks with high prevalence of HIV, constrained access to healthcare, and poverty. Pre-exposure prophylaxis (PrEP) can be taken daily to prevent HIV infection, yet there is limited awareness among BSWU. The purpose of this study is to explore facilitators and barriers to PrEP uptake among BWSU to inform the development of an ehealth intervention to increase awareness.

Methods: A sample of 13 BWSU living in New York City, between the ages of 18-25 were recruited to participate in 2 focus groups to explore the multi-level factors that impede or facilitate participants' awareness of, and interest in using PrEP. Qualitative data was analyzed using grounded theory to elicit key categories and subcategories.

Results: The results revealed five main themes: knowledge, social norms, stigma, sexual disinhibition, long term effects, and usefulness in their life. In line with previous PrEP studies, our data showed that the women had little or no knowledge of PrEP. The women expressed that PrEP was a useful option and could alleviate some of the anxiety related to contracting HIV during sex. However, the women expressed several concerns related to a sexual disinhibition, including high risk individuals not utilizing PrEP and over-reliance of PrEP that would decrease condom use. In addition, women were concerned about PrEP's safety, including its effects on reproductive health, as well as the practicality of maintaining the PrEP regimen. Women were greatly influenced by social norms, stigma, and stereotypes. They reported that peer and health care provider recommendations was a strong influence on their decision to utilize PrEP.

Conclusions: This study showed that there are issues unique to the sexual health of women that need to be addressed when educating them about PrEP. It would be premature or inappropriate for women to consider PrEP if these concerns are not addressed in the educational messages.

Financial Support: NIDA- Grant: 7T32DA007233-33

Abstract - ID: 371

Author(s):

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Title: Effect of nicotine use on prospective memory performance and associated intrinsic functional brain connectivity in binge drinkers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Imaging

Aims: We tested the hypothesis that time-based prospective memory (TPBM), a cognitive domain that plays a crucial part in many aspects of everyday functioning, including medication adherence, will be impaired in binge drinkers compared to healthy controls. Group differences in the intrinsic functional connectivity of the right anterior prefrontal cortex, a key region involved in TPBM performance, were also assessed. Finally, differences in TBPM and its neuroimaging correlates as a function of nicotine use in binge drinkers were also investigated.

Methods: Sixty participants were recruited from a community clinic in a peri-urban township in Cape Town (66.6% female, mean (SD) age: 38.3 (8.26) years), of whom 38 were classifed as binge drinkers (>= 6 drinks per occasion per week in previous 3 months). Current users of cigarettes or snuff were identified from urine samples. Bivariate tests were used to identify differences as a function of drinking and nicotine use status from the TBPM tasks in the Memory for Intentions Test (MIST), as well as whole-brain estimates of intrinsic functional connectivity with the right anterior prefrontal cortex (aPFC), obtained from 10 minutes of resting-state fMRI data.

Results: No difference in TBPM performance was detected as a function of drinking status ($t = 0.570$, $p > 0.05$), though average task scores were lower in binge drinking nicotine users (1.94) than non-users (3.25; $t = 2.32$, $p = 0.026$). Connectivity between the aPFC and the left inferior parietal cortex in 24 binge drinkers was inversely associated with TBPM performance in nicotine users only ($N = 12$).

Conclusions: We present evidence that nicotine use but not binge drinking is associated with deficits in prospective memory function. Greater connectivity between the anterior PFC and a region within the frontoparietal executive control network in nicotine users with poorer TBPM may reflect a compensatory mechanism in binge drinkers.

Financial Support: This study is supported by grants from the South African National Research Foundation and the Medical Research Council

Abstract - ID: 372

Author(s):

Michael Schaub **(Presenter)**, Research Institute for Public Health and Addiction

Title: A Web-based self-help intervention with and without chat counseling to reduce cannabis use in problematic cannabis users: Three-arm randomized controlled trial

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Treatment

Aims: Although approximately one in ten cannabis users develops serious problems of dependency, only a minority attend outpatient addiction counseling centers. Thus the study aim is to test the efficacy of a Web-based self-help intervention with and without chat counseling - Can Reduce - in reducing the cannabis use of problematic cannabis users as an alternative to outpatient treatment services.

Methods: Altogether, 436 participants were recruited by various online and offline media for the Web-based trial. A total of 308 of these were eligible for study participation and were randomly allocated in an unblinded manner to either self-help with chat (n=114), self-help without chat (n=101), or a waiting list control group (n=93). The fully automated self-help intervention consisted of eight modules designed to reduce cannabis use, and was based on the principles of motivational interviewing, self-control practices, and methods of cognitive behavioral therapy. Additional individual chat counseling sessions were based on the same therapeutic principles. The main outcomes were the frequency and quantity of cannabis use per week at baseline and at the 3-month follow-up.

Results: Can Reduce participants were older and reported a greater number of cannabis use days at baseline than patients who entered outpatient treatment. The change in the mean number of cannabis use days per week at 3 months differed between self-help without chat and self-help with chat (beta=-0.75, SE=0.32, t=-2.39, P=.02, d=0.34, 95% CI 0.07-0.61), as well as between self-help with chat and waiting list (beta=0.70, SE=0.32, t=2.16, P=.03, d=0.20, 95% CI -0.07 to 0.47).

Conclusions: Web-based self-help interventions supplemented by brief chat counseling are an effective alternative to face-to-face treatment and can reach a group of cannabis users who differ in their use from those who enter outpatient addiction treatment.

Financial Support: Funding for this study was provided by Infodrog, the Swiss Office for the Coordination of Addiction Facilities, Switzerland (Grant No. 5012/13/ZH/Cannabis Control). The funding institution had no role in the development or evaluation of the interventions.

Abstract - ID: 373

Author(s):

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Title: Application of randomized response technique to the nationwide general population survey on drugs in the Republic of Georgia

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Epidemiology

Aims: Survey response validity is of special concern in any survey of sensitive behaviors. Randomized Response Technique (RRT) was developed as a research approach for estimation of population prevalence of sensitive behaviors such as drug use and socially maladaptive or illegal behavior. Aim of the study is to evaluate the feasibility and applicability of RRT to the large scale general population based national survey (GPS) on drug and alcohol use.

Methods: Population based household survey with multi-stage probability sampling of 18-to-64-year-old household residents in 111 urban and 49 rural locations of Georgia. Respondents were interviewed with standardized GPS items and with an innovative RRT approach. RRT utilized paired (sensitive + non-sensitive) 6 questions covering major illegal drugs.

Results: Data for 4,805 respondents from 3,228 households were included in the final dataset. The final response rate for households was 99.3% and for individual respondents was 95%. Standard GPS estimate of lifetime cannabis use was 15.9%. The GPS+RRT approach suggests that the actual prevalence might be in a range from 37.9% to 47.9%, with a middle value of 42.9%. Likewise, for all other compounds (heroine, home-made stimulants, buprenorphine, new psychoactive substances) RRT approach produced estimates that were larger than corresponding estimates from the standard survey approach.

Conclusions: The novel RRT approach proved to be successful in confirming an assumption that the standard GPS might produce 'under-reporting' of illegal drug use. We suggest that the RRT approach to the GPS context should be refined and improved upon, and might become a useful adjunct to the now-standard GPS methods that have been used in other countries.

Financial Support: USAID, Addiction Research Development in Georgia.

Abstract - ID: 374

Author(s):

Hannah Crooke, University of Florida
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Title: Association between cannabis use and lifetime coronary disease

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Epidemiology

Aims: Cannabis is one of the most commonly used illicit drugs in the United States, and coronary disease continues to be one of the leading causes of death. Literature has explored the relationship between cannabis use and related conditions such as metabolic syndrome, and hypertension, but little research exists on the relationship between cannabis use and coronary disease. This research aimed to characterize the association between lifetime cannabis use and coronary disease.

Methods: Data used was collected by community health workers at HealthStreet, a community engagement model developed in partnership with the University of Florida Clinical and Translational Science Institute. The exposure was cannabis use (never, lifetime, or past 30d use). The outcome was coronary disease (lifetime history of myocardial infarction, coronary artery disease, or angina). The crude and adjusted associations between cannabis use and coronary disease were estimated using logistic regression. Covariates included age, race, gender, depression, anxiety, hypertension, hypercholesterolemia, BMI, tobacco use, and cocaine use.

Results: Of the 7945 respondents, 1011 (12.7%) indicated a lifetime history of coronary disease, 57.8% were female, and 52.4% were Black or African American. About half the sample (51.0%) had never used cannabis. In the unadjusted model, the odds of coronary disease were significantly greater among lifetime users compared to never users (OR 1.29, 95% CI 1.12, 1.51), and current users compared to never users (OR 1.33, 95% CI 1.10, 1.62), however the relationship was attenuated after controlling for relevant covariates.

Conclusions: Cannabis use alone is significantly associated with coronary disease in our community sample, but the relationship is attenuated in adjusted analyses. The correlation between cannabis use, and other substance use and mental disorders may explain the attenuation. This analysis fills a gap in the literature, and contributes to the growing public health interest in chronic disease outcomes related to cannabis use.

Financial Support: Research reported was supported by the University of Florida Clinical and Translational Science Institute, which is supported in part by the NIH National Center for Advancing Translational Sciences under award number UL1TR001427. Hannah Crooke is funded through the University of Florida Substance Abuse Training Center in Public Health (T32DA035167). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Abstract - ID: 375

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Title: Examining the relationship between exposure to marijuana advertising and recent marijuana use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Adolescent

Aims: The legalization of marijuana increases the potential for marijuana advertising and exposure to such advertising. However, the relationship between exposure to marijuana advertising and marijuana use has not been studied. We investigate whether exposure to marijuana advertising increases the probability of (1) recent marijuana use, or (2) perceived risk associated with marijuana use.

Methods: Of the 387 individuals studied, 178 were recruited from adolescent substance treatment (probands; baseline age range 14.0-19.6 years) and 209 were their siblings (baseline age range 12.0-33.1 years). At 10-year follow-up (age range 23-45 years), participants completed a questionnaire evaluating exposure to marijuana (MJ) advertising and recent MJ use. Logistic regression models were conducted (separately) for probands and siblings. To reduce bias arising from a non-independent sample (sibships of varying sizes), family-based weights were applied.

Results: We examined 4 predictors of perceived risk of MJ use and use of MJ in past year. Predictors included frequently seeing/hearing ads for MJ, seeing ads in various locations, liking MJ ads, and frequently seeing MJ dispensaries. In all models, sex, racial and ethnic group, and study site were included as demographic covariates; conduct disorder (CD) and symptoms of MJ use disorder (MJsx) (both measured in adolescence) were included as clinical covariates. For probands, seeing MJ advertising significantly predicted perceived risk of regular use (OR=4.16, p

Conclusions: In young adults formerly treated for substance use disorder, exposure to MJ advertising is associated with recent MJ use, even while controlling for baseline levels of CD and MJsx. These data appear to correspond to previous studies from the tobacco and MJ literature. Further investigation is warranted in order to better characterize potential directionality of relationships between MJ advertising exposure and MJ use and to specifically investigate younger samples.

Financial Support: DA032555 DA035804

Abstract - ID: 376

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Title: Evaluating reduced-nicotine standards on the addiction potential of cigarettes in vulnerable populations

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Dependence

Aims: This study is part of an effort to evaluate the feasibility of a U.S. national policy lowering the nicotine content of cigarettes to reduce addiction potential. We report on a multi-site, experimental study examining the relative addiction potential of investigational cigarettes varying in nicotine content from a level typical of commercial cigarettes to very low levels potentially below the addiction threshold among three populations especially vulnerable to tobacco addiction.

Methods: Participants were 169 adult daily smokers, including 53 economically-disadvantaged women, 60 opioid-dependent women and men, and 56 depressed/anxious women and men. Participants completed 14 double-blind laboratory sessions under acute abstinence (CO $\leq$ 50% baseline levels) and separated by $\geq$ 48 hrs. Sessions 1-5 oriented participants and allowed them to sample each of four investigational cigarettes varying in nicotine content (15.8, 5.2, 2.4, 0.4 mg per g tobacco). Sessions 6-14 directly assessed the relative reinforcing effects of all dose pairs at comparable or varying response effort. Results were analyzed using repeated measures analysis of variance.

Results: Response to the varying doses was consistent across populations. All doses significantly reduced nicotine withdrawal, but lower doses did so with fewer positive subjective effects. Demand for smoking in economic simulation modeling and the relative reinforcing effects of the cigarettes in concurrent choice testing decreased in a graded, dose-dependent manner, with the largest reductions seen at the 0.4 mg/g dose. Lowering nicotine content did not promote compensatory smoking.

Conclusions: These results suggest that reducing nicotine content would reduce the addiction potential of cigarettes even in highly vulnerable populations, with the 0.4 mg/g dose producing the greatest reduction.

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Abstract - ID: 377

Author(s):

Christine Mauro **(Presenter)**, Columbia University
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Silvia Martins, Columbia University

Title: Impact of medical marijuana laws on state-level marijuana use by age and gender, 2004-2013

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Policy

Aims: In states that have passed medical marijuana laws (MML), marijuana use (MU) increased after MML enactment among people ages 26 and older, but not among ages 12-25. We examined whether the age-specific impact of MML on MU varied by gender.

Methods: Data were from the 2004-2013 National Survey on Drug Use and Health aggregated at the state level. The exposure was a time-varying indicator of state-level MML (0=No Law, 1=Before Law, 2=After Law). Outcomes included past-month MU prevalence, daily MU prevalence among past-year users (i.e., 300+ days/year), and past-year MU disorder prevalence. Linear models tested the state-level MML effect on MU outcomes by age (12-17, 18-25, 26+) and gender. Models included a state-level random intercept and controlled for time and state-level covariates.

Results: Past-month MU did not increase after enactment of MML in men or women ages 12-25. Among those 26+, past-month MU increased significantly for men from 7.0% before to 8.7% after enactment (+1.7%, $p < 0$ .001) and for women from 3.1% before to 4.3% after enactment (+1.1%, p=0.013). Among people 26+, daily MU among users also increased significantly in both genders following MML enactment, from 16.3% to 19.1% among men (+2.8%, p=0.014) and from 9.2% to 12.7% among women (+3.4%, p=0.003). There were no significant increases in past-year MU disorder prevalence for any age or gender group after MML enactment.

Conclusions: While men consistently use marijuana with greater prevalence than women, the impact of MML on MU appears to similarly affect men and women. The primary impact of MML on MU is among those ages 26+, with increases in both past month and daily use among users for both genders. This study suggests that prevention efforts for MU disorders specifically targeting MMLs are not currently necessary. However, increasing MU among both adult men and women should continue to be monitored and campaigns should focus on informing the public of the risks associated with regular marijuana use.

Financial Support: Supported by NIH grants 1R01DA037866 (Martins), T32DA031099 (Hasin)

Abstract - ID: 378

Author(s):

Fang Zheng, Department of Pharmaceutical Sciences, College of Pharmacy
Chang-Guo Zhan **(Presenter)**, University of Kentucky

Title: Therapeutic potential of highly efficient long-acting cocaine hydrolases

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Other Drug Category: cocaine

Topic: Treatment

Aims: Enzyme therapy using a highly efficient exogenous cocaine-metabolizing enzyme is recognized as a promising new therapeutic strategy for cocaine abuse. Our recently designed highly efficient, long-acting cocaine hydrolases (LA-CocHs), engineered from human butyrylcholinesterase, have a considerably improved catalytic efficiency against cocaine and a significantly improved biological half-life. In this study, we want to know whether LA-CocHs are effective in blocking the physiological and psychological effects of cocaine. Based on the animal data, we may select the LA-CocH with the best overall *in vivo* profile for further development.

Methods: LA-CocHs were produced in a bioreactor using stable cell lines that we developed previously, and were purified. The purified LA-CocHs were used to test their actual *in vivo* activities in animals (rats and monkeys), including pharmacokinetics (PK), pharmacodynamics (PD), hyperactivity, drug discrimination, and drug self-administration studies.

Results: We have successfully prepared and characterized a set of LA-CocHs, including CocH5-Fc(6M). According to the animal data, a single dose of LA-CocH was able to effectively accelerate cocaine metabolism in animals even after 30 days and, thus, block cocaine-induced physiological effects and toxicity for a long period of time. In consideration of the general observation that the biological half-life of a protein drug in humans is generally longer than that in animals, CocH5-Fc(6M) examined in this study could allow dosing once every month for cocaine addiction treatment in humans.

Conclusions: The animal data suggest that CocH5-Fc(6M) has the desirable potency of a therapeutic enzyme. Hence, CocH5-Fc(6M) could be developed further to become the desirable enzyme therapy for cocaine addiction treatment.

Financial Support: This work was supported by an NIDA Translational Avant-Garde Award (grant UH2/UH3 DA041115) and NIDA R01 grants (DA035552, DA032910, DA013930, and DA025100).

Abstract - ID: 379

Author(s):

Rachel Luba **(Presenter)**, State University of New York at Albany
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Mitch Earleywine, State University of New York at Albany

Title: Marijuana expectancies and impulsivity: Acquired preparedness in marijuana users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Behavior

Aims: Marijuana (MJ) expectancies, an individual's beliefs about the subjective effects of MJ, predict patterns of use. Impulsivity covaries with substance use; more impulsive individuals appear more likely to experiment with psychoactive drugs and develop chronic patterns of use. The Acquired Preparedness Model (APM) posits that drug expectancies mediate the relation between impulsivity and substance use. The present study examines this model in MJ users.

Methods: 3,616 participants completed a survey measuring patterns of MJ use, MJ expectancies and positive urgency. We adapted the Biphasic Alcohol Effects for MJ users. This 14-item scale measures the stimulant and sedative effects of MJ. Participants choose between 0 (not at all) and 10 (extremely) to rate anticipated effects of MJ. The stimulant scale of the BMES includes: elated, energized, excited, stimulated, up, talkative and vigorous. The sedative scale includes: difficulty concentrating, down, heavy head, inactive, sedated, slow thoughts and sluggish. Participants completed the BMES for two situations: (1) immediately after using MJ (ascending limb) and (2) two hours after using MJ (descending limb). Participants completed the positive urgency subscale of the UPPS-P. This scale's 14 items measure an individual's tendency to act impulsively during positive moods. Participants reported the number of days per week and per month they used MJ.

Results: Stimulant expectancies correlate positively with MJ use per week. Sedative expectancies correlate negatively with MJ use per week. Mean scores for positive urgency correlate positively with BMES stimulant expectancies; while mean scores for positive urgency correlate negatively with BMES sedative expectancies. All effects were significant ($p < .01$) and observed for both the ascending and descending limbs of intoxication.

Expectancies emerged as a significant mediator in the relation between impulsivity and MJ use. Controlling for the mediator (expectancies) impulsivity did not significantly predict MJ use ($b = .128$, $p > .05$). Expectancies were a significant mediator for sedative but not stimulant expectancies (Sobel test Sedative Ascending: $z = 2.672$, p

Conclusions: MJ expectancies and impulsivity account for variance in use. A mediation model testing the APM demonstrated partial mediation. Sedative expectancies mediate the relation between positive urgency and MJ use per month. These findings provide a novel application of the APM and insight into the role of expectancies in predicting MJ use. Impulsivity and expectancies predict quantity and frequency of MJ use; a better understanding of this relation can help to identify problematic MJ use.

Financial Support: none.

Abstract - ID: 380

Author(s):

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Title: Emergency department patients' knowledge gaps and perceived needs after non-fatal opioid overdose

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Other

Aims:

Emergency medicine physicians are uniquely positioned to provide education and linkage to resources after non-fatal opioid overdose, although little is known about patients' overdose knowledge and perceived needs. Increased understanding of these issues can inform interventions to reduce morbidity and mortality in this high-risk population.

Methods: A purposive sample of 16 adult opioid overdose survivors receiving ED care was identified through screening or staff referral. Included patients were not suicidal, not currently in treatment for a substance use disorder (SUD), and provided consent. Participants were asked about age, race, lifetime number of opioid overdoses, and a mini International Neuropsychiatric Interview to assess for opioid dependence based on DSM-IV (MINI-SCID) was performed. Interviews were audio-recorded, transcribed verbatim and independently coded using thematic analysis. An interview guide with the domains of overdose knowledge, drug use and treatment history, and perceived needs was used. A codebook was generated using open and axial coding and constant comparison, and data were collected and analyzed iteratively. We identified common patterns across the dataset and grouped them into themes. An audit trail was maintained. Participant incentive was provided.

Results: Participants were an average of 35 years old (range: 23-56), 88% white, 13% black, opioid dependent (75% MINI-SCID+), 56% male, with a median of 2 lifetime opioid overdoses (interquartile range from 2-3.75; range: 1-11). All reported heroin use preceding most recent overdose.

Emergent themes include (1) limited knowledge of overdose prevention strategies, moderate knowledge of overdose response strategies and excellent knowledge of overdose recognition; (2) SUD minimization despite multiple overdoses; (3) ambivalence about SUD treatment effectiveness, with a stated need for social support (e.g. housing, mental health); (4) a strong desire to stop opioid use, without concrete strategy as SUD treatment referrals were often refused.

Conclusions: Understanding opioid overdose survivors' knowledge and perceived needs can provide opportunities to improve ED care and referrals for this vulnerable population with recurrent overdoses. A larger scale evaluation of these findings can inform the development of interventions.

Financial Support: NIDA Grant #4K12DA033312-04

Abstract - ID: 381

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Bridget Grant, NIAAA Intramural Research Program
Deborah Hasin, Columbia University

Title: Changes in lifetime heroin use and heroin use disorder: United States 2001-2002 to 2012-2013

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: Heroin is an urgent concern in the United States. We examined change in the lifetime prevalence, patterns and associated demographics of heroin use and disorder between 2001-2002 and 2012-2013 in two nationally representative samples of the U.S. adult general population.

Methods: Data from cross-sectional surveys of the National Epidemiologic Survey on Alcohol and Related Conditions (2001-2002; N=43,093) and the National Epidemiologic Survey on Alcohol and Related Conditions–III (2012-2013; N=36,309). Main outcomes: past-year heroin use and DSM-IV heroin use disorder.

Results: Heroin use and disorder significantly increased from 2001-2002 to 2012-2013 (use: 0.33% vs. 1.61%; disorder: 0.21% vs. 0.69%; $p < 0.001$). The increase in the prevalence of heroin use was significantly pronounced among whites (0.34% in 2001-2002 vs. 1.90% in 2012-2013) than non-whites (0.32% vs. 1.05% respectively), and the increase in the prevalence of heroin use disorder was more pronounced among whites and those ages 18-29 and 30-44 than among non-whites and older adults. Among users, significant differences were found across time in the proportion of respondents meeting DSM-IV heroin use disorder criteria (63.35% in 2001-2001 vs. 42.69% in 2012-2013). DSM-IV heroin abuse was significantly more prevalent among users in in 2001-2002 (37.02%) than in 2012-2013 (19.19%) as were all four of the DSM-IV abuse criteria. DSM-IV heroin dependence among users was similar in 2001-2002 (28.22%) and in 2012-2013 (25.02%). Only among whites the proportion of those reporting initiation of prescription opioids nonmedically before initiating heroin increase across time (35.83% in 2001-2002 to 52.83% in 2012-2013, $p < 0.01$).

Conclusions: The prevalence of heroin use and heroin use disorder increased significantly across time, particularly among whites. Findings highlight the need to expand access to treatment in populations at increased risk for heroin use and disorder.

Financial Support: R01DA037866 (Martins), R01DA034244 (Hasin), Intramural program, NIAAA, NIH (Grant), Colciencias (Santaella).

Abstract - ID: 382

Author(s):

Ashley Knapp **(Presenter)**, Geisel School of Medicine at Dartmouth
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Title: Trends and factors related to coping-related motives for cannabis use among a large sample of adult cannabis users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Mechanisms of Action

Aims: Coping motives for cannabis use (e.g., to regulate negative affect) is one mechanism that may increase our understanding of the complex interplay between cannabis use and anxiety. Due to the potential of coping motives to be targeted in the context of interventions, the purpose of this study was to learn more about this mechanism as a function of cannabis use patterns and individual difference variables among a large sample of cannabis users.

Methods: Through Facebook advertising, 3424 adults (M_{age} = 32yrs, SD = 12) completed a brief online survey. Participants were mostly male (61%), Caucasian (88%), and had completed at least some college (60%). Hierarchical linear regression models were employed to 1) test the main effects and interaction of cannabis use frequencies (i.e., days used and times per day used in the past month) on coping motives and 2) examine individual difference factors associated with coping motives.

Results: In the first model, days used significantly interacted with times per day used to predict coping motives [b = 2.59, 95% CI (.973, 4.22), t = 3.14, p = .002], after controlling for demographic covariates. Coping motives tended to be highest for those adults that used 4-10+ times a day and endorsed using 1-5 days the past month. In the second model after inclusion of covariates, anxiety sensitivity (sr^2 = .06, p < .001), negative urgency (sr^2 = .02, p < .001), and craving (sr^2 = .05, p < .001) explained an additional 17.9% of the total variance in coping motives (p < .001), each acting as a unique predictor.

Conclusions: These findings broaden our understanding of coping motives for using cannabis through elucidating unique use patterns and factors related to this specific motive for cannabis use. Future work is needed to further explicate the relationship between individual difference factors and motives for using cannabis more broadly, especially in the context of problematic cannabis use.

Financial Support: T32DA037202

Abstract - ID: 383

Author(s):

Lynda Stein **(Presenter)**, University of Rhode Island

Title: Moderation of four behavioral interventions for smoking among juvenile detainees

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: Aims-Detained youth are at high risk for continued smoking into adulthood. Four treatments for smoking, Cognitive Behavior Therapy, Self-Help Programming, Motivational Interviewing and Relaxation Therapy (CBT, SHP, MI and RT) were studied for direct and moderated effects. **Hypotheses**-CBT outperforms SHP; MI outperforms RT; effects of treatment are moderated by urge, physical aggression and self-efficacy.

Methods: Methods-A randomized 2x2 design compared MI vs RT, and CBT vs SHP. Treatments were provided during brief stay in detention (N=302). Adolescents were followed for 6 mos after release to determine longest number of days abstinent from smoking.

Results: Results-At moderate (p

Conclusions: Conclusions-CBT is a viable option for some youth. Unexpectedly, RT generally outperformed MI. RT had elements of mindfulness meditation, which may have assisted youth in delaying return to smoking following intervention. It is important to determine efficacious treatments for underserved youth at high risk for continued smoking. This study indicates further refinements in CBT and RT may assist high risk youth with smoking cessation.

Financial Support: R01 DA-020731, PI-Stein

Abstract - ID: 384

Author(s):

Hanna Wetzel **(Presenter)**, University of Cincinnati
Andrew Norman, University of Cincinnati College of Medicine

Title: A streamlined approach to the acquisition and analysis of data from drug self-administration sessions

Abstract Category: Theoretical/Commentary

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Behavior

Aims: Self-administration behavior is a frequently used model of addiction. Most commonly, data from self-administration experiments is reported as total number of lever-presses or self-injections per session. However, only using this single number can result in misinterpretation of data, as it blends the different phases of a self-administration session including the loading and maintenance phases. Delineating between these phases, as well as drawing cumulative event plots and displaying data as calculated concentration over time can provide a more useful interpretation of self-administration data. We have previously developed a MED-PC program that controls the execution of self-administration sessions and records all information needed for this type of analysis. However, processing these data remains complex and time-consuming. Therefore, we have developed a Python program to rapidly analyze and plot self-administration data.

Methods: The Med-PC program described previously was used to run and record data from self-administration sessions. The data was saved as a .txt file containing event codes corresponding to time stamps and calculated cocaine concentrations. A python script was written that extracts this information and formats it, negating the need for MED-PC to excel. The loading phase was determined by identifying the greatest slope change, defined as the peak in the second derivative. Options to create graphs including cumulative event plots for presses and self-injections, and concentration over time were included. Data and analysis results can be exported into an excel file. A GUI was constructed.

Results: N/A

Conclusions: This program represents a novel tool for analyzing self-administration data. It is more streamlined than anything currently available, and provides in-depth analysis of data with limited need for additional training. In conclusion, the combination of our previously developed MED-PC program and this data analysis program allow for researchers to get more out of their data faster and easier.

Financial Support: DP1DA031386

Abstract - ID: 385

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Title: Opioid craving and HIV care cascade outcomes

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: AIDS/Immune

Aims: Opioid use may impact individuals' engagement in HIV care, hindering achievement of the UNAIDS's 90-90-90 targets. We hypothesized that opioid craving is associated with adverse HIV care cascade outcomes.

Methods: We analyzed data from a cohort of HIV-positive Russians with a history of opioid use (LINC, n=333) to identify whether opioid craving is associated with HIV care cascade outcomes. The primary outcome was linkage to HIV care within 12 months. Secondary outcomes were prescription of antiretroviral therapy (ART) and, for a subset (n=48), achievement of undetected HIV viral load (HVL < 5 00). Opioid craving (visual analogue scale, 1-100), the main independent variable, was categorized based on tertiles. We assessed outcomes via medical record review (linkage, ART) and serum tests (HVL). To examine the primary outcome we used multiple logistic regression models controlling for age, gender, partnership, income, education, social support, HIV stigma (Berger scale) and depressive symptoms (CES-D, dichotomized at 16). Due to a limited number of events, prescription of ART outcome was examined in partially adjusted (age, gender, stigma) and HVL < 5 00 in unadjusted logistic models.

Results: Mean opioid craving score was 50 (SD 35). We did not detect associations between opioid craving with linkage to HIV care (AOR [95%CI]: 1.03 (0.53, 2.00), highest [71-100] vs. lowest [0-29] tertile; AOR 0.64 (0.34, 1.22), middle [30-70] vs. lowest tertile) or with secondary outcomes.

Conclusions: Opioid craving does not appear to play a role in achieving HIV care cascade milestones. Understanding the determinants of better engagement in HIV care for people who use drugs remains key to achieving the 90-90-90 objective.

Financial Support: NIDA INVEST; 1K99DA041245; U01AA020780; U24AA020779; U24AA020778; U01AA021989.

Abstract - ID: 386

Author(s):

Christina Brezing **(Presenter)**, Columbia University Medical Center and New York State Psychiatric Institute
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Title: Abstinence and reductions in cannabis use are associated with improvements in quality of life among treatment-seeking individuals with cannabis use disorder

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Treatment

Aims: Cannabis use disorder (CUD) is a large and growing problem in the United States, with no FDA approved treatments. Current outcome measures in treatment trials for CUD focus predominantly on abstinence and reduction of cannabis used but are not linked to other functional outcomes. Assessing additional measures that are clinically and socially relevant to the overall functioning of the individual is critical. Measures of quality of life (QOL) show promise and potential gender differences. Our aims were (1) to assess the relationship of changes in cannabis use and quality of life in individuals with CUD undergoing outpatient treatment through a randomized controlled trial, and (2) to examine gender differences.

Methods: Data from a double-blind, placebo-controlled trial of lofexidine and dronabinol for CUD treatment (n=62) was analyzed. Pearson's correlations between baseline responses to the Quality of Life, Enjoyment and Satisfaction Questionnaire-Short Form (QLES-Q-SF) and cannabis use assessed with modified timeline follow-back (TLFB) were examined. Multiple linear regression models of cannabis use on end of study QLES-Q-SF were analyzed, while adjusting for baseline QLES-Q-SF, study arm, and gender. Moderation effects with gender were also tested.

Results: No significant association between baseline cannabis use and baseline QLES-Q-SF scores was found. Reduction of cannabis use ($F_{1,27}$=15.3, p=.001) at the last 4 weeks of the study, last 2 weeks abstinence (F 1,47=< /sub>8.34, p=.006), and proportion of cannabis using days ($F_{1,47}$=9.48, p=.004) during the last 2 weeks of the study were each significantly associated with end of study QLES-Q-SF scores. Gender was not a significant moderator. **Conclusions:** Abstinence and cannabis use reduction during a CUD medication treatment trial were associated with higher QOL, regardless of gender. **Financial Support:** T32 DA007294-22 (Levin) Abstract - ID: 387 **Author(s):** Liqa Athamneh **(Presenter)**, Virginia Tech Carilion Research Institute
Jeffrey Stein, Virginia Tech Carilion Research Institute
Amanda Quisenberry, Ohio State University
Derek Pope, Virginia Tech Carilion Research Institute
Warren Bickel, Virginia Tech Carilion Research Institute **Title:** The association between parental history and delay discounting among individuals in recovery from addiction **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Behavior **Aims:** Family history of addiction is a risk factor for substance use disorders, and delay discounting (DD) is predictive of the likelihood of successful abstinence and treatment outcomes; thus, we investigated the extent to which parental history of addiction and number of addicted parents affect DD among individuals in recovery from addiction.**Methods:** Data from 177 individuals in recovery from addiction on The International Quit & Recovery Registry (IQRR), an ongoing online data collection program that aims to understand addiction and how people succeed in recovery, were included in the analysis. SPSS was used to perform all the statistical analysis with a significance level of 0.05.**Results:**
Parental history (PH) of addiction was significantly associated with DD [F(2,176) = 4.769, p = 0.010]. After controlling for age and gender, participants reporting two biological parents with addiction had significantly higher DD rates (M = -5.02, SD = 1.47) compared to those reporting one (p = 0.036; M =< /span> -6.41, SD = 2.01) or no (p = 0.032; M =< /span> -6.25, SD = 2.04) parents with addiction. The mean indifference points were also significantly higher for participants reporting two parents with addiction compared to the no parent and one parent with addiction groups at 6 months (p = 0.023, p = 0.039, respectively) and at 1 year (p = 0.001, p = 0.003, respectively). **Conclusions:** DD is significantly associated with PH of addiction. Participants with two parents with addiction had significantly higher rates of discounting compared to those with no or only one parent with addiction. This information can serve as a foundation to better identify and target important subgroups that need additional or non-traditional intervention strategies to address their larger degree of impulsivity and help achieve better treatment outcomes. **Financial Support:** Virginia Tech Carillon Research Institute Fund

Abstract - ID: 388 **Author(s):** Megan Dickson **(Presenter)**, University of Kentucky
Carl Leukefeld, University of Kentucky
Hannah Knudsen, University of Kentucky
Matt Webster, Center on Drug and Alcohol Research University of Kentucky
Katherine Marks, University of Kentucky
Carrie Oser, University of Kentucky
Michele Staton, University of Kentucky College of Medicine
Jennifer Havens, University of Kentucky College of Medicine **Title:** Social support and motivation to change among drug-involved juvenile offenders **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** Substance use problems **Topic:** Adolescent **Aims:** Social support is a key factor in successful outcomes among juvenile offenders, yet few studies have explored social support and varying degrees of substance use among drug-involved juvenile offenders. This study aims to 1) profile social support, substance use, and substance-related problems among juvenile offenders by motivation to change and 2) identify correlates of motivation and test the interaction of substance use problems by social support.**Methods:** As part of the NIDA JJ-TRIALS cooperative agreement, data on 208 drug-involved juvenile offenders were provided by the Kentucky Department of Juvenile Justice (DJJ). Bivariate analyses examined differences in demographics, substance use, and substance-related problems by offenders' motivation to change, as determined by DJJ caseworkers. A logistic regression model of motivation to change was estimated.**Results:** About one-third (35.6%) of drug-involved youth were motivated to change. Motivated youth were significantly less likely to identify their substance use as a current problem (5.2% vs. 20.3%), to use illegal drugs other than marijuana (25.4% vs. 47.3%), and to report that substance use caused problems with relationships (23.1% vs. 37.8%) and with school (19.4% vs. 33.8%). Motivated youth were more likely to have strong social support (60.4% vs. 23.0%). Logistic regression indicated that illegal drug use (other than marijuana) was negatively correlated with motivation to change (p=.04) while the association for strong social support was positive (p **Conclusions:** Results echo studies identifying supportive relationships as a source of material and emotional support, leading to successful outcomes among offenders. The negative relationship between illegal drug use and motivation suggests these youth may not have experienced or recognized negative consequences resulting from drug use.**Financial Support:** JJ-TRIALS is funded by NIDA in collaboration with SAMSHA and DOJ.

Abstract - ID: 389 **Author(s):** Hannah Knudsen **(Presenter)**, University of Kentucky
Michelle Lofwall, University of Kentucky College of Medicine
Sharon Walsh, University of Kentucky
Jamie Studts, University of Kentucky
Jennifer Havens, University of Kentucky College of Medicine **Title:** Availability of HIV-related services in buprenorphine treatment: Data from a national survey **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** AIDS/Immune **Aims:** Aim: Opioid use disorder is a major risk factor in the acquisition and transmission of HIV. Clinical practice guidelines call for the integration of HIV services in OUD treatment. This study describes the integration of HIV services in buprenorphine treatment and examines whether HIV services vary by prescribers' medical specialty and across practice settings. **Methods:** Methods: Data were obtained via mailed surveys from US buprenorphine prescribers (n=1,171) from June 2014-November 2016. Measures included screening for HIV risk behaviors at intake, offering HIV education, recommending all new patients receive HIV testing, and availability of on-site HIV testing. Prescribers' medical specialty, practice settings, caseload demographics, and physician demographics were measured. Multivariate models of HIV services were estimated**Results:** Results: The average buprenorphine prescriber screened for 3.2 of 5 HIV risk behaviors (SD=1.6) at intake. About 61.9% of prescribers delivered HIV education to patients and 53.2% recommended HIV testing to all new patients, but only 32.3% offered on-site HIV testing. Addiction specialists (*p*ppppp **Conclusions:** Conclusions: Buprenorphine treatment providers have not uniformly integrated HIV-related screening, education, and testing services for patients. Differences by medical specialty and practice setting suggest an opportunity for tailoring efforts to increase implementation. **Financial Support:** Supported by the National Institute on Drug Abuse (R33DA035641).

Abstract - ID: 390 **Author(s):** Jennifer Sharpe Potter **(Presenter)**, University of Texas Health Science Center at San Antonio
Mary Jo Pugh, University of Texas Health Science Center at San Antonio, South Texas Veterans Health Care System
Maj Joseph K. Maddry , San Antonio Military Medical Center, University of Colorado
Col David H. Carnahan, Defense Health Agency, University of Colorado
Vikhyat Bebarta, San Antonio Military Medical Center, University of Colorado **Title:** Predictors of long-term opioid use in active duty military: Psychotropics, procedures, pain **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Other **Aims:** In the United States, chronic pain is more prevalent among active duty (AD) military service members (44%) than civilians (26%). Assessing factors associated with acute versus 3 long-term opioid use patterns (episodic, long-term low dose [LTLD], long-term high dose [LTHD]) may facilitate opioid risk mitigation. We predicted differences in system-level, clinical and opioid characteristics among opioid use patterns. **Methods:** Administrative de-identified data (2012-2013) from the TRICARE Pharmacy Data Transaction Service and M2 DataMart included prescription information and diagnosis codes. Inclusion criteria: AD enrolled in TRICARE for ≥ 11 months who received ≥1 opioid in a year. Opioid episodes defined as: *Acute* (< 3 months) and episodes greater than 3 months: *episodic* (< 1 20 days supply/10 prescriptions), *LTLD* (>120 days supply/10 prescriptions, average MME < 2 0mg), *LTHD* (same as LTLD except average MME >20mg). **Results:** Multinomial logistic regression identified risk factors associated with episodes (acute episodes as comparator). Cohort included 242,578 AD (43.8% Army, 83.9% male and 62.2% 18-25 years old). Individuals co-prescribed benzodiazepines were significantly more likely to have LTLD (4.36 CI[3.90, 4.86]) and LTHD (5.18 CI[4.45, 6.03]). Similarly individuals co-prescribed antidepressants were significantly more likely to have LTLD (13.63 CI[12.09, 15.37]) and LTHD (19.60 CI[16.60, 23.15]). Similar patterns were found for AD Army (vs. Air Force and Navy), and individuals who had major inpatient procedures or back pain. **Conclusions:** Results are similar to that observed in civilians. Factors exist that are unique to military context, e.g., service branch. Areas of concern and potential modifiable risk factors include co-prescribing. **Financial Support:** Air Force Research Laboratory FA8650-15-C-6588 P1; Air Force Research Laboratory FA8650-15-C-6588 P2; NIH NIDA U10 020024 Funding received through the Substance Abuse Working Group (SAWG) of the Joint Program Committee 5 (JPC-5) / Military Operational Medicine Research Program (MOMRP), US Army Medical Research and Materiel Command (USAMRMC).

Abstract - ID: 391 **Author(s):** Rachel Altshuler **(Presenter)**, University of Michigan
Colleen Carpenter, University of Michigan
Margaret Gnegy, University of Michigan
Emily Jutkiewicz, University of Michigan **Title:** Investigating the role of protein kinase C-beta inhibitors as potential therapeutics for amphetamine abuse **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Behavior **Aims:** Amphetamines (AMPH) are a class of stimulants that are abused worldwide. Despite the prevalence of their usage, there is no effective treatment for AMPH abuse. AMPHs elicit their reinforcing effects by increasing extracellular dopamine (DA) levels in the nucleus accumbens through the reversal of the dopamine transporter (DAT) function, a process enhanced by protein kinase C (PKC). PKC-beta inhibitors have been shown to block AMPH-stimulated DA efflux but it is not yet known what effect PKC inhibitors have on AMPH's reinforcing effects We propose that PKC-beta inhibitors will decrease AMPH self-administration in rats. **Methods:** Male Sprague-Dawley rats (n=12) were trained to self-administer 0.032 mg/kg/infusion AMPH i.v. or sucrose pellets on a fixed ratio 5 schedule of reinforcement during daily 60 min self-administration sessions. The rats were trained to respond specifically for AMPH by substituting in saline during a training session. The rats were pretreated with 10 pmol enzastaurin, a PKC-beta selective inhibitor, directly into the lateral ventricles (i.c.v.) 3 or 18 hours prior to the self-administration session. **Results:** A 2-way ANOVA demonstrated that an 18-hour pretreatment with enzastaurin significantly decreased responding for AMPH by 80%. A 3-hour pretreatment of enzastaurin had no effect on the rat's behavior. An 18-hour pretreatment of enzastaurin did not alter a rat's responding for sucrose pellets. **Conclusions:** These results show that enzastaurin will decrease AMPH reinforcement without altering responding for natural rewards, suggesting the PKC-beta regulation is specific to AMPH reinforcement. They also show that PKC-beta inhibitors require long pretreatment times when administered i.c.v. for them to be effective. Taken together, these data suggest that PKC-beta inhibitors could serve as a good therapeutic intervention for AMPH abuse. **Financial Support:** R01 DA11697, T32-GM007767, and the Benedict and Diana Lucchesi Graduate Education Fellowship.

Abstract - ID: 392 **Author(s):** Karen Corsi **(Presenter)**, University of Colorado School of Medicine
Jonathan Davis, University of Colorado School of Medicine
Janet Spradley, University of Colorado School of Medicine
Robert Booth, University of Colorado School of Medicine **Title:** Contingency management and strengths-based case management interventions for methamphetamine users in Denver, CO **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Treatment **Aims:** Contingency management has been successful for in-treatment methamphetamine (meth) users. However, the effectiveness of contingency management with the addition of strengths based case management for out-of-treatment heterosexual meth users has not been previously studied. **Methods:** Two hundred and forty one out-of-treatment meth users were randomized into two interventions: contingency management or contingency management plus strengths-based case management. A count of clean urinalysis (UAs) over time was the outcome of interest. Latent Class Analysis (LCA) of baseline characteristics was used to identify subgroups of meth users. This was followed by a total clean UA count analysis over 17 weeks in a negative binomial framework that tested the interaction of intervention by latent class group. **Results:** LCA analysis identified two subpopulations that differed by relationship status (65% class 1 vs. 45% class 2, $p = 0.02$), sexual abuse history (56% class 1 vs. 0% class 2, $p < 0.001$), and methamphetamine use in the last 30 days (24 days class 1 vs. 10 class 2, $p < 0.001$). Also, class 1 had a higher history of depression (73.6%, 40.0% $p < 0.001$) and physical abuse (73.6%, 45.0% $p < 0.001$). Classes did not differ by gender, age or alcohol use. In general, class 2 was a less severe meth-using group, had less abuse history, and less depression at baseline. A significant interaction suggested that the additional intervention was most effective in class 2 individuals ($p = 0.01$). Class 2 individuals participating in the additional intervention had approximately 9-fold more clean UAs on average ($p = 0.002$). There were no intervention differences detected in the class 1 group or between class 2 controls and class 1 individuals. **Conclusions:** The additional intervention appears effective in methamphetamine users reporting less traumatic events and with lower past 30 day use frequency. Early intervention incentive programs combined with strength- based case management may be effective in lowering drug use frequency in this population. **Financial Support:** Support provided by NIDA DA026741.

Abstract - ID: 393 **Author(s):** Edward Sellers **(Presenter)**, University of Toronto
Armel Stockis, UCB Pharma
Kerri Schoedel, Altreos Research Partners Inc. **Title:** Subjective abuse potential of brivaracetam compared to alprazolam, levetiracetam, and placebo in recreational CNS depressant users **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** Anti-epileptic drugs **Topic:** Other **Aims:** Brivaracetam (BRV) is a new antiepileptic drug (AED) with a main mechanism of action similar to another AED, levetiracetam (LEV). However, compared with LEV, BRV displays a markedly higher selectivity and affinity for synaptic vesicle protein 2A (SV2A). The aim of the study was to evaluate the subjective abuse potential of BRV compared to alprazolam (ALP, positive control), LEV, and placebo (PBO). **Methods:** Randomized, double-blind, crossover study in healthy adult recreational CNS depressant users, who distinguished ALP 2 mg from PBO in a qualification phase. In the main study, subjects received single doses of BRV (50, 200, 1000mg), ALP (1.5, 3mg), LEV (4000mg), and PBO separated by 7–10 days. Subjective visual analog scales (VAS) and Addiction Research Centre Inventory (ARCI) were completed over 24 hours postdose. Peak effects (E_{max}) were analyzed by mixed-effect modeling (per-protocol population, n=44). **Results:** ALP results were consistent with a sedative drug of abuse, and study validity was demonstrated. Both BRV and LEV had significantly greater effects than PBO for Drug Liking VAS E_{max} (DL E_{max}) (95% CIs of difference: 12.4–30.4; 16.4–34.9; 23.3–40.3 for BRV 50, 200, and 100mg, respectively, and 9.6–29.4 for LEV) and most other endpoints, and subjective effects of BRV and LEV were similar. DL E_{max} for BRV 50mg was lower than ALP, while supratherapeutic doses of BRV (200, 1000mg) were more similar to ALP. BRV had a different subjective profile than ALP, with fewer sedative, positive (some doses/endpoints), and negative effects, but showed comparable Overall Drug Liking and Take Drug Again VAS results. **Conclusions:** The subjective abuse potential of BRV was similar to LEV, consistent with their pharmacology, and greater than PBO. Some similarities were observed on balance of effects measures, but the subjective profile of BRV was distinct from that of ALP. **Financial Support:** Study supported by UCB Pharma.

Abstract - ID: 395 **Author(s):** Ken Grasing **(Presenter)**, Kansas City VA Medical Center
Michael Grasing, Kansas City VA Medical Center
Jessica Idowu, Kansas City VA Medical Center
Haiyang Xu, Florida State University **Title:** Anxiety- and depression- like behaviors in rats selectively bred for intravenous cocaine self-administration **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Genetics **Aims:** Comorbid psychiatric conditions occur commonly in patients with cocaine use disorders and can worsen after drug use. The LS and HS are rat lines selectively bred for Low- or High- cocaine Self-administration. HS rats have lower dopamine release in the nucleus accumbens shell, but greater cocaine-induced activation of dopamine D1 and D2 receptors in this brain region. Given the significant comorbidity between stimulant abuse and disorders of anxiety and mood, this study evaluated anxiety- and depressive- like profiles in LS and HS rats. **Methods:** After acclimatization to handling, anxiety indices were recorded with exposure to the elevated plus maze in 16 week-old, fifteenth-generation LS and HS rats. Animals then received a 15-minute pre exposure to warm (25.7 degree) water swimming. On the following day, immobility was digitally recorded and scored during 5 minutes of swimming.**Results:** During plus-maze testing, HS rats spent less time in open arms (2.98 ± 0.12 vs 3.67 ± 0.19 minutes, $p < 0.01$), and also made fewer entries into open areas (39.4 ± 3.7 vs 74.3 ± 9.2, $p < 0.01$). There were no significant effects of sex on anxiety measures. Immobility was greater in female rats during forced swimming (26.7 ± 2.5 vs 23.0 ± 5.9 %, $p = 0.02$), but did not differ between LS and HS animals. Escape, climbing, and diving behaviors also did not differ according to strain. **Conclusions:** In addition to neurochemical differences, rat strains selectively bred for altered intravenous drug self-administration also differ in anxiety- but not depression- like behaviors. Diminished spent within open areas and fewer entries into these areas by high-reward HS rats shows increased anxiety-like behavior. This may stem from lower levels of dopaminergic and cholinergic tone in the nucleus accumbens of this strain.
Financial Support: Supported by grants 1R21DA037556 (NIDA) and 589-KG-0012 (Department of Veterans Affairs).

Abstract - ID: 397 **Author(s):** Deborah Hasin **(Presenter)**, Columbia University
Aaron Sarvet, Columbia University
Magdalena Cerda, University of California, Davis
Katherine Keyes, Columbia University Mailman School of Public Health
Sandro Galea, Boston University School of Public Health
Melanie Wall, Columbia University and NYSPI **Title:** U.S. adult illicit cannabis use, cannabis use disorder, and medical marijuana laws: 1991-2012 **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Epidemiology **Aims:** Over the last 25 years, illicit cannabis use and DSM-IV cannabis use disorders (CUD) have increased among U.S. adults. Since California passed the first medical marijuana law (MML) in 1996, many states passed MMLs. Little is known about the relationship of MML to adult illicit cannabis use or CUD over time. We present nationally representative data on these relationships. **Methods:** Difference-in-difference (DiD) analyses of three U.S. adult surveys: NLAES (1991-1992), NESARC (2001-2002), and NESARC-III (2012-2013). Early-MML states passed MML between NLAES and NESARC ("early period"). Late-MML states passed MML between NESARC and NESARC-III ("later period").**Results:** Overall (1991-1992 to 2012-2013), illicit cannabis use and CUD increased more in states that passed MML than in other states (DiD tests, p=0.004; p=0.032). In the early period, the change in illicit cannabis use and cannabis use disorder in early-MML states differed from non-MML states (DiD tests; p=0.004; p=0.020) except for California, a high-use state even in 1991-1992. In the later period, illicit cannabis use increased significantly more in late-MML states than in non-MML states (p=0.014). Descriptively, cannabis use disorders increased more in late-MML states than non-MML states, but differences did not reach statistical significance. Exploratory analyses in the later period addressing Colorado's rapid medical marijuana commercialization beginning in 2009 showed greater increases in Colorado than in non-MML states for illicit cannabis use and cannabis use disorder (p=0.025; p=0.037). **Conclusions:** Over time, MML appear to have contributed to increased prevalence of illicit cannabis use, and possibly to increases in CUD. Commercialization may also play a role in such increases. MML may benefit some individuals with medical problems, but possible adverse consequences of illicit cannabis use due to changes in state laws should receive consideration by voters, legislators, policy and health professionals. **Financial Support:** R01DA034244 (PI: Hasin)

Abstract - ID: 398 **Author(s):** Hui Hu **(Presenter)**, University of Florida
Catherine Woodstock Striley, University of Florida
Linda Cottler, University of Florida **Title:** The association between neighborhood deprivation and past month prescription opioid use **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Epidemiology **Aims:** There is a national prescription drug epidemic, driven by opioid addiction. Conditions in residential neighborhoods can have major health effects. For instance, neighborhood deprivation has been linked to adverse health outcomes. This study investigates the association between neighborhood deprivation and past month prescription (Rx) opioid use among community members who participated in HealthStreet, a community engagement program at University of Florida. **Methods:** Using data from HealthStreet, we successfully geocoded residential addresses for 99% of participants from Northcentral Florida in the past 5 years (7,998 out of 8,088 who consented to an interview on health conditions including drug use). Seventeen census block-group level neighborhood characteristics covering 7 different domains of neighborhood deprivation were obtained from the American Community Survey; principal component analyses were used to construct the neighborhood deprivation index (NDI). We used mixed-effects models to assess association between NDI and Rx opioid use with a random intercept by census block-groups to address spatial clustering.**Results:** Compared with participants living in neighborhoods with an NDI in the lowest quartile, those living in neighborhoods with an NDI in the third (OR: 1.22, 95% CI: 1.00, 1.48) and fourth quartiles (OR: 1.24, 95% CI: 1.01, 1.52) had higher odds of past month Rx opioid use, after adjusting for age, gender, and race/ethnicity. Consistent results were observed when NDI was analyzed as a continuous variable.**Conclusions:** Living in a deprived neighborhood is associated with increased odds of past month Rx opioid use, providing further evidence of the importance of social determinants of health. **Financial Support:** We would like to acknowledge the National Institutes of Health (NIH) and National Center for Advancing Translational Sciences (NCATS) Clinical and Translational Science Institute and the University of Florida (UF) College of Public Health & Health Professions and College of Medicine. The Clinical and Translational Science Institute (CTSI) is supported in part by the NIH/NCATS Clinical and Translational Science Award to the University of Florida, grant UL1 TR000064.

Abstract - ID: 399 **Author(s):** David Gorelick **(Presenter)**, University of Maryland
Zachary Dezman, University of Maryland School of Medicine
Carl Soderstrom, University of Maryland School of Medicine **Title:** Test characteristics of a 4-item screening instrument for non-alcohol substance use disorders in trauma inpatients **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Other **Aims:** To determine the test characteristics of a 4-item screening questionnaire to detect non-alcohol/non-tobacco substance use disorders (SUDs) in an unselected population of adult trauma inpatients. **Methods:** 1,115 adult patients (55% 18-35 years old) consecutively admitted directly to a Level-one trauma center for at least 2 days from September, 1994 through November, 1996 underwent both the SUD section of a structured psychiatric diagnostic clinical interview (SCID) (DSM-IIIR criteria) and a 4-item screening questionnaire (drug CAGE) modified from the (alcohol) CAGE. Sensitivity, specificity, positive (PPV) and negative predictive value (NPV), positive (LR+) and negative likelihood ratios (LR-), and the area under the receiver operating curve (AUC) were calculated for each individual question and the overall questionnaire, using SCID-generated diagnoses as the gold-standard. Performance characteristics of the screen were also compared across selected sociodemographic and diagnostic sub-groups**Results:** Non-alcohol/non-tobacco SUDs were common (n=349, 31.3%), including cannabis (n=203, 18.2%), cocaine (199, 17.8%), and opioids (156, 14.0%). The screen performed well overall (AUC=0.896, 95% CI: 0.877-0.914); answering any single question in the affirmative had a sensitivity=83.4% (95% CI: 79.1-87.1), specificity=92.3% (95% CI: 90.2-94.1), PPV=83.1%, LR+=10.8. The screen performed well across sociodemographic subgroups and current or past substance dependence (all AUCs 0.756-1.000), but had somewhat poorer (albeit still statically significant) performance in subjects with only abuse diagnoses (AUC 0.583) and those with only cannabis use disorders (AUC 0.616). **Conclusions:** The 4-item drug CAGE and its individual questions had good–to–excellent ability to detect illicit drug SUDs in this adult trauma inpatient population, suggesting its usefulness as a screening tool in acute clinical care settings. **Financial Support:** Data collection was funded by the National Institutes of Health/National Institute on Alcohol Abuse and Addiction (R01 AA009050 01A2 awarded to CS).

Abstract - ID: 400 **Author(s):** Tanara Sousa **(Presenter)**, Center for Drug and Alcohol Research, Federal University of Rio Grande do Sul
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Jaqueline B. Schuch, Center for Drug and Alcohol Research of, Federal University of Rio Grande do Sul
Tais Fiorentin, Postgraduate Program in Pharmaceutical Sciences, Federal University of Rio Grande do Sul
Renata Limberger, Postgraduate Program in Pharmaceutical Sciences, Federal University of Rio Grande do Sul
Flavio Pechansky, Center for Drug and Alcohol Research, Federal University of Rio Grande do Sul **Title:** Drug use among Brazilian drivers with oral fluid screening devices as part of traffic checkpoints **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Technology Issues **Aims:** To investigate drug use among Brazilian drivers using oral fluid screening devices. **Methods:** Four screening devices were used to test a sample of drivers who were stopped at alcohol checkpoints in the city of Porto Alegre, Brazil. After the standard protocol procedure, drivers who fell into any legal situation that would prevent them from further driving were invited to participate in the study. Those who accepted were interviewed to obtain drug use and driving profiles, and were screened with one of the screening devices by a traffic agent. **Results:** Out of the 3,321 drivers stopped at the checkpoints, 309 met inclusion criteria and 178 (57.6%) accepted to participate in the study. Out of those, 106 (59.2%) accepted to be breathalyzed, with 34 (32.1%) testing positive. From the 178 drivers interviewed, 164 (92%) completed the screening tests with 33 (20.1%) samples testing positive for at least one substance other than alcohol. Cocaine (n= 14; 42.4%) and cannabis (n= 9; 27.3%) were the most prevalent substances detected aside from alcohol. Considering the drivers who tested positive for drugs, 24% also tested positive for alcohol and 48% refused to perform the breath test. **Conclusions:** Although confirmatory tests were not performed yet, self report - together with the screening results - suggests that impaired driving is highly prevalent among southern Brazilian drivers. Therefore, we highlight the need to improve enforcement practices in Brazil and suggest the inclusion of drug screening technologies concerning performance and cost-effectiveness analysis in accordance with local needs. **Financial Support:** Brazilian National Secretariat for Drug Policies (#07/2014)

Abstract - ID: 401 **Author(s):** H.H. Cleveland **(Presenter)**, Penn State University
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Dean Stankoski, Penn State University College of Medicine
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E. Bixler, Penn State College of Medicine
Roger Meyer, Penn State College of Medicine, Psychiatry
S. Bunce, Penn State College of Medicine **Title:** The between and within-person moderation of associations between negative affect and cravings by experiences of pain among patients with opiate use disorder **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** Craving for substance use may be associated with relapse risk for opioid use disordered patients. Craving may be associated with negative affect. Where opioid use disorder develops consequent to analgesic treatment for "pain management", negative affect may vary, based on patients' experience of pain. Understanding how continued experiences of pain may affect the link between negative affect and craving may help elaborate for whom and when negative affect is related to craving, as well as how pain may indirectly contribute to the conditions for risk of relapse. **Methods:** In this study, participants who met DSM-IV-TR criteria for prescription opiate dependence took part in a 12-day Ecological Momentary Assessment study at a residential drug and alcohol treatment facility in Pennsylvania. Participant ages ranged from 19 to 56 (M = 28.96). Four surveys (2-3 minutes each) asking participants about their perceptions of negative affect, pain, and craving were collected each day. Survey responses were averaged within days to reduce the impact of missing data. Multilevel models were run on 726 days nested within 73 persons (30% female). **Results:** Significant ($p < 0.05$) results included higher craving on days with higher than average negative affect or pain. In addition, a day-level interaction between negative affect and pain, controlling for person-level negative affect and pain as well as their interactions with day-level pain and negative affect, indicated that associations between pain and craving were stronger on days when participants also reported higher than usual levels of negative affect. **Conclusions:** Findings demonstrate how subjective pain can create conditions that may elevate relapse risk among patients with opioid analgesic use disorder by accentuating the strength of within-day linkages between negative affect and craving. **Financial Support:** NIDA R01 DA035240

Abstract - ID: 402 **Author(s):** Stephanie Johnson **(Presenter)**, University of Kansas
Joshua Zamora, University of Texas Health Science Center
Rachel Crowley, University of Kansas
Teresa Chavera, University of Texas Health Science Center
William Clarke, University of Texas Health Science Center
Kelly Berg, University of Texas Health Science Center
Thomas Prisinzano, University of Kansas School of Pharmacy **Title:** Chemical studies towards understanding functional selectivity at peripheral kappa receptors **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Opiates/Opioids **Topic:** Chemistry **Aims:** The ability of ligands to differentially regulate the activity of signaling pathways coupled to a receptor potentially enables researchers to optimize therapeutically relevant efficacies, while minimizing activity at pathways that lead to adverse effects. We have shown (Jamshidi et al., JPET 355: 174-182, 2015) that in primary cultures of rat peripheral pain sensing neurons, the kappa opioid receptor (KOR) selective agonist, U50,488, inhibits PGE_2-stimulated cAMP accumulation and increases extracellular signal regulated kinase (ERK) activity. In a rat behavioral model of thermal nociception, intraplantar injection of peripherally-restricted doses of U50,488 produces robust antinociception. However, the dose response curve (DRC) has an inverted U-shape and the descending limb is mediated by ERK. In this study, our goal was to alter the structure of U50,488 such that efficacy was maintained for signaling pathways important for antinociception (inhibition of cAMP accumulation) and minimized for signaling pathways that reduce antinociception (ERK)**Methods:** A small library of compounds based on the U50,488 scaffold were synthesized and evaluated for KOR activity. Selected analogues were further evaluated for inhibition of PGE_2-stimulated cAMP accumulation and activation of ERK in CHO cells transiently transfected with rat KORs.**Results:** Modification of the structure of U50,488 in three different regions resulted in inhibition of cAMP accumulation with similar potency and efficacy as U50,488. However, unlike U50,488 the analogues tested did not activate ERK. **Conclusions:** These data suggest that the efficacy for specific signaling pathways can be finely tuned by structural modifications to a given ligand, which may lead to improved KOR signaling profiles important for maximum, peripherally-mediated analgesia. **Financial Support:** NIH DA038645

Abstract - ID: 403 **Author(s):** Philip Veliz **(Presenter)**, University of Michigan
John Schulenberg, University of Michigan
Sean McCabe, University of Michigan **Title:** Trajectories of nonmedical prescription drug use: Assessing the impact of early exposure to prescription drugs
Abstract Category: Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Epidemiology **Aims:** The purpose of this study is to examine trajectories of nonmedical prescription drug use between adolescence and adulthood as a function of early prescription drug exposure (i.e., medical and/or nonmedical use of opioids, sedatives, stimulants, and tranquilizers). **Methods:** Longitudinal data from the Monitoring the Future is used for the study. Nationally representative samples of 9,420 high school seniors in the U.S. were followed from adolescence (modal age 18) to adulthood (modal age 35) resulting in 8 waves of data. **Results:** At baseline, roughly 9.8%, 3.2%, 4.4%, and 5.5% indicated medical use only of opioids, sedatives, stimulants and tranquilizers, respectively. Moreover, about 9.1%, 7.1%, 17.4%, and 9.6% indicated nonmedical use of opioids, sedatives, stimulants and tranquilizers at baseline, respectively. Latent growth curve models were used to estimate trajectories of nonmedical prescription drug use and found significant decreases in nonmedical use between age 18 and age 35 for all four drug classes. For instance, 10.9% of respondents indicated nonmedical use of stimulants at baseline, 8.2% at age 19/20, 7.8% at age 21/22, 5.4% at age 23/24, 3.2% at age 25/26, 2.6% at age 27/28, 1.9% at age 29/30, and 1.5% at age 35. Early exposure to nonmedical use of prescription drugs was associated with higher starting points at baseline (Intercept) and a steeper linear decline from baseline to age 35 when compared to respondents with no history of exposure to prescription drugs. However, positive quadratic effects among those with early exposure to nonmedical use indicated a slower deceleration of nonmedical prescription drug use at later ages (this was consistent across all four drug classes). Trajectories of nonmedical use of prescription drugs were similar between respondents with no early exposure to prescription drugs and respondents with early exposure to prescription drugs in a medical context only. **Conclusions:** The findings indicate that respondents with early exposure to prescription drugs only in a medical context have similar trajectories of nonmedical use of prescription drugs between adolescence and adulthood when compared with those who had no early exposure to these types of drugs. However, early nonmedical exposure to prescription drugs elevates the overall risk of nonmedical use of prescription drugs during adolescence and continues to persist into adulthood. **Financial Support:** Supported by research grants R01DA001411, R01DA016575, R01DA031160 and R01DA036541.

Abstract - ID: 404 **Author(s):** Lynn Madden **(Presenter)**, APT Foundation, Inc.
Kathryn Eggert, APT Foundation, Inc.
Scott Farnum, APT Foundation, Inc.
Robert Freeman, APT Foundation, Inc.
Declan Barry, Yale School of Medicine **Title:** An investigation of an open access model for scaling up methadone maintenance treatment **Abstract Category:** Program Descriptions **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims: Aim:** To examine the longitudinal impact on patient census, wait time, cost efficiency, retention, illicit drug use, and patient mortality of adopting an “open-access” model in which prospective patients were enrolled rapidly in methadone maintenance treatment, using walk-in evaluation services instead of appointment making, irrespective of their ability to pay, and provided real-time access to multiple treatment options from which they were free to choose. **Methods: Methods:** Medical and administrative records from the non-profit APT Foundation in New Haven, CT were abstracted to compare patient census, wait time, cost efficiency (net income as % of total revenue), retention, illicit drug use, and patient mortality data for one fiscal year before and 9 fiscal years following the implementation of a Network for the Improvement of Addiction Treatment-informed open-access treatment model in July 2007.**Results: Results**: Between July 2006 and June 2015, patient census increased by 183% from 1,431 to 4,051, average days of wait time decreased from 21 to < 1 (same day), cost efficiency increased from about 2% to 10% without decrements to patient mortality, retention or illicit drug use outcomes.**Conclusions: Conclusions:** Increased patient census, decreased wait time, and the absence of a negative impact on retention or illicit drug use outcomes offer strong initial support for the potential usefulness of the open-access model in scaling up methadone maintenance treatment. The increased cost efficiency associated with no appointment making and increased patient census support the possible long-term sustainability of the model. The expansion of the open-access model in methadone maintenance treatment programs merits further investigation as it offers one promising avenue for addressing the current opioid use disorder epidemic in the US**Financial Support:** The APT Foundation, Inc

Abstract - ID: 405 **Author(s):** Suzette Glasner-Edwards **(Presenter)**, Integrated Substance Abuse Programs (UCLA)
Frances Kay-Lambkin, University of Newcastle
Alan Budney, Geisel School of Medicine at Dartmouth
Helene Chokron Garneau, UCLA
Alexandra Venegas, Integrated Substance Abuse Programs (UCLA)
Anne Lee, Integrated Substance Abuse Programs (UCLA) **Title:** Preliminary outcomes of a computerized CBT/MET intervention targeting depression and cannabis use in a psychiatric care setting **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Treatment **Aims:** Cannabis use disorders (CUD) are associated with four times the risk of developing depression; moreover, depression is one of the most commonly cited conditions for which cannabis is used medicinally. Motivational enhancement therapy (MET) combined with cognitive behavioral therapy (CBT) is the current state-of-the art psychosocial intervention for CUD; nevertheless, availability of this approach is limited. As such, enhancing dissemination and implementation of CBT/MET via technology can have a high potential public health impact. The objective of the present study is to improve treatment for adults with CUD and comorbid major depression by augmenting usual care in primary care settings with an integrated computer-assisted strategy combining MET and CBT to promote relapse prevention skills, reduce cannabis use and depressive symptoms. **Methods:** We conducted a pilot study of SHADE (Self-Help for Alcohol and Other Drug Use and Depression), a computer-assisted, integrated CBT/MET intervention, among 26 cannabis users with major depression in a primary psychiatric care setting. **Results:** Treatment retention (i.e., attending $\geq$4 urine testing appointments) was achieved by 95% of the sample. Participants attended on average 9.6 (SD=1.8) out of 10 SHADE sessions. Treatment completion, (i.e., providing a urine specimen during week 10), was also excellent (85%). Depressive symptom severity was reduced from the moderately severe range at baseline (M=13.3, SD=4.7) to the mild range at week 10 (M=5.3, SD=4.9) ($p < 0$ .001). Reductions in cannabis use frequency in the past 30 days were observed from baseline (M=24 days, SD=7.7) to treatment-end (M=8.9, SD=11.7) ($p < 0$ .001). **Conclusions:** Preliminary data indicate that integrating SHADE with psychiatric treatment for depression: (a) is feasible and acceptable, (b) facilitates treatment engagement and retention in a difficult-to-treat comorbid population with major depression and cannabis use disorders; and (c) produces significant reductions in depressive symptoms and cannabis use. **Financial Support:** The research presented herein was supported by NIDA Grant 1R56DA036718 awarded to S. Glasner.

Abstract - ID: 406 **Author(s):** Andréa L. Hobkirk **(Presenter)**, Duke University School of Medicine
Bennett W. Hartley, Duke University School of Medicine
Sheri Towe, Duke University School of Medicine
Christina Meade, Duke University School of Medicine **Title:** Cocaine use and HIV have independent effects on the neural processing of ambiguous decisions
Abstract Category: Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Imaging **Aims:** The aim of the current study was to determine the effects of cocaine use and HIV infection on the neural processing of ambiguous decisions, which has implications for HIV risk behavior. **Methods:** Four distinct groups (n=77) of cocaine users and non-drug users with and without HIV chose between pairs of gambles while undergoing functional magnetic resonance imaging followed by diffusion tensor imaging. Each pair included a 100%-probability option (ranging from $3-$6) and an uncertain option (ranging from $2-$84). The uncertain option either had a risky probability (25%, 50%, 75%) or ambiguous probability (unknown) of winning. General linear models tested for group differences in behavioral task performance and BOLD activity during ambiguous over risky trials. FMRIB's Automated Segmentation Tool determined white matter volume.**Results:** There were no group differences in behavioral task performance. Participants chose the uncertain option on risky trials significantly more often than ambiguous trials ($t(76)$=2.55, p=.013). Mean reaction time was similar for risky (M=1.87, SD=0.47) and ambiguous trials (M=1.87, SD=0.51). Cocaine use was associated with activation in the left ventrolateral prefrontal cortex and insula. HIV was associated with diffuse activation bilaterally throughout the insula, thalamus, and basal ganglia, and deactivation in the occipital cortex and cerebellum. White matter volume in the regions of HIV-related activation was significantly lower for HIV+ compared to HIV- ($t(75)$=2.28, p=.026). Tract-based spatial statistics will further elucidate the association between white matter integrity and BOLD activity throughout the midbrain. **Conclusions:** Cocaine use and HIV infection have independent effects on the neural processing of ambiguous decisions in regions involved in executive function and reward processing, respectively. HIV-related white matter degradation may influence neural processing. **Financial Support:** R21 DA036450; F32 DA038519

Abstract - ID: 407 **Author(s):** Richard Kline, Ph.D. **(Presenter)**, CPB/DTMC/NIDA/NIH
Kevin Gormley, RTI International
Steven Gust, OD/NIDA/NIH
Robert Walsh, NIDA NIH **Title:** The National Institute on Drug Abuse drug supply program: Facilitating research through compound inventory and supply **Abstract Category:** Program Descriptions **Abstract Detail:** Animal Study **Drug Category:** Polydrug **Topic:** Other **Aims:** The NIDA Drug Supply Program (NDSP) makes various controlled drugs, other chemical substances, marijuana in various forms, and nicotine research cigarettes available for research purposes to investigators studying drug abuse, addiction, and related areas. NDSP substances are available to various academic, government and pharmaceutical laboratories within the United States and throughout the world. The availability and permitted use of controlled drug substances is highly regulated by the United States Drug Enforcement Administration (DEA), Department of Justice under the Control Substances Act (CSA), and the United Nations Convention on Psychotropic Substances. These controlled drugs include hallucinogens, stimulants, sedatives, hypnotics, narcotics, designer drugs, cannabinoids and marijuana, as well as several other important research substances. The NIDA Drug Supply Program maintains an inventory of several drugs in these categories and other chemical substances. In addition, continuous efforts are made to identify potential compounds of interest to researchers and to synthesize new compounds for addition to the NDSP. Analytical stability, and purity testing, of all compounds is periodically monitored and maintained. Upon request and approval, compounds are provided to researchers with respective analytical data reports. In addition to providing drugs and other chemical substances for research, the NDSP also provides analytical services to research investigators who do not have necessary analytical facilities in their own laboratories. Upon request and approval, biological experimental samples (such as tissue, plasma, urine, and saliva) can analyzed in a NIDA contract laboratory with results being supplied to the researcher through the NIDA drug supply program official. X-ray diffraction analysis providing definitive three-dimensional structural coordinates of compounds, in support of drug abuse research, is also available through the NDSP. **Methods:** (see Aims) **Results:** (see Aims) **Conclusions:** (see Aims) **Financial Support:** National Institute on Drug Abuse

Abstract - ID: 408 **Author(s):** Dean Stankoski, Penn State University College of Medicine
Andrew Huhn, Johns Hopkins University School of Medicine
E. Bixler, Penn State College of Medicine
Roger Meyer, Penn State College of Medicine, Psychiatry
E Deneke, Caron Treatment Center
S. Bunce **(Presenter)**, Penn State College of Medicine **Title:** Reregulation of cortisol levels in opioid-dependent patients during long-term residential treatment **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** It is well established that opioid dependent individuals experience high levels of stress during withdrawal from opioids. However, the degree to which opioid dependent patients (ODPs) experience reregulation of the hypothalamic-pituitary-adrenal axis (HPA-axis) following withdrawal is unclear. Creating a tangible understanding of the timeline of reregulation is an important step in understanding how risk factors such as stress induced craving hamper recovery from opioid dependence. **Methods:** In the current study, salivary cortisol samples were collected at five points throughout the day over a three-day period to determine mean diurnal cortisol in recently withdrawn ODPs in residential treatment (n=63), as well as healthy controls (HC) matched for age and gender (n=37). ODPs that stayed in residential treatment for two months (n=14) and/or four months (n=7) repeated the three-day sample collection. **Results:** A within-subject mixed modeling approach was used to determine a reduction in mean diurnal cortisol over the four-month treatment period among ODPs ($F_{2, 16.2} = 6.01$, p=.011). There were no significant differences in mean cortisol when comparing the ODPs who completed four months of treatment (n=7) to the larger group of recently withdrawn ODPs at either the one-month or two-month treatment points. A repeated measures ANOVA revealed a similar trend in reduction of mean cortisol in the four-month treatment group ($F_{2,6}=5.56$, p=.056). Whereas recently withdrawn ODPs had higher mean cortisol levels compared to HC (M=20.8?g/dL^{-1} versus M=11.58?g/dL^{-1}; t=6.12, p-1 versus M=11.58?g/dL^{-1}; NS). **Conclusions:** These data suggest that HPA-axis reregulation can occur over a four-month period in ODPs undergoing structured, residential treatment. Future longitudinal research should focus on allostatic reregulation of stress signals in a larger cohort. **Financial Support:** NIDA funded study (Prescription Opioid Dependence: Physiology, Emotion & Treatment Outcome (R01 DA035240; PRAMS00044050))

Abstract - ID: 409 **Author(s):** Allison Ober **(Presenter)**, RAND Corporation
Derek Dangerfield II, University of Southern California
Steve Shoptaw, UCLA
Gery Ryan , RAND Corporation
Brian Stucky, RAND Corporation
Samuel Friedman, National Development and Research Institute, Inc. **Title:** Using a “Positive Deviance” framework to discover adaptive risk reduction behaviors among substance-using HIV negative Black men who have sex with men **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** AIDS/Immune **Aims:** Although the overall incidence of HIV in the United States is declining, new infections among men who have sex with men (MSM) have increased steadily since the 1990s. Black men of all ages in the U.S. are disproportionately affected by the disease, but more new infections occur among Black MSM between 13 and 29 than in any other age and racial/ethnic group of MSM. Despite the unacceptably high incidence of HIV among young Black MSM, many men in this group avoid infection despite engaging in high risk behaviors, such as unprotected anal intercourse and substance use. This suggests that some men may engage in systematic, intentional or unintentional risk reduction behaviors when not always using condoms or abstaining from substances. A study of positive deviance, defined as behaviors that contribute to otherwise high-risk individuals remaining free from a disease or condition, offers a different lens by which to understand ways in which men with a high likelihood of encountering HIV remain HIV uninfected. This study sought to discover whether behaviors reported by young, Black HIV-negative MSM who have used substances that increase risk for HIV in the past six months, such as methamphetamine, cocaine, club drugs, as well as those who currently have hazardous alcohol use could be serving as adaptive risk reduction strategies that help them avoid HIV infectio**Methods:** Using a positive deviance framework, we conducted qualitative interviews with HIV-negative, Black MSM between 25 and 35 who reported unprotected anal sex and drug use in the past six months or currentheavy drinking (N=29) to discover behaviors that could facilitate remaining HIV-uninfected in spite of high-risk behaviors.**Results:** Findings suggest that men who do not contract HIV may be engaging in strategies before and during sexual events that could lead to increased condom use, avoidance or delay of a risky sexual event (such not getting so high or drunk they might end up in a situation in which they do not use a condom), or reduction of their risk pool (i.e., reducing the number or type of partners likely to have HIV through screening and pre-selection). **Conclusions:** A positive deviance framework in which a grassroots approach is used to discover specific behaviors by members of a high-risk community who successfully avoid a disease (“positive deviants”) when many peers are not able to do so may ultimately serve to inform a community-based, peer-led risk reduction intervention among HIV negative black MSM who use substances. **Financial Support:** NIDA grant 5 R03 DA035689-02

Abstract - ID: 410 **Author(s):** Steven Harrod **(Presenter)**, University of South Carolina
Hailong Li, University of South Carolina
Jessica Illenberger, University of South Carolina
Robert Roscoe, University of South Carolina
Srimal Samaranayake, University of South Carolina
Parastoo Hashemi, University of South Carolina
Charles Mactutus, University of South Carolina
Rosemarie Booze, University of South Carolina **Title:** Potential abuse liability of orally self-administered methylphenidate in HIV-1 transgenic rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Other (specify) **Other Drug Category:** methylphenidate **Topic:** AIDS/Immune
Aims: HIV+ youths have an increased risk for mental health disorders, including ADHD. As a result, HIV+ children have twice the odds of receiving psychostimulant medications, such as methylphenidate (MPH, Ritalin®). Unfortunately, little is known regarding the etiology of this psychopathology and potential for psychostimulant abuse in HIV-1+ adolescents. **Methods:** First, we examined oral self-administration of MPH in female OVX F344/N (*n*=20) and female OVX HIV-1 Transgenic (Tg) rats (*n*=19). Animals were given access to MPH/sucrose (max dose 4 mg/kg/day) for 14 days, on a FR1 schedule of reinforcement. We also evaluated dopamine release from the nucleus accumbens core (NAcc) region using an electroanalytical technique, fast-scan cyclic voltammetry. Animals (F344/N *n*=8 males/6 females; HIV-1 Tg *n*=7 males/7 females) were fully anesthetized and the stimulating electrode was positioned in the medial forebrain bundle. To determine synaptodendritic alterations in HIV-1 Tg rats following MPH exposure we employed DiOlistic labeling/confocal microscopy on medium-spiny neurons (MSN) in the NAcc using large-scale dendritic spine analyses (Neurolucida 360). We hypothesized that MPH would resolve genotype differences in sucrose-maintained responding, dopamine release and MSN spines. **Results:** A significant increase in MPH self-administration was found during the first week for HIV-1 Tg animals, relative to F344 controls ($p < 0.05$), indicating escalation in MPH dosing during drug initiation in HIV-1 Tg animals. HIV-1 Tg rats of both sexes exhibited a significant decrease in dopamine release in the NAcc, ($p < 0.05$), relative to controls. MPH had a normalizing effect on dendritic spines in the NAcc. **Conclusions:** Together, these experiments establish the role of the dopamine system in contributing to, if not mediating, potential abuse liability of MPH in the treatment of ADHD in HIV-1+ youths.**Financial Support:** DA013137, MH106563, MH106392, HD043680

Abstract - ID: 411 **Author(s):** Naomi Dambreville **(Presenter)**, CUNY Graduate School of Public Health and Health Policy
Lesia M. Ruglass, CUNY Graduate School of Public Health and Health Policy
Grinband Jack, Columbia University Medical Center
Michael Costa, CUNY Graduate School of Public Health and Health Policy
Eric A. Fertuck, CUNY Graduate School of Public Health and Health Policy **Title:** Rejection sensitivity and anger during social exclusion in young adult marijuana users **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Mechanisms of Action **Aims:** This pilot study examines differences in trait rejection sensitivity and state rejection sensitivity during social rejection and its relation to marijuana use and craving in young adults.**Methods:** An ongoing study, we aim to recruit 70 young adults at an urban, public college. Preliminary data on 13 participants consist of healthy controls (HC; n=8), moderate (n=2), and heavy (n=3) marijuana users with an average age of 20.5; 61% male (n=8), and are of diverse races (38% Hispanic; 38% Asian, 23% Black, 31% White). Participants completed self-reports, including the Rejection Sensitivity Questionnaire (RSQ) and the Cannabis Use Disorder Identification Test-Revised (CUDIT-R), and participated in Cyberball, an experimental task of varying rates of social exclusion (10, 20, 40, 50, 60%) during which they rated feelings of rejection and ange**Results:** The five marijuana users reported use and symptoms consistent with cannabis use disorder (M=14.2, SD=7.04). An independent samples t-test revealed no differences in rejection sensitivity between HC and users (t_{11}= -1.58; $p_{1\text{-tailed}}$=.07). A repeated-measures two-way ANOVA indicated that overall, participants reported higher levels of anger (p=.00) and rejection (p=.00) as exclusion increased from over-included (60%) to over-excluded (10%). Feelings of rejection (M=3.53, SD=1.45) were higher than anger (M=2.53, SD=1.50) after the over-excluded trial. **Conclusions:** Preliminary results suggest Cyberball can elicit feelings of rejection and anger, particularly when levels of exclusion vary. Differences in rejection sensitivity between users and HC seemed to approach significance. Replication of these findings with a larger sample will be presented and relation to frequency of marijuana use will be explored.**Financial Support:** Supported by PSC-CUNY #6958800-47; Translational Research Training in Addictions for Racial/Ethnic Minorities at the City College of New York and Columbia University Medical Center (TRACC) Program (4R25DA035161).

Abstract - ID: 412 **Author(s):** Cinder Cohen **(Presenter)**, University of Cincinnati College of Medicine
Hanna Wetzel, University of Cincinnati
Fatima Saeed, University of Cincinnati College of Medicine
Terence Kirley, University of Cincinnati College of Medicine
Andrew Norman, University of Cincinnati College of Medicine
Jordan Marckel, University of Cincinnati College of Medicine
William Ball, University of Cincinnati College of Medicine
Rose Webster, University of Cincinnati College of Medicine **Title:** The Fab fragment of a humanized anti-cocaine monoclonal antibody: Development of a quality control method and its application to an ELISA **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Chemistry **Aims:** Use of a semi-quantitative assay such as the Enzyme-Linked Immunosorbent Assay (ELISA) for pharmacokinetic studies requires stringent quality control of the data. Our aim was to develop and implement Levey-Jennings quality control methods for an ELISA assay to quantify the Fab fragment of an anti-cocaine antibody in blood. This will facilitate pre-clinical and clinical pharmacokinetic studies. **Methods:** A colorimetric ELISA was performed using a goat anti-human anti-Fab capture method. Mice blood samples (n=3) spiked with the Fab fragment were tested against a standard curve of known concentrations of Fab fragment over a period of eight weeks after being stored at 4°C and -20°C. Mice blood samples (n=10) without the antibody were tested for cross-reactivity. All standard curves were analyzed using our custom designed program to batch process the data and generate Levey-Jennings control charts to ensure that values were within two standard deviations for each concentration. The Optical Density units of the spiked blood samples at concentrations ranging from 0 to 0.4 µg/ml were converted to percent of control of a standard curve at the same concentration range. A paired two-tailed t-test was used for significance testing. **Results:** Blood samples from normal, untreated mice (n=10) showed no cross-reactivity in the assay. All standard curve data and the spiked samples from stability experiments were analyzed by our program to ensure that they were within two standard deviations. The stored samples from 3 mice across time didn't reveal any significant difference from the controls ($p>0.05$) (with one exception). Overall, our computer program confirmed all analyses by t-test. In the future, these methods will be integrated. **Conclusions:** We have developed a method to rapidly screen ELISA data for quality control. This method was successfully applied in the development of a method for quantification of the Fab fragment in pharmacokinetic studies in rodents. **Financial Support:** NIDA grant U01DA039550

Abstract - ID: 413 **Author(s):** Alison Kreisler **(Presenter)**, The Scripps Research Institute
Candice Contet, Scripps Research Institute
Daniella Walter, Scripps Research Institute
Eric Zorrilla, Scripps Research Institute **Title:** Escalated intake of palatable food in rats with intermittent, extended access is associated with high corticotropin-releasing factor mRNA neuronal density in the ventral tegmental area **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Other (specify) **Other Drug Category:** Palatable food **Topic:** Neurobiology **Aims:** Previous studies implicate increased VTA CRF signaling in the aversive state associated with drug withdrawal and escalated self-administration. The duration and intermittency of drug-taking (e.g., intermittent, extended access) are thought to play key roles in these behavioral changes. Previously, we found that female rats given intermittent (MWF) extended (24 h, Int-Long rats), but not intermittent brief (30 min, Int-Short rats), access to palatable, sucrose-rich, chocolate-flavored pellets (CHOC) escalated their 24-h CHOC intake (150% of continuous CHOC access controls [Chocolate]) and under-accepted the less preferred chow (~40% of continuous chow access controls [Chow]) even when CHOC was unavailable. Here, we tested the hypothesis that intermittent extended access to palatable food leads to increased VTA CRF mRNA expression during withdrawal from palatable food. **Methods:** *In situ* hybridization analyses were performed on brain sections obtained during non-CHOC access phases from Int-Long and Int-Short rats, as well as from Chocolate and Chow controls, *n*=6-8/group. The mean CRF mRNA signal density per neuron was calculated in each VTA section, normalized to Chow controls, and averaged across VTA sections. **Results:** Chi-square analysis revealed that sections and also subjects from Int-Long and CHOC groups were significantly more likely to show increased CRF density (> 2 SD from the Chow mean) compared to Chow or Int-Short groups. The subgroup of 3 Int-Long rats with markedly increased VTA CRF mRNA expression ate significantly more during their final (mean*z*-score=6.73), but not initial (*z*=< /em>0.68), 24-h CHOC access period and showed more BW gain (z=3.20) and white adipose tissue (z=1.92) than both Chow controls and Int-Long rats with normal VTA CRF mRNA expression, which did not differ from each other. In contrast, the subgroup was not exceptional in their degree of chow underacceptance. **Conclusions:** Thus, intermittent extended access to palatable food leads to increased VTA CRF mRNA neuronal expression in a subset of rats, and this change is associated with escalated daily intake of preferred food, as well as greater weight gain and fat. **Financial Support:** NIAAA T32 AA007456 & P60 AA006420.
Abstract - ID: 414 **Author(s):** Jake Morgan **(Presenter)**, Boston University School of Medicine
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Jared Leff, Weill Cornell Medicine
Benjamin Linas, Boston University School of Medicine
Alexander Walley, Boston University School of Medicine **Title:** Injectable naltrexone, oral naltrexone, and buprenorphine/naloxone utilization and discontinuation among individuals treated for opioid use disorder in a U.S. commercially insured population **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** Our primary aim was to describe prescribing patterns for three opioid use disorder (OUD) medications: 1) injectable naltrexone, 2) oral naltrexone, and 3) buprenorphine/naloxone in a nationally representative claims-based database (Truven Health MarketScan®) of over 200 million commercially insured individuals in the United States. **Methods:** We calculated the prevalence of OUD in the database for each year 2010-2014 and the proportion of individuals with OUD prescribed each medication in each year. We compared characteristics of individuals diagnosed with OUD who did and did not receive OUD medications with bivariate descriptive statistics. Finally, we fit a Cox proportional hazards model of time to discontinuation of therapy as a function of therapy type controlling for relevant confounders. **Results:** The proportion of commercially insured individuals diagnosed with OUD grew by fourfold from 0.12% (34,328 person years) in 2010 to 0.48% (144,463 person years) in 2014, but the proportion of diagnosed patient months on OUD medication decreased from 24% in 2010 (0.05% injectable naltrexone, 0.3% oral naltrexone, 23.1% buprenorphine/naloxone) to 14% in 2014 (0.2% injectable naltrexone, 0.4% oral naltrexone, 13.8% buprenorphine/naloxone). Individuals who received medication therapy were more likely to be male, were younger, and were more likely to have an additional substance use disorder compared to those diagnosed with OUD who did not receive medication therapy. Those prescribed injectable naltrexone were more often male, younger, and diagnosed with additional substance use disorders compared to those prescribed oral naltrexone or buprenorphine/naloxone. The proportion discontinuing medication therapy by 30 days was 59% for individuals treated with injectable naltrexone, 73% for individuals treated with oral naltrexone, and 37% for individuals treated with buprenorphine/naloxone. In the Cox proportional hazard model, use of injectable or oral naltrexone was associated with significantly higher hazard of discontinuing therapy beginning 30 days after treatment initiation (HR=2.63 and HR=2.70, respectively, 95% CI 2.48-2.80 and 2.60-2.80) than use of buprenorphine/naloxon€**Conclusions:** This analysis demonstrates that the use of evidence-based medication therapies has not kept pace with increases in OUD diagnoses in commercially insured populations in the United States. Among those who have been treated, discontinuation rates after 30 days are high. The proportion treated with injectable and oral naltrexone grew over time but remains small, and the discontinuation rates are higher compared to those treated with buprenorphine/naloxone. In the face of the opioid overdose and addiction crisis, enhanced efforts are needed at the provider, health system, and policy levels so that treatment keeps pace with new OUD diagnoses and treatment discontinuation is minimized. **Financial Support:** This study was sponsored by the National Institute on Drug Abuse (P30DA040500 and R01DA031059). The content of this article is solely the responsibility of the authors and does not necessarily represent the official views of the funding agencies or the US government. Abstract - ID: 415 **Author(s):** Eraka Bath **(Presenter)**, UCLA
Lindsey Thompson, UCLA-Pediatrics
Elizabeth Barnert, UCLA-Pediatrics
Mekeila Cook, UCLA **Title:** Characteristics of participants in a specialty court for commercially sexually exploited girls with substance use and mental health problems **Abstract Category:** Program Descriptions **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Adolescent **Aims:** Sexually exploited girls often exhibit their traumatic experience through substance-use related behaviors, such as running away, and disruptive behaviors that increase their contact with the law. The lack of well-established intervention strategies reflects a poor understanding of the unique needs of this population and how best to deliver these services. Court settings may represent a reliable way to reach CSEY. The Succeeding Through Achievement and Resilience (STAR) Court, a specialty diversion court in Los Angeles, provides mental health (MH) and substance use (SU) treatment to CSEY on probation for prostitution related charges. The STAR Court uses a multidisciplinary team approach and relies on partnership between attorneys, probation, child welfare and social service providers. To better understand processes that affect engagement and retention of CSEY in SU and MH treatment and the STAR Court, the objectives were: (i) to understand the SU and MH characteristics of CSEY in order to inform future service planning and (ii) to examine the relationship of SU and MH disorders in engagement in court-referred treatment**Methods:** **Methods**: We conducted an exhaustive chart review of health-related data from the court files of 183 STAR Court CSEY. The observation period spanned from 2012-2014. Domains included sociodemographics, MH and SU diagnoses, child welfare involvement and citation history. Two team members systematically transferred the data from CSEY's court files to a computerized database. Data was summarized using descriptive statistics. **Results: Results**: Of the 183 CSEY, 75% were identified as African-American, 18% Hispanic, 4% White, 2% Asian, and 2% other. 51% of the CSEY had at least 3 MH diagnoses reported and 88% had SU reported. 14% of the youth had 1-4 child welfare placements, 48% had 5-9, 32% had 10 or more, and the placement history for 7% was unknown. Frequency of legal charges at baseline was as follows: 74 CSEY had 1-3 charges, 62 had 4-6, and 48 had 7 or more. Frequency of running away or "AWOL" was also high, with 105 CSEY having 1-4 AWOL events**Conclusions:** Conclusions: CSEY participants in the STAR Court have extremely high levels of systems involvement, running away and MH and SU problems. Parternships with specialty court-based programs that can address MH and SU needs and related problem behaviors may provide inroads in engaging this vulnerable population and linking them to services. **Financial Support:** Eraka Bath, MD, Director, Child Forensic Services Associate Professor, Department of Psychiatry, UCLA Neuropsychiatric Institute 300 Medical Plaza, Rm 1243 Los Angeles, CA 90095. She receives funding from NIH, Grant # P20MD000182, from the Los Angeles County Department of Probation and from the National Institute on Drug Abuse of the Nations Institutes of Health under the AACAP NIDA K12 program. Dr. Bath reports no biomedical financial interests or potential conflicts of interest. Abstract - ID: 416 **Author(s):** Teresa Lopez-Castro **(Presenter)**, The City College of New York
Nicholas Allan, Oregon Health and Science University
Santiago Papini, University of Texas at Austin
Sudie Back, Medical University of South Carolina
Therese Killeen, Medical University of South Carolina
Daniel Gros, Medical University of South Carolina
Emma Barrett, Medical University of South Carolina
Lesia M. Ruglass, CUNY Graduate School of Public Health and Health Policy
Denise Hien, Adelphi University **Title:** Response-to-treatment for comorbid post-traumatic stress and substance use disorders: A parallel-process latent class growth analysis **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Treatment **Aims:** Whereas several studies have used data-driven approaches to examine heterogeneity in response to substance use disorder (SUD) or posttraumatic stress disorder (PTSD) treatments, none have explored this heterogeneity simultaneously across SUD and PTSD symptoms. This is a critical research target given the dynamic association between the two disorders and the need to tailor treatment approaches to varying patient needs. Parallel process latent curve growth analysis (PP-LCGA) provides a promising analytic strategy towards achieving this goal. Our primary aim was to examine response-to-treatment classes within two integrated treatment trials using PP-LCGA and provide support for the use of PP-LCGA within studies exploring multiple outcomes in clinical trials. **Methods:** The current study employed PP-LCGA to examine percentage of days using substances and PTSD symptoms across two randomized clinical trials (n=127) for co-occurring SUD and PTSD. **Results:** Results revealed four distinct SUD and PTSD response profiles for one sample and three profiles for a second sample. For PTSD symptoms across both studies, response trajectories could be broadly classified into responders and non-responders. For substance use, response trajectories reflected declining, moderately stable, and abstaining profiles. **Conclusions:** In isolation, the identified profiles were consistent with profiles found in prior studies. However,

study-specific trajectories that would have gone undetected using traditional analytic methods emerged when PTSD symptom and substance use trajectories were considered in tandem. The current study provides support for PP-LCGA in recognizing meaningful treatment response diversity and underscores the importance of modeling individual differences in SUD treatment outcome data. ***Financial Support:*** *5R01DA023187 5R01DA030143 Abstract - ID: 417* ***Author(s):*** *Jeremy Cornelissen* ***(Presenter)****, Medical College of Virginia*
Floyd Steele, Medical College of Virginia
Katherine Nicholson, Medical College of Virginia
Kenner Rice, NIH, NIDA
Matthew Banks, Virginia Commonwealth University ***Title:*** *Antinociceptive interactions between mu-opioid receptor agonists and NMDA antagonists in rhesus monkeys* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Behavior* ***Aims:*** *This preclinical study tested the hypothesis that N-methyl D-aspartate (NMDA) antagonists would enhance mu agonist-induced antinociception with reduced mu agonist-induced behavioral suppression.* ***Methods:*** *NMDA antagonist (ketamine and MK-801) and mu agonist (nalbuphine and oxycodone) interactions were determined in two experimental procedures (schedule-controlled responding and tail withdrawal) in groups of 3 monkeys. NMDA antagonist and mu agonist interactions were analyzed using dose-addition analysis.* ***Results:*** *In the assay of schedule-controlled responding, all drugs dose-dependently decreased rates of operant responding. All fixed proportions of NMDA antagonists and mu agonists produced primarily additive effects on rates of operant responding. In the assay of capsaicin-induced thermal allodynia, ketamine, oxycodone, and nalbuphine produced dose-dependent antinociception. MK-801 was ineffective up to doses that produced undesirable effects. Fixed proportions of NMDA antagonists and mu agonists produced primarily additive effects on thermal allodynia. No fixed proportion of NMDA antagonist and mu agonist produced an experimental therapeutic ratio better than the mu agonist alone.* ***Conclusions:*** *Overall, these results do not support the clinical utility of NMDA antagonists as adjuncts to mu agonists.* ***Financial Support:*** *Research supported by R01DA037287 Abstract - ID: 418* ***Author(s):*** *Sean Dolan* ***(Presenter)****, University of North Texas*
Michael Gatch, UNT Health Science Center ***Title:*** *"Ecstasy" to addiction: Discriminative stimulus and reinforcing effects of synthetic cathinone analogs of MDMA* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Club/Designer Drugs* ***Topic:*** *Behavior* ***Aims:*** *Synthetic cathinones and other novel psychoactive substances remain a prominent component of global drug culture, and several cathinone analogs have been diverted into "Ecstasy" or "Molly" formulations in lieu of MDMA. The current study aims to address how molecular size influences the discriminative stimulus and reinforcing effects of three synthetic cathinone analogs of MDMA: methylone, butylone, and pentylone.* ***Methods:*** *Separate groups of adult, male Sprague-Dawley rats (n=8) were trained to discriminate methamphetamine, DOM, or MDMA from vehicle. Dose-response studies for substitution were performed in each group and antagonism studies with SCH23390 were performed against each compound that produced substitution. Another group of rats (n=4) was trained to self-administer methamphetamine and dose-response studies for substitution were performed using a progressive ratio schedule of reinforcement.* ***Results:*** *Each of the test compounds substituted fully for the discriminative stimulus effects of methamphetamine and MDMA, but only partially for DOM. SCH23390 fully and dose-dependently attenuated methamphetamine-appropriate responding in each test compound, but was least potent against pentylone. MDMA-appropriate responding was only partially attenuated by SCH23390 in methylone and butylone, but was fully antagonized in pentylone. Each test compound was robustly self-administered with a rank order of reinforcing efficacy of pentylone>methylone>butylone=MDMA.* ***Conclusions:*** *These data indicate complex, MDMA-like discriminative stimulus effects for methylone and butylone, but a predominantly dopaminergic, stimulant-like discriminative stimulus for pentylone, which may drive the high rate of self-administration engendered by pentylone relative to the more MDMA-like methylone and butylone. Given the prevalence of synthetic cathinones in "Ecstasy" formulations, these data indicate that adulterated "Ecstasy" formulations may drive more compulsive drug use than those containing only MDMA.* ***Financial Support:*** *Supported by NIH N01DA-13-8908, T32AG020494 Abstract - ID: 419* ***Author(s):*** *Thomas Chao* ***(Presenter)****, New York State Psychiatric Institute*
Vanja Radoncicic, Adelphi University
Denise Hien, Adelphi University
Gillinder Bedi, Columbia University
Margaret Haney, Columbia University Medical Center ***Title:*** *Trauma exposure, sex and stress responding among cannabis smokers* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Marijuana/Cannabinoids* ***Topic:*** *Sex Differences* ***Aims:*** *Trauma exposure is a risk factor for substance use and relapse. One mechanism linking trauma and substance abuse may be dysregulation of acute stress responding. Little is known about the relationship between trauma and stress responding in cannabis users, or effects of sex on this relationship. Here, we present data on acute stress responding as a function of past trauma exposure and sex in cannabis smokers.* ***Methods:*** *103 healthy, non-treatment-seeking daily cannabis smokers (31.8 ± 8.0 years old, 20F) completed the Trauma Assessment for Adults and the Trier Social Stress Task (TSST) as part of a broader cannabis research program. Stress response was assessed at baseline and repeatedly after the TSST with heart rate (HR), salivary cortisol (CORT) and self-reported mood.* ***Results:*** *The TSST increased indicators of stress across the sample. Cannabis smokers who reported ?1 trauma (N = 68) had higher CORT and greater stress, anxiety, and fatigue overall than those who had no history of trauma (N = 38; p's < .05), with no difference in stress response. The total number of traumas endorsed correlated positively with CORT and anxiety (p's < .05). Compared to males matched for cannabis use, females had higher HR, subjective arousal and nervousness overall (p's < .01), without evidence of a differential stress response. An interaction between time, sex and trauma on HR (p < .001) suggested that trauma exposure may be associated with slower HR recovery after stress in females but not in males.* ***Conclusions:*** *Females and trauma-exposed cannabis smokers have overall higher physiological arousal and negative affect relative to males and non-exposed individuals, without altered responses to stress. However, there was evidence of increased stress responding as a function of the extent of trauma exposure. Moreover, effects of trauma on stress responding vary between female and male cannabis smokers. These findings support further investigation of how trauma impacts stress responding in male and female cannabis smokers.* ***Financial Support:*** *NIDA DA031005 and DA038739 Abstract - ID: 420* ***Author(s):*** *Andre Bedendo* ***(Presenter)****, Universidade Federal de Sao Paulo*
Andre Luiz Monezi Andrade, Universidade Federal de São Paulo, Department of Psychobiology
Ana Regina Noto, Universidade Federal de São Paulo, Department of Psychobiology ***Title:*** *Effectiveness of a brief Internet-based alcohol intervention among risky college drinkers: Four-arm randomized controlled trial* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Alcohol* ***Topic:*** *Prevention* ***Aims:*** *to evaluate the effectiveness of a web-based intervention (Personalized Normative Feedback - PNF) and its two components (Normative Feedback - NF and Consequences Feedback - CF) in reducing alcohol use and alcohol-related consequences among college students. We hypothesized that PNF and CF would reduce alcohol consumption and number of consequences and NF would reduce only alcohol consumption after 3 months compared with a control group* ***Methods:*** *College students aged 18-30 years classified as risky drinkers by AUDIT-C (?4 for men; ?3 for women) were randomized into four groups: Control, PNF, NF or CF. Generalized Mixed Models adjusted by id, age, institution and baseline data (N=4,495) were performed separately by gender (female: N=2,442). Outcomes were maximum number of drinks, binge drinking and number of consequences in the last three months.* ***Results:*** *PNF intervention was effective at follow-up in reducing the maximum number of drinks (IRR:0.90, p=0.01) and binge drinking (OR:0.45, p < 0 .05) among female students, when compared to Control. On the other hand, males from the PNF group reported higher maximum number of drinks (IRR:1.08, p < 0 .05) at follow-up. Both NF and CF interventions were effective only among female students. At follow-up, NF was effective in reducing binge drinking (OR:0.39, p < 0 .05), while CF was effective in reducing maximum number of drinks (IRR:0.92, p < 0 .05). There were no significant effects on consequences* ***Conclusions:*** *PNF showed to be effective in reducing the maximum number of drinks and binge drinking only among female students. Reduction in maximum number of drinks appears to be related to the consequences component and the reduction in binge drinking to the normative component. None of these interventions was effective to reduce the number of consequences* ***Financial Support:*** *Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP), Centro de Integração Empresa-Escola (CIEE), Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) and Associação Fundo de Incentivo à Pesquisa (AFIP) Abstract - ID: 421* ***Author(s):*** *James Tolliver* ***(Presenter)****, U.S. Food and Drug Administration*
E. Gregory Hawkins, U.S. Food and Drug Administration
Michael Klein, Food and Drug Adminstration ***Title:*** *Standards for assessing the activity of anabolic steroids* ***Abstract Category:*** *Theoretical/Commentary* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Other (specify)* ***Other Drug Category:*** *Anabolic Steroid* ***Topic:*** *Policy* ***Aims:*** *Designer steroids continue to be abused in the United States and their anabolic/androgenic activity is associated with adverse events such as liver toxicity and changes to sexual organs. The Designer Anabolic Steroid Control Act of 2014 amended the Controlled Substances Act by allowing for the placement of a substance in Schedule III based on: 1) its structural similarity to a currently scheduled anabolic steroid and 2) if it was either created or marketed with the intent of promoting muscle growth. With the exception of steroids considered as dietary supplements, proof of androgenic/anabolic activity is no longer required for placement of a steroid into schedule III. We are of the opinion that any steroid being considered as a schedule III anabolic steroid should be evaluated for androgenic/anabolic activity.* ***Methods:*** *Evaluation of structural similarity of a steroid to known schedule III anabolic/androgenic steroids provides a means of predicting whether a steroid is likely to have anabolic/androgenic activity. This involves knowledge of structure activity relationships for androgenic/anabolic activity.* ***Results:*** *Anabolic and androgenic pharmacological effects can also be determined using in vitro and in vivo assays. In vitro assays consist of binding assays at the androgen receptor as well as downstream effector measurements (transcription). Selectivity of pharmacological effect may be determined by assessing binding at other steroid receptors. Whole animal in vivo assays are essential to a proper evaluation of androgenic/anabolic activity. We believe that a combination of both in vitro and in vivo assays is necessary to determine if a steroid has androgenic/anabolic activity.* ***Conclusions:*** *We suggest a minimum set of assays be done through a sequential approach consisting of: 1) assessment of structural similarity, 2) in vitro binding coupled with transcription assays, and 3) in vivo assays. These studies will scientifically evaluate anabolic steroids to better understand the potential safety risk associated with their abuse.* ***Financial Support:*** *None Abstract - ID: 422* ***Author(s):*** *Ryan Lacy* ***(Presenter)****, Franklin and Marshall College*
Bridget Austin, Franklin and Marshall College

Justin Strickland, University of Kentucky ***Title:*** *Sex differences and the role of estrous cyclicity in cocaine and remifentanil demand in rats* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Stimulants* ***Topic:*** *Sex Differences* ***Aims:*** *Behavioral economics has been increasingly applied to understand drug-taking behavior. The threshold procedure allows for the determination of demand parameters in a single session. The purpose of the present study was to examine sex differences in cocaine and remifentanil demand using the threshold procedure in rodent subjects. We also evaluated estrous cyclicity in females given the importance of gonadal hormones in drug use.* ***Methods:*** *Eight male and eight female rats were tested on a threshold procedure. In this procedure, the dose available for self-administration is systematically reduced to increase unit price. Subjects responded for 15 days for each drug. Threshold data were evaluated using the exponentiated demand equation to derive measures of demand intensity (Q0) and elasticity (?). The role of estrous cycle was evaluated using repeated-measure ANOVAs. Sex differences across repeated testing sessions were determined using mixed ANOVAs.* ***Results:*** *Estrous cycle did not significantly influence demand parameters for cocaine or remifentanil. Males and females did not differ on measures of demand intensity or elasticity for cocaine and this effect was consistent across repeated sessions. Male subjects showed greater demand intensity for remifentanil than females (main effect of sex $p = .02$; $?_p^2 = .39$), but did not significantly differ for demand elasticity. These effects were consistent across multiple test sessions as indicated by the lack of statistically significant main or interaction effects involving session.* ***Conclusions:*** *These data represent the first comparison of cocaine and opioid demand between male and female animal subjects and indicate that males may show higher opioid consumption at low unit prices than females (i.e., higher demand intensity). Consistent findings across the numerous sessions is also promising for future uses of the threshold procedure with repeated-measure designs.* ***Financial Support:*** *Professional development funds from Franklin & Marshall College to RTL. Abstract - ID: 423* ***Author(s):*** *Rachel Crowley* ***(Presenter)****, University of Kansas*
Thomas Prisinzano, University of Kansas School of Pharmacy ***Title:*** *Development of salvinorin A-based kappa opioid receptor agonists for drug abuse therapy* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Chemistry* ***Aims:*** *Kappa opioid receptor (KOR) agonists have been successful in treating abuse related behaviors in several animal models of drug abuse. The potent and selective KOR agonist salvinorin A (SVA) is a structurally-unique natural product, lacking a basic nitrogen. It is a structurally complex molecule, with a variety of sensitive functional groups and stereocenters. While SVA has interesting and desirable pharmacological activity, it possesses some undesirable pharmacokinetic properties such as poor water solubility and bioavailability. By probing the structure-activity relationships (SAR) at KORs, we aim to identify a point on the molecule that can be modified to address these pharmacokinetic shortfalls without loss of KOR activity.* ***Methods:*** *Previous investigations have indicated the lactone of SVA as being tolerant to modifications. Development of synthetic strategies to further derivatize this position will allow for novel analogs of salvinorin A to be prepared.* ***Results:*** *Analogs with various substituents in the lactone position were synthesized and then evaluated for their activity at the KOR. Substitutions varied in polarity, steric bulk, and chain length to determine SAR for this position. Results indicate that while lactone substitutions are tolerated, they are not required. Additionally, substituents capable of hydrogen-bonding as well as sterically small groups are preferred. Analogs with potencies similar to that of SVA with better water solubility have been identified.* ***Conclusions:*** *The lactone moiety of SVA has been validated as a point on the natural product where structural changes affecting water solubility are tolerated without activity loss. Compounds with improved solubility and KOR activity are currently undergoing further evaluation for their effectiveness in treating drug abuse.* ***Financial Support:*** *NIDA DA018151, GM008545, AFPE Pre-Doctoral Award in Pharmaceutical Science Abstract - ID: 424* ***Author(s):*** *E. Gregory Hawkins* ***(Presenter)****, U.S. Food and Drug Administration*
Silvia Calderon, U.S. Food and Drug Administration
Michael Klein, Food and Drug Adminstration ***Title:*** *Triaging which new psychoactive substances should be prioritized for further study* ***Abstract Category:*** *Theoretical/Commentary* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Other (specify)* ***Other Drug Category:*** *New Psychoactive Substances* ***Topic:*** *None* ***Aims:*** *Since 2008 over 600 New Psychoactive Substances (NPS) have been identified worldwide. We propose a method to efficiently prioritize a list of NPS when only their names and structures are available. These substances can then be synthesized to determine their pharmacology, abuse potential, and risk to public health.* ***Methods:*** *At a minimum, the method used to prioritize NPS should accurately predict the binding and activity of the substance at receptor systems known to be associated with abuse. This approach may include a literature search, review of patents, and assessment of the structure activity relationship or high throughput assays.****Results:*** *NPS are mostly unregulated and scientifically uncharacterized substances designed to mimic the psychoactive properties of illicit substances. The toxicity, long-term effects and abuse potential of these substances are typically unknown. The United Nations Office on Drugs and Crime identified over 600 NPS and over 34 tons of NPS were seized globally in 2014. Although most recent information is that these substances are comprised of synthetic cannabinoids, hallucinogens and stimulants, little is known about the risk these substances pose to public health. Thus, there is a need to develop a process that will identify which substances need to be studied first. We propose a simple approach to prioritize the pharmacological characterization of these substances that may include a thorough literature and patent search and an assessment of the structural activity relationship of the drugs at various receptor systems. Supplemental information related to drug use and seizures can also be included as part of the assessment. Following initial analyses, resources can be allocated to synthesize or procure those substances believed to pose the highest risk to further characterize their pharmacology through a battery of in vivo and in vitro testing.****Conclusions:*** *Prioritizing a list of NPS to determine their pharmacology will help to inform regulators and health care professionals about the abuse related risks and potential health consequences of their use.* ***Financial Support:*** *none Abstract - ID: 425* ***Author(s):*** *Maria Lucia Souza-Formigoni, Universidade Federal de São Paulo*
Andre Luiz Monezi Andrade ***(Presenter)****, Universidade Federal de São Paulo, Department of Psychobiology*
Henrique Gomide, Universidade Federal de Juiz de Fora
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Leonardo Martins, Universidade Federal de Juiz de Fora
Telmo MotaEonzani, Universidade Federal de Juiz de Fora
Roseli Boerngen Lacerda, Universidade Federal do Paraná ***Title:*** *Evaluation of the factor structure of the Brazilian-Portuguese version of the Readiness to Change questionaire applied to problem drinkers in the beginning of a web-based intervention* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Alcohol* ***Topic:*** *Other* ***Aims:*** *The Readiness to Change Questionnaire (RCQ) short form has been used to classify people into the stages of change. Despite some validation studies its factor structure is not well established. We evaluated the factor structure of the Brazilian-Portuguese version of the RCQ applied to alcohol problem drinkers over the internet* ***Methods:*** *We analyzed data from 429 problem drinkers (AUDIT score higher than 7) who filled out the RCQ before starting the web-based intervention Bebermenos (Drink less). We applied the Horn's method of parallel analysis, and the Very Simple Structured (VSS) method, to identify the number of factors retained, and the factor analysis using the oblique rotation "Oblimin". In the Confirmatory Factorial Analysis (CFA) we used six models: (1) one-factor solution with the twelve items; (2) three non-correlated factors; (3) three factors correlated; (4) hierarchical three-factor correlated with a global factor; (5) two-factor exploratory models and (6) one-factor with high loading items* ***Results:*** *The Parallel analysis detected the existence of 3 factors, whereas the VSS suggested 2 factors. The EFA fit indexes were considered poor (TLI =.907; RMSEA =.087 - CI90% =.066 -.105) but the Cronbach's alpha was good (.79). CFA: models 3 and 4 did not converge (lack of fitness); models 1, 2 and 5 showed poor fit indexes. Most of the confirmatory models indicated low fitness indexes (Model 1/one-factor: CFI =.720, RMSEA =.196; Model 2/three-factor uncorrelated: CFI =.568, RMSEA =.238, Model 5/two-factor: CFI=.815, RMSEA =.161).However, model 6 indicated satisfactory indexes: CFI=.998; RMSA=.045* ***Conclusions:*** *Our data suggest that RCQ is a one-dimensional instrument, since only the one-factor model presented good fit indexes* ***Financial Support:*** *Conselho Nacional de Pesquisa e Desenvolvimento; World Health Organization, Associacao Fundo de Incentivo a Pesquisa. Abstract - ID: 426* ***Author(s):*** *Marc Larochelle* ***(Presenter)****, Boston University School of Medicine*
Dana Bernson, Massachusetts Department of Public Health
Thomas Land, Massachusetts Department of Public Health
Thomas Stopka, Tufts University School of Medicine
Alexander Walley, Boston University School of Medicine ***Title:*** *Mortality after nonfatal opioid overdose: Medication for opioid use disorder is associated with lower risk* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Treatment* ***Aims:*** *People surviving opioid overdose are at high risk for subsequent fatal opioid overdose; however, it is unknown if overdose survivors treated with medication for opioid use disorder (MOUD) benefit. We hypothesized MOUD would be associated with reduced risk of opioid-related and all-cause mortality.* ***Methods:*** *We conducted a retrospective cohort study of Massachusetts residents ages 11 and older who experienced a nonfatal opioid overdose in 2013-2014. We used individually linked state-based data from ambulance encounters, hospital treatment, the prescription monitoring program, substance use treatment programs, all payer claims, and death records. We examined the number and proportion of individuals who subsequently received MOUD defined as treatment in a methadone maintenance program, receipt of buprenorphine, or receipt of naltrexone in each month. We examined time to opioid-related and all-cause mortality, censoring for the end of the study period or, for opioid-related mortality, death due to another cause. We used a multivariable Cox proportional hazards model with MOUD as the monthly time varying predictor of interest. We controlled for age, sex, and receipt of prescription opioids or benzodiazepines as monthly time varying covariates.****Results:*** *We identified 11,438 individuals who survived an opioid overdose. Over a median follow-up of 10 months, 2,642 (23%) people received MOUD in one or more months [693 (6%) received methadone, 1,672 (15%) buprenorphine, 624 (5%) naltrexone]. Opioid-related mortality was 2% (n=240), and all-cause mortality was 6% (n=649). Compared to not receiving MOUD in a given month, receipt of MOUD was associated with a decreased risk of opioid-related mortality (adjusted hazard ratio (AHR): 0.2 [95% confidence interval (CI): 0.1-0.6]) and all-cause mortality (AHR: 0.3 [95% CI: 0.2-0.5]).* ***Conclusions:*** *A minority of individuals received MOUD following nonfatal opioid overdose; however, MOUD was associated with a 70% reduction in all-cause mortality, and an 80% reduction in opioid-related mortality. Increasing engagement*

in MOUD may improve outcomes for individuals with high mortality risk. ***Financial Support:*** *No external funding. Abstract - ID: 427* ***Author(s):*** *Ajay Manhapra* ***(Presenter)****, Yale School of Medicine; Hampton VA Medical Center*
Edeanya Agbese MPH5, Penn State College of Medicine, Department of Public Health Sciences
Douglas Leslie, Penn State College of Medicine, Department of Public Health Sciences
Robert Rosenheck, Yale University-Psychiatry ***Title:*** *Comparison of long-term buprenorphine treatment retention in patients with opioid use disorder in the Veterans Health Administration and in privately insured adults* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Treatment* ***Aims:*** *Long-term opioid agonist treatment (OAT) with buprenorphine is being increasingly used in recent times due to the easy accessibility to the treatment in office based settings. There is little comparative data on retention under private insurance versus public integrated healthcare systems like the Veterans Health Administration (VHA).****Methods:*** *This study compared retention in buprenorphine treatment patients initiating treatment for OUD for up to three years in VHA (N=3,151) from Fiscal Year (FY) 2012-2015 and in patients with private insurance claims available from the Marketscan ® database (N=16,410) from 2011 to 2014. We identified those who filled their first prescription of buprenorphine after the first 60 days of the FY as new starts, and compared the period between the date of their first prescription to the last prescription during the period of study in each database (treatment retention period).* ***Results:*** ***Results:*** *The mean treatment retention duration was 1.68 years (standard deviation [SD] 1.23) among VHA patients and 1.23 years (SD 1.16) among MarketScan® patients, a moderately large effect size difference (cohen's d = 0.37). The proportion of patients retained in buprenorphine treatment in the VHA and MarketScan® groups were, respectively, 83.2% Vs. 85.0% for > 30 days, 61.60% Vs 45.0% for >1 year and 31.83% Vs. 13.6% for >3 years.* ***Conclusions:*** *Our data suggests that long-term buprenorphine treatment retention among patients with OUD is significantly higher in VHA compared to non-VHA settings. The implications of these results will be discussed based on data from further detailed analysis.* ***Financial Support:*** *None Abstract - ID: 428* ***Author(s):*** *Amanda Quisenberry* ***(Presenter)****, Ohio State University*
Abigail Shoben, Ohio State University
Sarah Cooper, Ohio State University
Amy Ferketich, Ohio State University
Micah Berman, Ohio State University
Ellen Peters, Ohio State University
Mary Ellen Wewers, Ohio State University
Elizabeth Klein, Ohio State University ***Title:*** *Emotional responses to smokeless tobacco warning labels: Are graphics more powerful than text?* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Nicotine/Tobacco* ***Topic:*** *Behavior* ***Aims:*** *The aim of the analysis was to evaluate self-reported emotional responses from rural male smokeless tobacco users to health warning labels placed on smokeless tobacco advertisements.* ***Methods:*** *A convenience sample of male smokeless tobacco users were randomly assigned to one of three warning label conditions embedded within product advertisements: a small textual warning as a control (n = 70), or an intervention with either a textual (n = 72) or graphic plus text warning (n = 70) placed within 20% of the advertisement area. After viewing the advertisements, participants were asked to rate 12 emotional reactions on a 5-point Likert scale (not at all to completely). Primary components factor analysis was used to create an aggregate emotional reaction scale and impact of study condition assessed with a simple linear regression****Results:*** *Items that loaded on the first factor (worried, angry, sad, guilty, discouraged, annoyed, depressed, disgusted, uneasy) were used to create a simple additive scale (? = .89), which was used in the remainder of the analyses. Stronger emotional reactions were reported for the graphic warning label condition compared to the text-only condition (p < .001) and the control condition (p < .001). No significant differences in emotional reactions were found between the control condition and the text-only condition (p > .05).* ***Conclusions:*** *Emotion is one of several facilitators to informed decisions regarding tobacco use. Consistent with emotional responses to cigarette health warning labels, graphic health warning labels for smokeless tobacco evoked greater emotional responses when compared to text-only health warnings among smokeless tobacco users.* ***Financial Support:*** *R01CA129771-05S1 Abstract - ID: 429* ***Author(s):*** *Justin Nickell* ***(Presenter)****, University of Kentucky*
Arlington Wilson, University of Kentucky
Emily Denehy, University of Kentucky
John Culver, University of Kentucky
Venumadhav Janganati, University of Arkansas for Medical Sciences
Peter Crooks, University of Arkansas for Medical Sciences
Michael Bardo, University of Kentucky
Linda Dwoskin, University of Kentucky ***Title:*** *JPC-089, a 1,4-diphenethyl substituted piperidine, inhibits the neurotoxic, psychomotor stimulant and reinforcing effects of methamphetamine* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Animal Study* ***Drug Category:*** *Stimulants* ***Topic:*** *Treatment* ***Aims:*** *Methamphetamine (METH) use disorders place an enormous burden on society. No FDA-approved treatments exist; however, the vesicular monoamine transporter-2 (VMAT2) is a viable target for pharmacotherapeutic discovery for this disorder. VMAT2 inhibitors show efficacy attenuating neurochemical and behavioral effects of METH, but requisite drug-likeness or VMAT2 selectivity were lacking. To improve upon these characteristics, 1,4-diphenethyl substituted piperidine analogs of lobelane were synthesized and evaluated in neurochemical and behavioral studies.* ***Methods:*** *JPC-089 was assessed in vitro for selectivity for VMAT2 vs. dopamine, serotonin and norepinephrine transporters, and the human-ether-a-go-go related gene channel (hERG). JPC-089 was evaluated for interaction with METH on striatal dopamine content and for attenuation of METH-sensitized locomotor activity and METH iv self-administration and reinstatement in rats.* ***Results:*** *JPC-089 exhibited high affinity (40±7 nM) and >50-fold selectivity for VMAT2 relative to the plasmalemma neurotransmitter transporters and hERG channel, suggesting minimal risk of abuse liability and cardiotoxicity. JPC-089 prevented METH-induced striatal dopamine depletion, suggesting neuroprotection. JPC-089 (56 mg/kg, sc; 300 mg/kg, po) decreased (>50%) METH-sensitized locomotor activity. JPC-089 (170 mg/kg, po) decreased (>50%) the number of METH infusions while having no effect on responding for food, demonstrating a specific decrease in the reinforcing properties of METH. JPC-089 (170 mg/kg, po) also blocked METH-induced reinstatement of METH-seeking behavior, indicating that JPC-089 may be a useful prophylactic against relapse.* ***Conclusions:*** *JPC-089 constitutes a promising lead in the development of a pharmacotherapy for METH use disorders, reducing the neurotoxicity, psychomotor stimulant and reinforcing properties of METH.* ***Financial Support:*** *DA13519, DA016176, TR000117 Abstract - ID: 430* ***Author(s):*** *Diana Keith* ***(Presenter)****, University of Vermont*
Derek Reed, University of Kansas
Ryan Redner, Southern Illinois University
Allison Kurti, University of Vermont
Stephen Higgins, University of Vermont ***Title:*** *Simulating demand for cigarettes among economically disadvantaged mothers of young children: A low-risk method for studying vulnerable populations* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Nicotine/Tobacco* ***Topic:*** *Dependence* ***Aims:*** *Accumulating evidence from studies using behavioral economics are demonstrating simulated purchase tasks to be safe, time-efficient, and valid experimental models for studying consumption of cigarettes and other reinforcing commodities, without experimentally having to administer the product. The purpose of the present study was to extend these investigations to economically disadvantaged mothers of young children who are current cigarette smokers.* ***Methods:*** *Participants were 30 publicly-insured mothers of young children (? 11 years old) who completed the Cigarette Purchase Task (CPT) prior to participation in a smoking cessation trial. The CPT is a behavioral-economic method for simulating changes in demand for hypothetical cigarettes as a function of varying hypothetical cigarette prices. A demand curve was generated using Hursh and Silberberg's (2008) exponential demand equation, which was developed based on direct manipulation of price and drug consumption in prior preclinical and clinical experimental studies (i.e., good construct validity). Empirical (i.e., observed) and derived (i.e., calculated) measures of demand included intensity (Q_0; number of cigarettes consumed at a price of $0.00), O_{max} (peak expenditure), P_{max} (the price associated with peak expenditure), alpha (rate of change in elasticity across the demand curve), and breakpoint (the last price with any level of demand).* ***Results:*** *Aggregate and individual participant demand varied as an orderly function of price and those changes were well fit by the exponential equation (aggregate R^2=0.95; RMSE=0.11; using k=1.6). Correlation between empirical and derived Q_0 indicated strong convergence (r_S = .80, p max was calculated to model potential policy impacts, suggesting that a price of $0.95/cigarette yields unit elasticity in this sample. Cigarette demand differed significantly between women who smoked ? 15 versus < 15 cigarettes per day, with heavier smokers exhibiting significantly greater empirical intensity of demand (U=51, p< 0.01).* ***Conclusions:*** *Overall, these results represent a promising step in demonstrating the validity of the CPT for experimentally examining demand for cigarettes, and potentially other tobacco and nicotine delivery products, among economically disadvantaged mothers of young children, a population at substantially increased risk for cigarette smoking, nicotine dependence, difficulties quitting, and exposing children to second-hand-smoke. The results are consistent with research validating the CPT in economically disadvantaged pregnant cigarette smokers, another highly vulnerable population.* ***Financial Support:*** *This project was supported by National Institute on Drug Abuse, National Institutes of Health, and Food and Drug Administration, Center for Tobacco Products, Tobacco Centers of Tobacco Regulatory Science award P50DA036114. Abstract - ID: 431* ***Author(s):*** *Brett M Millar* ***(Presenter)****, CUNY Graduate School of Public Health and Health Policy*
Christian Grov, CUNY Graduate School of Public Health and Health Policy
Jeffrey Parsons, Hunter College, CUNY ***Title:*** *Considering sleep-related fatigue as a motivating factor in substance use* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Alcohol* ***Topic:*** *Behavior* ***Aims:*** *The detrimental effects of sleep-related fatigue on executive functioning and emotion are gaining increased attention in the study of health behaviors. However, research has not yet addressed whether people may also be motivated to use substances to help them combat their fatigue. This study aimed to investigate how commonly men report using alcohol or drugs to help them stay awake, and to explore associations with mental health, substance use expectancies, condom beliefs, and sexual risk-taking.* ***Methods:*** *In an online survey, 942 gay and bisexual men were asked whether they have used substances to "help them stay awake longer if they are feeling tired."****Results:*** *In total, 319 (33.9%) answered yes to drinking alcohol*

and 103 (10.9%) to using drugs, in order to help stay awake. Those that answered yes regarding alcohol were, on average, younger (p < 0 .001) scored higher on depression, and also scored higher on: emotion regulation difficulties; expectancies that substance use increases sexual pleasure, intimacy, disinhibition, and risk of not using condoms; beliefs that condoms reduce intimacy and; motivations against condom use due to partner pressure—all p < 0 .001. These men also reported greater numbers of recent condomless anal sex acts with casual partners, Exp(B)=1.33, p < 0 .001. Similar patterns of differences were noted between those who did or did not report using drugs to stay awake, with an even stronger association with number of recent condomless anal sex acts, Exp(B)=2.41, p < 0 .001. ***Conclusions:*** *This paper shows that, for many gay and bisexual men in our national sample, being tired is a motivating factor in their use of alcohol and drugs. Alarmingly, those endorsing this motivation reported more risk-prone substance use expectancies and condom beliefs, emotion regulation difficulties, and greater rates of recent sexual risk-taking. Further consideration of sleep-related fatigue as a factor in substance use is warranted and may help to generate novel interventions aimed at reducing substance use and HIV and STI transmission.* ***Financial Support:*** *The One Thousand Strong study was funded by a research grant from the National Institute on Drug Abuse (R01 DA036466: Jeffrey T. Parsons & Christian Grov, MPIs). Abstract - ID: 432* ***Author(s):*** *Aaron Sarvet* ***(Presenter)****, Columbia University*
Melanie Wall, Columbia University and NYSPI
Katherine Keyes, Columbia University Mailman School of Public Health
Mark Olfson, Columbia University and NYSPI
Magdalena Cerda, University of California, Davis
Deborah Hasin, Columbia University ***Title:*** *Self-medication of mood and anxiety disorders with marijuana: Higher in states with medical marijuana laws* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Marijuana/Cannabinoids* ***Topic:*** *Epidemiology* ***Aims:*** *Self-medication with drugs or alcohol is commonly reported among adults with mood or anxiety disorders, and increases the risk of developing substance use disorders. Living in a state with a medical marijuana law (MML) may be associated with greater acceptance of the therapeutic value of marijuana, leading individuals to self-medicate.* ***Methods:*** *The analytic sample included adults with a mood or anxiety disorder in Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions (2004-2005, N=7418). Weighted logistic regression models were used to predict the prevalence of self-medication with drugs in U.S. states based on medical marijuana law passage by 2004, adjusting for individual and state-level covariates. Models were run among individuals with a mood or anxiety disorder overall, and among the subgroup whose only illicit drug use involved marijuana (n=314). As a negative control, analyses were repeated for self-medication with alcohol****Results:*** *Overall, self-medication with drugs was 3.74 percentage points higher among those living in a MML state (p=0.01). Among individuals whose only illicit drug was marijuana, self-medication with drugs was 19.02 percentage points higher among those living in a MML state (p=0.03). In contrast, self-medication with alcohol had nearly identical prevalence in MML and non-MML states, overall and among drinkers.****Conclusions:*** *Among adults with mood or anxiety disorders, living in a MML state is associated with self-medication with marijuana. While additional research is needed to determine the reasons for this association, clinical screening for self-medication with marijuana may be particularly important in states with MML.* ***Financial Support:*** *R01DA034244, R01DA019606, R01DA040924, K01DA030449, K01AA021511, NY State Psychiatric Institute Abstract - ID: 433* ***Author(s):*** *Madhur Chandra* ***(Presenter)****, Michigan State University*
James Anthony, Michigan State University ***Title:*** *Of sleet and snow: Are newly incident crack users at greater risk of developing cocaine dependence problems soon after onset of cocaine use?* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Opiates/Opioids* ***Topic:*** *Dependence* ***Aims:*** *The main aim is to present new epidemiological evidence on the risk of developing individual cocaine-attributable problems and experiences soon after onset of cocaine use with hypothesized excess risk when crack (sleet) is consumed, rather than only cocaine HCl powder (snow).* ***Methods:*** *The study population is United States (US) community residents age 12 years and older, 2010-14, with nationally representative probability samples recruited and assessed for the National Surveys on Drug Use and Health (n~55,000/year). Ascertainment of newly incident cocaine users (n=1834) and their cocaine-attributable problems and experiences (PE) are from standardized item modules in confidential computerized self-interviews. Generalized estimating equations in general linearized models (GLM/GEE) produce PE occurrence estimates and crack/powder contrasts for each year's replicate sample. DerSimonian & Laird random effects meta-analyses yield summary estimates.* ***Results:*** *Excess risk of cocaine-attributable problems and experiences is seen for crack smokers, relative to 'powder only' (p < 0 .05), with no appreciable attenuation after covariate adjustment for age, sex, race-ethnicity, alcohol and tobacco use, and exclusion of cocaine injecting users. Salience of cocaine experiences within the behavioral repertoire and cocaine-attributed emotional problems emerge early as noteworthy potential manifestations of incipient cocaine dependence.* ***Conclusions:*** *Against a backdrop of a declining US cocaine epidemic (2010-2014), newly incident crack users studied very soon after onset have excess risk of cocaine-attributable problems and experiences that form part of the cocaine dependence case definition. As was found in earlier epidemic years, crack use continues to be a signal of excess risk.* ***Financial Support:*** *NIDA awards T32DA21129 (MC) and K05DA015799 (JCA). Abstract - ID: 434* ***Author(s):*** *Pia Mauro* ***(Presenter)****, Columbia University*
Julian Santaella-Tenorio, Columbia University
Christine Mauro, Columbia University
Niki Nourmohammadi, Columbia University
Arthur Robin Williams, Columbia University Division on Substance Use Disorders
Silvia Martins, Columbia University ***Title:*** *Medical marijuana laws and state substance use disorder treatment by age, 2004-2013* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Marijuana/Cannabinoids* ***Topic:*** *Policy* ***Aims:*** *Though 28 states have passed medical marijuana laws (MML) in the US, the relationship between MML and substance use disorder (SUD) treatment remains unclear. We estimated the impact of enacting MML on SUD treatment prevalence.****Methods:*** *Aggregate state-level estimates of the proportion of people reporting past-year SUD treatment were obtained from the 2004-2013 National Survey on Drug Use and Health. Time-varying indicators for MML enactment by 2015 differentiated states (no MML, before MML, after MML). Age-stratified linear models (12-17, 18-25, 26+) regressed the proportion reporting past-year treatment on MML status and accounted for state level clustering with robust standard errors. Models were weighted by state population and adjusted for time, past-month state-level marijuana use prevalence, and state-level covariates.* ***Results:*** *Past-year SUD treatment prevalence was 1.26% for ages 12-17 (SD=0.69%), 2.66% for ages 18-25 (SD=1.10%), and 1.44% for ages 26+ (SD=0.63%). Adjusted state SUD treatment was higher after MML compared to before MML enactment for ages 12-17 (aOR=1.28, p=0.039); differences were not significant for ages 18-25 (aOR=1.11, p=0.3) or 26+ (aOR=1.12, p=0.2). Aggregate SUD treatment in states before MML enactment was not statistically significantly different from that in states that did not enact MML by 2015 for any age category after adjustment. State-aggregated prevalence of past-month marijuana use was positively associated with SUD treatment prevalence for ages 12-17 (aOR=1.06, p=0.002) and 18-25 (aOR=1.03, p=0.002), but not ages 26+ (aOR=1.01, p=0.4).* ***Conclusions:*** *Findings indicate age-specific effects of MML on SUD treatment prevalence, though past-year SUD treatment overall was low. Increased treatment prevalence in ages 12-17 by MML occurred in the context of no differential effect of MML on other marijuana use outcomes among adolescents, such as cannabis use disorder, and nationwide decreases in adolescent cannabis use disorder. Future studies should disaggregate SUD treatment to understand substance-specific treatment effects of MML by age****Financial Support:*** *R01DA037866 (Martins), T32DA031099 (Hasin) Abstract - ID: 435* ***Author(s):*** *Mishka Terplan* ***(Presenter)****, Virginia Commonwealth University*
Yukiko Washio, Christiana Care Health Services/University of Delaware ***Title:*** *Characteristics of marijuana-using pregnant women entering and leaving treatment* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Marijuana/Cannabinoids* ***Topic:*** *Perinatal* ***Aims:*** *Marijuana use during pregnancy is common next to smoking and drinking. This descriptive study examines the demographic, socio-economic, treatment related characteristics associated with prenatal marijuana use in the United States.* ***Methods:*** *Using the Treatment Episode Data Set, the study population included pregnant women reporting alcohol use upon entry into and discharge from substance use treatment in the United States for the first time between 1992 and 2012.* ***Results:*** *From 1992 to 2012, 166,863 pregnant women were admitted to treatment for the first time, and 74,790 (45%) reported marijuana use. Among marijuana users, 84% were younger than 30 years old, 53% were non-Hispanic White, 54% had less than 12 years of education, 85% were non-employed, and 86% were not married. Those who reported marijuana use as the primary choice of drug also presented similar demographic characteristics. Seventy-seven percent of marijuana users reported polysubstance use (i.e., 2 or more), and alcohol (16%), methamphetamine (14%), and cocaine (13%) were the most commonly co-used substances with marijauna. Over 75% were admitted to treatment in an outpatient setting, and 34% were involved in criminal justice at treatment admission. At treatment discharge, the most common reason for discharge was treatment completion (34%), followed by leaving against professional advice (27%) and transfer to other places (25%)****Conclusions:*** *Marijauan using pregnant women were younger and socioeconomically disadvantaged. Most co-use with other substances during pregnancy. The treatment completion rate is not ideal, indicating the significance to tailor the treatment for marijuana using pregnant women and address their needs to help complete treatment. Given the high rate of polysubstance use during pregnancy, the potential clinical and public health impacts of prenatal marijauana use during pregnancy and beyond are significant. Targeted substance use interventions for women should focus on polysubstance use as well as giving special attention to certain high risk groups.* ***Financial Support:*** *None Abstract - ID: 436* ***Author(s):*** *Thomas Whitfield* ***(Presenter)****, Center for HIV Educational Studies and Training*
Brett M Millar, CUNY Graduate School of Public Health and Health Policy
Christian Grov, CUNY Graduate School of Public Health and Health Policy
Jeffrey Parsons, Hunter College, CUNY ***Title:*** *Substance use and sexual expectancies among gay and bisexual men* ***Abstract Category:*** *Original Research* ***Abstract Detail:*** *Human* ***Drug Category:*** *Alcohol* ***Topic:*** *Behavior* ***Aims:*** *Researchers have documented associations of alcohol and drugs with sexual risk among gay and bisexual men (GBM). Less examined are sexual and emotional expectancies. This study aimed to explore differences in sexual expectancies and behavior between those who report using substances during sex compared to those who did not.* ***Methods:*** *Within a larger U.S. national online sample of 1,017 HIV-negative GBM, 469 (46.1%) reported recently engaging in any anal sex with a casual partner. These men provided data on sexual expectancies of substance use, condomless anal sex (CAS), and substance use.* ***Results:*** *Compared to those reporting either alcohol use or CAS (but not together), those who reported CAS while drinking were younger, and scored higher on expectancies that substances will lead to enhanced pleasure (increased disinhibition, more intimacy), and greater risk of not using a*

condom, all pp **Conclusions:** These findings build on previous research that connects CAS and substance use to show that sexual expectancies under the influence may play a significant role in how GBM decide to use or not use alcohol and illicit drugs. Addressing sexual expectancies of substance use may be an important factor in future sexual risk interventions**Financial Support:** NIDA

Abstract - ID: 437 **Author(s):** Karl Alcover **(Presenter)**, Michigan State University
James Anthony, Michigan State University **Title:** Rapid-onset cannabis problems: Excess risk for polydrug users? **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Dependence **Aims:** An estimated 9%-11% of cannabis users eventually develop a cannabis dependence syndrome (CDS), irrespective of using other internationally regulated drugs (IRDs); and about 1%-3% become cases within 12-24 months after 1st cannabis use. In this United States (US) study of newly incident cannabis users (NICU), we sought to estimate variation in risk of CDS-related cannabis problems and experiences (PEs) across polydrug subgroups (e.g., for 'cannabis only' versus 'cannabis+other IRD' users).**Methods:** A nationally representative sample of >11,800 NICUs was identified in a study population of non-institutionalized civilian US residents aged 12 years and older, after sampling, recruitment, and standardized computer assisted self-interviews for the US National Surveys on Drug Use and Health (NSDUH), 2004-14. For 10,626 NICU, IRD experience was restricted to 'cannabis only' use, while 1,212 started using ?1 other IRD(s) soon after cannabis onset but before CDS assessment. For each survey year, we studied 17 individual PEs of CDS, using generalized estimating equations (GEE), and estimating PE-specific risks for 'cannabis only' versus polydrug subgroups. We then used meta-analysis to summarize variation in CF risk across subgroups.**Results:** An estimated 26%-28% of 'cannabis only' users developed **at least one** CDS PE when observed within 12 months after first cannabis use. For newly incident polydrug (cannabis+other IRD) users, the corresponding risk estimate is 3-4 times larger ($p < 0$ .05), even with GEE model adjustment for background characteristics (e.g., age, sex, use of alcohol and/or tobacco).**Conclusions:** This study's main discovery is that there is excess CDS-associated risk when 'cannabis only' users start using other IRD, consistent with other recent estimates (e.g., Lopez-Quintero & Anthony, 2015). Some CDS problems and experiences may be seen quite rarely during the 1st 12 months after onset of cannabis use. If successful, our continuation of this line of research should identify specific IRD combinations implicated in observed patterns of excess risk for each cannabis problem.**Financial Support:** NIDA K05DA015799(JCA), T32DA021129 (KCA) & MSU.

Abstract - ID: 438 **Author(s):** Zoe Weinstein **(Presenter)**, Boston University School of Medicine
Jeffrey Samet, Boston University School of Medicine
Colleen Labelle, Boston University School of Medicine
Gabriela Gryczynski, Kaiser Permanente
Debbie Cheng, Boston University School of Medicine
Emily Quinn , Boston University School of Medicine
David Hui, Boston University School of Medicine
Hyunjoong Kim, Boston University School of Medicine **Title:** The frequency of tapering off buprenorphine maintenance in a primary care office-based opioid treatment program **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** Guidelines recommend long-term treatment for opioid use disorder including the use of buprenorphine; however, many patients desire to eventually taper off buprenorphine. The aim of this study is to examine the prevalence and patient characteristics of patients that voluntarily taper off buprenorphine in an Office Based Opioid Treatment (OBOT) program. The secondary outcome was re-engagement in care with the same OBOT treatment program after taper.**Methods:** This is a 12-year retrospective cohort study of adult patients treated with buprenorphine from 1/2002 to 2/2014. Potential predictors of buprenorphine taper were: age, race/ethnicity, employment, prior buprenorphine treatment, ever heroin use, and mean daily buprenorphine dose. The primary outcome was completion of a voluntary buprenorphine taper, which was further characterized as a medically supervised or unsupervised taper. Descriptive statistics and frequencies of both taper completion and re-engagement in buprenorphine treatment were calculated using Kaplan-Meier estimates. Bivariate analyses compared patients who tapered vs. did not taper.**Results:** Only 48 of the 1308 patients tapered off buprenorphine during the study period, with an estimated proportion of 15% (95%CI: 10%-21%) based on Kaplan Meier by the end of follow-up. These 48 patients were in treatment a median of 490 days (IQR: 242-1402) before completing the taper. Less than half, 45.8% (22/48) were a medically supervised taper. Subsequently, 13 of the 48 patients then re-engaged in buprenorphine treatment (estimated proportion by end of follow-up: 61%, 95%CI: 27%-96%, based on Kaplan-Meier estimate).**Conclusions:** Despite the fact that many patients desire to taper off buprenorphine, a small minority had a documented taper. Among those who tapered, more than half did so unsupervised by the clinic and over a quarter of those who taper off returned to buprenorphine treatment.**Financial Support:** NIDA R25DA0123582, NIDA R25DA033211, NIAID T32AI052074, NCATS 1UL1TR001430

Abstract - ID: 439 **Author(s):** Lisham Ashrafioun **(Presenter)**, VA VISN 2 Center of Excellence for Suicide Prevention
Cathleen Kane, VA VISN 2 Center of Excellence for Suicide Prevention
Todd Bishop, VA VISN 2 Center of Excellence for Suicide Prevention
Peter Britton, VA VISN 2 Center of Excellence for Suicide Prevention
Wilfred Pigeon, VA VISN 2 Center of Excellence for Suicide Prevention **Title:** Suicide attempts and substance use disorders among veterans seeking specialty pain services **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** General substance use disorders **Topic:** Epidemiology **Aims:** The purpose of this study was to investigate the relationship between a substance use disorder diagnosis and suicide attempts in the year following the initiation of specialty pain services among Veterans. **Methods:** National data from the Veterans Health Administration (VHA) was used to identify Veterans initiating VHA specialty pain services from Fiscal Year 2012 to 2014. Data on demographics, psychiatric and medical diagnoses, and pain intensity scores were extracted and merged with suicide attempt data from the Suicide Prevention Application Network database. The cohort contained 236,823 Veterans who initiated services during this time and had sufficiently complete data on demographics, diagnostic information, and pain intensity scores.**Results:** Substance use disorders were significantly associated with suicide attempts in the year following the initiation of specialty pain services (Hazards Ratio = 2.01, 95% Confidence Interval = 1.74, 2.33) after accounting for previous suicide attempts, psychiatric disorders, demographics, and pain intensity. A subanalysis to identify risk factors of suicide attempts within Veterans with a substance use disorder (n = 30,775) was also conducted. Having a psychiatric diagnosis (i.e., depression, alcohol use disorder, PTSD, other anxiety disorder), higher physical comorbidity scores, and higher maximum pain intensity scores in the six months prior to initiating services were all significantly associated suicide attempts in the year following the initiation of pain services.**Conclusions:** These findings highlight the importance of substance use disorder and suicide risk assessments in VHA specialty pain care. **Financial Support:** None

Abstract - ID: 440 **Author(s):** Paul Czoty **(Presenter)**, Wake Forest School of Medicine
Phillip Epperly, Wake Forest School of Medicine
April Davenport, Wake Forest School of Medicine
Mei-Chuan Ko, University of Michigan
Stephen Husbands, University of Bath
James Daunais, Wake Forest School of Medicine
Shawn Flynn, Wake Forest School of Medicine **Title:** Effects of BU08028, a mixed mu and nociceptin/orphanin FQ peptide receptor agonist, on alcohol drinking in rhesus monkeys **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Alcohol **Topic:** Behavior **Aims:** Alcohol use disorder (AUD) persists as a devastating public health problem that lacks widely effective pharmacological interventions. Over the past decade, preclinical research has supported the therapeutic potential of targeting brain receptors for the neuropeptide nociceptin/orphanin FQ (NOP) to treat a number of psychiatric conditions including AUD. In these experiments, we examined the effects of BU08028 [(2S)-2-[(5R,6R,7R,14S)-N-cyclopropylmethyl-4,5-epoxy-6,14-ethano-3-hydroxy-6 methoxymorphinan-7-yl]-3,3-dimethylpentan-2-ol], a novel orvinol analog, in a nonhuman primate model of AUD. BU08028 has a similar pharmacological profile to the intermediate-efficacy mu opioid receptor agonist buprenorphine, but has higher affinity and efficacy at NOP receptors and lower abuse potential. **Methods:** Five adult female rhesus monkeys were provided free access to a 4% ethanol (EtOH) solution and water in daily 6-hr sessions. Monkeys also self-administered food pellets by pressing a lever under a fixed-ratio schedule. When daily EtOH intakes (g/kg) were stable, BU08028 (0.001-0.01 mg/kg, i.m.) was administered 60 minutes before the session. **Results:** BU08028 decreased ethanol drinking in all monkeys. Analysis of group data indicated a statistically significant decrease in EtOH intake, but not in food pellet deliveries. By comparison, the mu opioid receptor antagonist naltrexone, an FDA-approved medication for AUD, did not significantly or selectively affect EtOH consumption when administered as an acute i.m. injection (1.7, 3.0 mg/kg) or chronically by the oral route (1.0-3.0 mg/kg, s.i.d.). **Conclusions:** The data support continued studies of BU08028 and other NOP receptor agonists as potential pharmacotherapies for AUD. **Financial Support:** Support: AA 21099, DA 32568.

Abstract - ID: 441 **Author(s):** Denise Hien **(Presenter)**, Adelphi University
Kathryn Smith, Columbia University Medical Center, New York State Psychiatric Institute
Max Owens, University of South Florida
Teresa Lopez-Castro, The City College of New York
Lesia M. Ruglass, CUNY Graduate School of Public Health and Health Policy **Title:** How patients with PTSD+SUD change across CBT treatments: A secondary analysis of two randomized clinical trials **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** Alcohol, Cocaine and other substance dependence **Topic:** Treatment **Aims:** The state of science regarding evidence-based treatments for comorbid PTSD+SUD continues to underscore the need to evaluate optimal treatment pathways of patients change over the course of treatment, and what types of therapies work for which types of patients. **Methods:** We applied linear growth and time varying effects models to re-examine previous findings from two randomized clinical trials of cognitive behavioral treatments for PTSD+SUD (Study I: COPE vs RPT vs active monitoring (NIDA); Study II: Seeking Safety (SS) + Sertraline vs SS + placebo (NIAAA) to examine in "real time" how patients changed across time and three study phases: baseline, during treatment and over follow-up. **Results:** Study I: Growth models were applied to examine relative changes in the rates of days of use and PTSD symptom decline between COPE and RPT during "in-treatment" and follow-up periods. Between groups, for days of use, models indicated a relatively variable rate of reduction for RPT compared to COPE. For PTSD symptoms RPT was associated with relatively rapid reductions "in-treatment" that plateau during follow-up, whereas COPE was associated with significant linear reductions for the "in-treatment" period as well as the follow-up period. Study II: Time varying effects models revealed that associations between PTSD and drinking days were strengthened over the course of treatment such that for every reduction of 8 points on the PTSD scale led to a reduction of one drinking day. **Conclusions:** Important detail bearing on the process of psychotherapy change in potent treatments for PTSD+SUD was revealed. All analyses provide strong evidence that when conducted with fidelity, CBT treatments for PTSD+SUD can lead to ultimate reductions in substance use symptoms as well as PTSD. Implications for clinician decision-making around treatment selection will be discussed. **Financial Support:** NIDA/NIAAA

Abstract - ID: 442 **Author(s):** Stevie Britch **(Presenter)**, Washington State University
Carlie Knox, Washington State University
Jenny Wiley, RTI International
Rebecca Craft, Washington State University **Title:** A sex comparison of morphine and delta-9-tetrahydrocannabinol interactions on inflammatory pain in rats
Abstract Category: Original Research **Abstract Detail:** Animal Study **Drug Category:** Marijuana/Cannabinoids **Other Drug Category:** Op **Topic:** Drug Interactions **Aims:** Opioid-cannabinoid antinociceptive synergy has been demonstrated in male animals. However, sex differences in opioid and cannabinoid antinociception have been observed. The purpose of this study was to examine morphine-tetrahydrocannabinol (THC) interactions on antinociception in male and female rats to determine whether low doses of each drug were more effective when given in combination than when given alone. **Methods:** Sprague Dawley rats, 60-100 days old were used (N=111). Inflammation was induced by intraplantar injection of complete Freund's adjuvant. Twenty-four h later, morphine (0, 0.32 or 1.0 mg/kg, s.c.) and THC (0, 0.32 or 1.0 mg/kg, i.p.) injections were given and nociceptive testing was conducted 30, 90 and 180 min post-injection. Mechanical allodynia, heat hyperalgesia, biased weight bearing, and locomotor activity were assessed at each time point.**Results:** At the doses tested, morphine alone was anti-allodynic and reversed pain-suppressed locomotor activity, but was not anti-hyperalgesic and did not attenuate biased weight-bearing. THC alone had no significant effect on any test. When morphine and THC were combined, they produced significant anti-allodynia, but no significant changes in anti-hyperalgesia, biased weight bearing or locomotor activity. The anti-allodynic effects of the drug combinations were significantly greater than the anti-allodynic effects of morphine alone. There were no significant sex differences in these effects.**Conclusions:** The present results suggest that combining morphine and THC may result in enhanced antinociception in both sexes. Restoration of pain-suppressed locomotion seen with morphine alone was not apparent with morphine-THC combinations, suggesting that this combination may be sedative. Isobolographic analysis will be conducted to determine whether there is antinociceptive synergy between morphine and THC. **Financial Support:** This research was supported by funds from the National Institute on Drug Abuse (DA-016644).

Abstract - ID: 443 **Author(s):** Kayla Tormohlen **(Presenter)**, Johns Hopkins Bloomberg School of Public Health
Karin Tobin, Johns Hopkins Bloomberg School of Public Health
Carl Latkin, Johns Hopkins Bloomberg School of Public Health **Title:** Sources of stress and their correlates among adults who use drugs **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Behavior **Aims:** This study aimed to examine sources of stress among a sample of people who use drugs (PWUD), and explore individual, social and neighborhood level correlates of stress. **Methods:** The data is from the baseline survey of a longitudinal RCT testing an intervention to reduce depressive symptoms. Study participants were 18 to 55 years old and reported injecting drugs in past week, or snorting heroin and/or cocaine or smoking crack within the past 6 months. Sources of stress were assessed using 11 items from the baseline survey. Factor analysis was conducted to identify factors of the sources. Exposure variables included, sex, race, age, education, homelessness, arrest within past year, depression score (CES-D), sharing cookers in past 6 months, use of shooting gallery in past 6 months, and smoking crack in past 6 months. Independent group t-test and multiple linear regression analyses were completed to assess the relationship between exposures and categories of stress. **Results:** The sample was comprised of 473 adults. Three types of stress were identified: stress from income generation to obtain drugs (income stress), stress from neighborhood and interpersonal relationships (micro environment stress), and stress related to interactions with others about drug use (social stress). A CES-D score of 23 or higher was associated with increased income stress. Homelessness, arrest in past 6 months, and a CES-D score of 23 or higher were associated with higher micro environment stress. Use of a shooting gallery in past 6 months and a CES-D score of 23 or higher were correlated with increased social stress. **Conclusions:** In this sample of PWUD, we identified three different sources of stress. Income stress was the most common and high CES-D score was associated with all sources of stress. This suggests that programs to reduce depressive symptoms may impact stress. Overall, stress is a complex construct that requires in-depth exploration, especially among PWUD.
Financial Support: 1R01 DA022961 National Institute on Drug Abuse (NIDA) Drug Dependence Epidemiology Training Program (T32DA007292)

Abstract - ID: 444 **Author(s):** Sunny Jung Kim **(Presenter)**, Geisel School of Medicine at Dartmouth
Jesse Dallery, University of Florida
Mary Brunette, Geisel School of Medicine at Dartmouth
Lisa Marsch, Geisel School of Medicine at Dartmouth
Jeff T. Hancock, Stanford University
John A. Naslund, Dartmouth College **Title:** Persuasive antismoking interventions via Facebook, email-listserv, and MTURK **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Behavior **Aims:** We employed persuasion strategies to develop and evaluate social media- and crowdsourcing-based interventions for smoking reduction and cessation. We delivered various levels of informational and social support to current smokers and examined the acceptability, feasibility and persuasion effects of three antismoking interventions.**Methods:** We used Amazon Mechanical Turk (MTurk) to solicit applications (N=223). Among 173 applicants who confirmed their interest, 46 U.S.-based eligible smokers were randomly assigned to one of the three conditions. During the 4-week intervention, participants in the Email-Listerv (n=15) and Facebook (n=16) conditions received 56 antismoking materials. Only Facebook Group participants had outlets to receive social support and engage with other group members. MTurk participants (n=15) did not receive these antismoking messages or social support. All participants completed a baseline survey, weekly surveys and a 2-week follow-up survey via MTurk**Results:** Participants significantly reduced the number of weekly-smoked cigarettes measured at baseline and at follow-up, $t(45)=9.51$, $pM_d=80.91$, $SD_d = 57.70$, 95% CI=63.78-98.05. We achieved 100% study retention throughout the six-weeks of the intervention period. Smoking reduction did not differ across conditions, $F(2,43)=1.56$, $p=.22$. Perceived social support was significantly higher among Facebook Group participants ($M=4.63$, $SD=.71$), compared to Email-Listserv participants ($M=3.64$, $SD=1.15$) and MTurk participants ($M=3.38$, $SD=1.32$), $F(2,43)= 5.79$, $p = .006$, $?^2=.21$. Among all secondary outcomes, the sustained motivation to quit was a significant predictor of reduced number of weekly consumed cigarettes when baseline smoking was adjusted, $B=10.79$, $SE=5.27$, $F(1, 45)=4.18$, $p=.05$, 95% CI=.12-21.47. **Conclusions:** We leveraged Facebook, Email, and MTurk to disseminate antismoking content, practice rapid outreach to smokers in the US and to provide social support to current smokers. Social media and crowdsourcing platforms were feasible and acceptable in delivering antismoking interventions, maintaining motivation to quit, and promoting smoking reduction and cessation**Financial Support:** P30DA029926

Abstract - ID: 445 **Author(s):** Luis Segura **(Presenter)**, Columbia University
Julian Santaella-Tenorio, Columbia University
Christine Mauro, Columbia University
Silvia Martins, Columbia University **Title:** Is nonmedical prescription opioid and/or marijuana use associated with higher major depression prevalence among U.S. young adults? **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Epidemiology **Aims:** There is little evidence of the interrelationship between major depressive episodes (MDEs) and nonmedical users of prescription opioids only (NMUPO) in young adults young adults over time. We examined associations and significant changes overall and by gender from 2005–2014 in past-year MDE prevalence among four past-year user categories: NMUPO, marijuana users only (MU), NMUPO and MU, and non-users using a US nationally representative sample of young adults.**Methods:** We used data from 18–34 year-olds (n=237,116) from the 2005–2014 National Survey on Drug Use and Health. Weighted linear regression models estimated overall, and by gender, past–year MDEs prevalences among three user categories and non-users. **Results:** The past-year MDE prevalence among young adults in the overall sample was 8.1% [8.0%– 8.3%], and was higher for women than men (10.5% [10.3%–10.8%] vs. 5.7% [5.5%–6.0%]). The yearly MDE prevalence remained stable in the overall population and by gender (6.6% [6.0%–7.3%] in 2005, and 6.9% [6.4%–7.4] in 2014). Reporting any drug use was associated with an average increase in the past–year MDE prevalence compared to nonusers. The effect in MDE prevalence among any drug use was moderated by gender, with females that used both NMUPO and MU with the highest MDE prevalence (24.12% [23.32%–26.97%). MDE prevalence declined on average 0.4% [0.1%–0.7%] for those 26–34 yrs, particularly in females.**Conclusions:** While MDE remained stable across time in young adults, MNUPO and/or MU was associated with an increased change in past-year MDE prevalence, particularly in NMPO and marijuana users, with a stronger effect in females. These findings could be explained by MDE self-medication and inadequate treatment (~50% of young adults in this sample received no medical attention for MDE). **Financial Support:** CONACYT scholarship (Segura), R01DA037866 (Martins, PI) Colciencias and Fulbright Scholarships (Santaella-Tenorio).

Abstract - ID: 446 **Author(s):** Luke Legakis **(Presenter)**, Virginia Commonwealth University
S. Stevens Negus, Virginia Commonwealth University **Title:** Chemotherapy effects on motivated behaviors in male and female rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Opiates/Opioids **Other Drug Category:** Paclitaxel - Chemotherapy Induced Neuropathic Pain **Topic:** Sex Differences **Aims:** Paclitaxel is a cancer chemotherapy with adverse effects that include chemotherapy-induced peripheral neuropathy (CIPN) and neuropathic pain. Opioid analgesics are used clinically during or after chemotherapy to treat pain due to cancer or CIPN, but opioid addiction is a risk. This study evaluated antinociceptive and abuse-related effects of repeated morphine in female and male rats treated with paclitaxel.**Methods:** Sprague-Dawley rats (n=44) were treated with saline or a paclitaxel regimen (2.0 mg/kg x 4 injections; total dose=8.0 mg/kg) sufficient to produce peripheral neuropathy and mechanical allodynia. On days 22-29 after initiation of saline/paclitaxel treatment, rats were treated with morphine and tested in assays of (1) von Frey filament-induced paw withdrawal to assess mechanical allodynia or (2) intracranial self-stimulation (ICSS) to assess abuse-related effects. Cumulative morphine doses (0.32-10 mg/kg) were administered on Days 22 and 29. On days 23-28, rats received 3.2 mg/kg/day morphine, which was the lowest dose to produce full antinociception on Day 22.**Results:** Paclitaxel produced sustained mechanical allodynia but did not alter baseline ICSS performance. Morphine produced dose-dependent antinociception on Day 22, and tolerance developed to this effect on Day 29. There were no sex differences in morphine potency, efficacy, or tolerance. In ICSS, morphine produced primarily abuse-related ICSS facilitation on Day 22 in females, but only ICSS depression in males. Repeated morphine produced tolerance to ICSS rate-decreasing effects and enhanced expression of ICSS facilitation in both sexes. Effects of repeated morphine were similar in saline- and paclitaxel-treated rats.**Conclusions:** These results suggest that repeated morphine produces antinociceptive tolerance but enhanced rewarding effects in paclitaxel-treated rats. Females were initially more sensitive to abuse-related morphine effects, but repeated treatment eliminated this sex difference. **Financial Support:** R01 NS070715, F30CA213956

Abstract - ID: 447 **Author(s):** Brittany Carney **(Presenter)**, Boston University School of Medicine
Scott Hadland, Boston University School of Medicine
Sarah Bagley, Boston University School of Medicine **Title:** The catalyst clinic: Implementing a primary care-based, multidisciplinary team approach for adolescents and young adult who use substances **Abstract Category:** Program Descriptions **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Adolescent

Aims: Adolescents and young adults with substance use disorders (SUD) have limited access to evidenced-based treatment. Office-Based Addiction Treatment (OBAT) is a widely disseminated, evidence-based approach used for the treatment of adults with SUD, but has not been adapted for the care of youth. To bridge this treatment gap and adapt OBAT for youth, we established the CATALYST Clinic (Center for Addiction Treatment for AdoLescents/Young adults who use SubsTances) in 2016. **Methods:** The CATALYST Clinic is an SUD treatment program located in adolescent and adult primary care, providing team-based care in a general health setting for patients (? 25 years old) with SUD. We adapted the OBAT model to serve adolescents/young adults through a comprehensive, interdisciplinary team-based approach. Services include substance use disorder assessment, diagnosis and treatment (including buprenorphine/naloxone or naltrexone); nurse care management; individualized therapy with a licensed clinical social worker; linkage to child and adult psychiatry; and outreach and recovery support through patient navigation. Future research efforts will provide an implementation framework for understanding individual and programmatic outcomes of this innovative model. **Results:** Facilitators of the interdisciplinary, team-based model include 60-minute, weekly meetings to discuss challenging cases, committed team members, and wrap-around approaches including case management. In addition, the development of administrative and systematic infrastructure was critical to successful clinical implementation. Barriers include limited patient engagement and ambivalence to establish care, particularly among adolescents. **Conclusions:** The CATALYST Clinic has adapted an adult OBAT model for a transitional age group with SUD. As we expand our clinical services, we plan to use implementation science methodology to rigorously study how to translate OBAT for youth.

Financial Support: Funding for CATALYST is provided by a gift from the Jack Satter Foundation and a grant from SAMHSA via the Massachusetts Department of Public Health, Bureau of Substance Abuse Services.

Abstract - ID: 448 **Author(s):** Bertha Madras **(Presenter)**, McLean Hospital
Peter Meltzer, Organix, Inc.
Elijahu Livni, Massachusetts General Hospital
Ali Bonab, deceased MGH
Alan Fischman, deceased MGH **Title:** PET imaging detects dopamine transporter occupancy of new psychoactive substances: Alpha-PVP, pyrovalerone and analogs **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Club/Designer Drugs **Topic:** Mechanisms of Action **Aims:** Pyrovalerone (Schedule 5), the alpha-PVP analog (Schedule 1), and others were initially produced for legitimate medicinal and scientific purposes. Some analogs, categorized as New Psychoactive Substances (NPS), have entered the illicit market. Pyrovalerone and alpha-PVP are potent inhibitors of the dopamine transporter (DAT) in vitro, yet whether pyrovalerone, alpha-PVP, or other pyrovalerone analogs occupy the DAT in living brain is unknown. To address the void, we monitored DAT occupancy of 11 pyrovalerone analogs to determine whether in vitro DAT potencies predict DAT occupancy in brain, and whether occupancy levels were similar to reported occupancies of therapeutic drugs (methylphenidate, modafinil, bupropion) that target the DAT.**Methods:** DAT occupancy (1 mg/kg) was measured in living brain of rhesus monkeys with the DAT probe [^{11}C]CFT ([^{11}C]WIN 35,428). Occupancy was calculated on the basis of reduced [^{11}C]CFT baseline binding potential one hour after administration of the test compound and compared to (-)-cocaine occupancy. **Results:** (-)-Cocaine occupied 49% of striatal DAT sites within 15 min of administration, but after 1 hour DAT occupancy was too low to quantify. Novel pyrovalerone analogs occupied 48% or more DAT sites in brain within one hour of injection. O-2439 and O-2443 occupied 89% or 87% of DAT sites, even though *in vitro* potencies (266 nM; 30.2 nM, respectively) differed by 8-fold. (*RS*)-pyrovalerone (75%) and alpha-PVP (80%) occupied most of available DAT sites within 1 hour. DAT occupancies by pyrovalerone analogs did not correlate positively with DAT potencies*in vitro*, but instead correlated inversely with lipophilicity. Alpha-PVP occupancy of DAT was higher than reported occupancies by therapeutic drugs. **Conclusions:** Our data on DAT occupancy and reported in vivo potencies for producing cocaine-like behavioral effects, are unable to distinguish the abuse liability of pyrovalerone and alpha-PVP even though pyrovalerone currently is classified in Schedule 5 (lowest abuse potential), whereas alpha-PVP resides in Schedule 1. Other specific 4-aryl substituted pyrovalerone analogs occupied even higher proportions of DAT sites, portending abuse liability, and possibly psychosis. Monitoring DAT occupancy of newly emerging psychostimulant designer drugs is an expedient, albeit imperfect process for identifying or fortifying predictions of abuse liability and decisions on scheduling, especially if chemical analogy and *in vitro* potency are the only extant parameters. Currently, there is no concensus on a threshold for DAT occupancy that is reliably predictive of adverse events related to DAT occupancy. **Financial Support:** NIH-NIDA: DA11558 (BKM); NIH-NIDA: DA15305 (BKM); NIH-NIDA: DA06303 (BKM); NCRR: RR00168 (BKM); DA1-8825 (PCM); DA11542 (PCM).

Abstract - ID: 449 **Author(s):** Lewei (Allison) Lin **(Presenter)**, University of Michigan
Amy Bohnert, University of Michigan
Paul Christine, University of Michigan
Donovan Maust, University of Michigan **Title:** Provider characteristics and opioid prescribing among primary care physicians treating Medicare patients in the US **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Epidemiology **Aims:** The dramatic rise in sales of prescription opioids in the U.S. has contributed to the rise in overdose deaths and other adverse outcomes. Although there is variability in prescriber attitudes on use of opioids, little is know about how specific provider characteristics are associated with opioid prescribing. This study examined physician characteristics and opioid prescribing among all U.S. primary care physicians prescribing opioids to Medicare patients. **Methods:** Data were aggregated at the physician level from outpatient Medicare claims from 2014. Relationships were examined between provider characteristics, which included provider gender, location, clinical specialty, and categories of years in practice, with percent of patients prescribed opioids. Analyses adjusted for patient-mix characteristics at the provider level, including the CMS Hierarchical Condition Categories risk score for medical morbidity, percent of patients age ?65, and percent of patients receiving low income subsidy**Results:** 153,051 primary care physicians were included. On average, 20% of a physician's Medicare patients are prescribed opioids and patients receive on average 80 days supply of opioids. Female physicians prescribe opioids to lower percentage of patients (19.3%, 95% CI 19.2-19.3%) compared to male providers (21.0% 95% CI 20.9-21.1%). Physicians in practice < 5 years prescribed to 19.9% (95% CI 19.7-20.1%) and physicians in practice ? 5 years prescribed to 20.4% (95% CI 20.4-20.5%) of patients. Geriatric medicine physicians prescribed to 24.0% (95% CI 23.4-24.6%) of patients compared to 19.8% (95% CI 19.7-19.9%) for internal medicine and 20.6% (95% CI 20.5-20.6%) for family practice physicians. Results remained similar after adjusting for patient-mix characteristics and geographic location.**Conclusions:** Primary care physician characteristics were associated with differences in opioid prescribing. Future studies should examine variability in provider attitudes that mediate these findings to inform strategies to promote safer opioid prescribing. **Financial Support:** Univ. of Michigan, Dept. of Psychiatry

Abstract - ID: 450 **Author(s):** Denis Antoine **(Presenter)**, Johns Hopkins University School of Medicine
Eric Strain, Johns Hopkins University School of Medicine **Title:** An exploration of the effect of acute morphine administration on taste acuity and feeding behavior **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Behavior **Aims:** Obesity is a worldwide epidemic that continues to rise. There is a biological interplay between drug use and feeding behavior. Opioids are known to contribute to weight gain in long-term use and taste acuity is an understudied aspect of feeding behavior in which opioid receptors play a role. Acute opioid administration could decrease taste acuity leading to increased caloric intake. The aim of this study was to quantitatively explore the effect of acute morphine administration on taste acuity thresholds and caloric intake. **Methods:** Fifteen healthy non-drug dependent participants were consented to a 3-day outpatient study. Each study day, detection, recognition, and hedonic taste acuity thresholds for sweet and salty tastants were measured followed by a randomized subcutaneous injection of morphine (placebo, 1mg, or 4mg), a second taste acuity measurement, then an ad-libitum meal. Participants were designated as morphine discriminators if the peak drug effect VAS score for morphine was 20 points higher than that for placebo. ANOVA analyses examined the effect of drug condition and discriminator status on taste acuity thresholds, as well as caloric and nutrient intake level**Results:** Mean age was 32 years old and mean BMI 25. Fifty-three percent were female, 47% were African-American. There were eight discriminators (53%). Discriminators had a dose-dependent decrease in the detection threshold for sweet tastants ($p < 0$ .05), while non-discriminators had no statistically significant difference in taste acuity between drug conditions. There was no statistically significant effect of morphine on total caloric intake. **Conclusions:** Findings suggest there may be a dose-dependent effect of acute morphine administration on the detection threshold for sweet tastants that may be mediated by the ability to distinguish opioid from placebo. Further research is needed to characterize the biological determinants of taste acuity and related factors that may alter feeding behavior**Financial Support:** NIDA T32DA023186 andNIDA K24DA023186

Abstract - ID: 451 **Author(s):** Alison Wakeford **(Presenter)**, Yerkes National Primate Research Center
Sara Bramlett, Emory University
Mar Sanchez, Yerkes National Primate Research Center
Leonard Howell, Emory University **Title:** Effects of early life stress on vulnerability to cocaine self-administration in male and female rhesus macaques **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Behavior **Aims:** Early life stress (ELS) is a strong predictor for the emergence of cocaine abuse in adolescence. While ELS can be defined in many ways, maternal abuse and neglect constitutes an extreme form of ELS, leading to the development of anxiety and anxious behaviors that persists into adolescence. Additionally, women show a higher prevalence of anxiety as well as a greater susceptibility in progressing from drug experimentation to drug dependence. Rhesus monkeys show a similar distribution of maternal care, and the prevalence of this abuse is similar in captivity as it is in the wild, providing researchers with a unique opportunity to study an organic model of ELS that is not experimenter induced. **Methods:** Accordingly, we examined whether male (n = 4) and female (n = 3) rhesus monkeys maltreated early in life show differential sensitivity to the reinforcing effects of cocaine using drug self-administration (SA). Animals were trained to respond under a fixed-ratio 20 response (FR 20) schedule of reinforcement to receive an infusion of cocaine (0.01-0.1 mg/kg/infusion). After meeting criteria for stable SA, animals progressed through a full dose-effect curve to establish the dose that engendered the highest response rate while allowing animals to receive all possible infusions (maximum of 20). Rate of acquisition (days to acquire), cocaine consumption (total cocaine intake, mg/kg/session), sensitivity to (dose engendering stable SA) and magnitude (response rate, responses/sec) of the reinforcing effects of cocaine were examined in both groups. **Results:** There were no differences in rate of acquisition between males and females. Both males and females acquired self-administration at relatively low doses. Females consumed less cocaine in comparison to males and males demonstrated a greater response rate than females. **Conclusions:** These preliminary data suggest that males maltreated early in life may have a greater sensitivity to the reinforcing effects of cocaine. However, based on the limited sample having completed all phases of self-administration, robust sex differences were not observed across multiple outcome measures. This may be indicative of a strong effect of ELS independent of sex, or that sex differences may emerge as more subjects complete these experiments. **Financial Support:** This research was supported by USPHS grants DA 038588 (MMS/LLH), DA 010344 (LLH), DA 031246 (LLH), and P51OD11132 (YNPRC).

Abstract - ID: 452 **Author(s):** Andrea Devereaux **(Presenter)**, Concordia University Wisconsin School of Pharmacy
Jason Healy, Thomas Jefferson University
Nicholas Griggs, University of Michigan
John Traynor, University of Michigan
Rae Matsumoto, Touro University California
Andrew Coop, University of Maryland School of Pharmacy
Christopher Cunningham, Concordia University Wisconsin **Title:** Benzylideneoxymorphone: A new lead for development of bifunctional mu/delta opioid receptor ligands **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Opiates/Opioids **Topic:** Chemistry **Aims:** Chronic opioid use is currently a widespread epidemic across the United States. The classic opioids, like morphine and oxycodone, inhibit nociceptive processing, but also result in harmful consequences like tolerance and dependence. Our overall goal is to identify and develop small molecule analgesics that are mu opioid receptor (MOR) agonists and delta opioid receptor (DOR) antagonists to inhibit pain, but not produce tolerance and dependence. Previous studies have shown that benzylidenenaltrexone (BNTX) is a MOR/DOR antagonist; since N-substituents in the 4,5-epoxymorphinan series are known to modulate MOR efficacy, we hypothesized that N-methyl, -phenethyl, and -phenylpropyl BNTX analogues would selectively enhance MOR efficacy while maintaining low DOR efficacy resulting in a MOR agonist/DOR antagonist. **Methods:** Three analogues of oxymorphone were generated by reaction of oxymorphone, N-phenethyl- and N-phenylpropylnoroxymorphone with benzaldehyde under basic conditions. We also improved the conditions to convert oxymorphone to benzylideneoxymorphone (BOM) by using microwave heating over the course of 1 hour. The compounds were evaluated in vitro in hMOR, hDOR, hKOR-transfected Chinese hamster ovary (CHO) cells using the [35S]GTP-gamma-S functional assay. Compounds were evaluated in vivo (mice) using the hot plate and tail flick nociceptive tests. **Results:** 7-Benzylidene-substituted analogues were synthesized in greater than 60% yield using benzaldehyde, sodium hydroxide in methanol at 0 degrees for 18 hours. These conditions were improved using microwave assisted heating conditions at 160 degrees for 1 hour using piperidine. In vitro testing determined that MOR/DOR affinity and potency were negatively correlated with N-substituent length. Of the compounds tested in vitro, benzylideneoxymorphone (BOM) was found to be the most potent, bifunctional MOR-partial agonist/DOR antagonist. In vivo, BOM (60 mg/kg) was found to generate significant antinociceptive effects with E_{max} ~40% Maximum Possible Effect (MPE) with a T_{max} of 50 min in the hot plate test and Emax of approximately 60% in the tail flick test between 30-50 min. **Conclusions:** Combined, BOM acts as a bifunctional MOR partial agonist/DOR antagonist that produces antinociceptive effects after parenteral administration in vivo. This means BOM is a new useful lead compound for developing analgesics lacking dependence liability. Understanding how the structural features of BOM influence MOR efficacy and potency is the subject of our current investigation. **Financial Support:** National Institute on Drug Abuse (NIDA): DA 13583 (AC): DA 021049 (C.W.C): DA 039997 (J.R.T). J.R.H. is supported by the National Institutes of Health Postdoctoral training grant no. T32GM008562. C.W.C. is supported by internal funds from Concordia University of Wisconsin.

Abstract - ID: 453 **Author(s):** Danielle Ramo **(Presenter)**, UCSF
Mark Rubinstein, UCSF **Title:** Marijuana use is associated with poorer smoking cessation treatment outcomes in young adults **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Treatment **Aims:** Co-use of marijuana with tobacco is common among young adult smokers; yet it is unclear whether and to what extent co-use interferes with outcomes from smoking cessation treatment. This study examined smoking profiles as a function of marijuana use among young adults participating in a social media smoking cessation intervention trial.**Methods:** Young adult smokers (N=500; age 18-25) were recruited online and randomized to either the 3-month Tobacco Status Project (TSP) intervention or a referral to a smoking cessation website (Smokefree.gov; control). TSP included assignment to a private Facebook group tailored to readiness to quit smoking, daily Facebook contacts, weekly live counseling sessions, and for those ready to quit, 6 additional Cognitive Behavioral Therapy counseling sessions. At baseline, smoking profiles were examined as a function of cannabis use. At intervention end (3 months), smoking outcomes (reported abstinence, reduction of smoking by at least half, readiness to quit smoking) were examined as a function of cannabis use, covarying for group assignment and smoking severity at baseline **Results:** The sample was 73% non-Hispanic White and 55% female with 87% daily smokers, 48% smoking 10 or fewer cigarettes per day, and averaging 2.8 years smoking (SD=.6); 21% intended to quit smoking in the next 30 days. Half (51%) reported current marijuana use at baseline. Compared to nonusers, marijuana users were more likely to identify as social smokers (75% vs. 67%, χ^2=4.3, p=.039) and reported greater difficulty in remaining abstinent from tobacco (likert scale 1-10; 7.1 vs. 7.8, F=6.9, p=.009). There was no association between marijuana and tobacco use severity (quantity/frequency, dependence). At intervention end (3 months), marijuana users were less likely to report 7-day abstinence (6.4% vs. 14.2%) and less ready to change (34% vs. 41% in preparation stage of change; all p **Conclusions:** Despite similarities in tobacco use severity between co-users of marijuana, young adult smokers who use marijuana had poorer short-term cessation treatment outcomes. Findings illustrate the complex relationship among marijuana and tobacco use and highlight the need for further exploration into the potential reinforcing effect of marijuana on tobacco use in young adults.**Financial Support:** K23 DA032578, P50 DA09253

Abstract - ID: 454 **Author(s):** Landhing Moran **(Presenter)**, NIDA Intramural Research Program
David Epstein, NIDA Intramural Research Program
William Kowalczyk, NIH
Karran Phillips, NIDA
Vahabzadeh Massoud, NIDA Intramural Research Program
Mustapha Mezghanni, NIDA Intramural Research Program
Kenzie Preston, NIDA Intramural Research Program **Title:** Sex differences in daily life stress and craving in drug-dependent patients **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Sex Differences **Aims:** Responses to stress are among the more reliable sex differences. In this study, we examined sex differences in the contexts and causes of stress, and in the relationship between stress and craving. We tested these differences in real time, using ecological momentary assessment. **Methods:** Outpatients on opioid-agonist maintenance (n=182) reported stress, craving, and behavior on smartphones for up to 16 weeks. They initiated an entry each time they felt more stressed than usual (stress event) and made randomly prompted entries (RPs) 3 times/day. In stress-event entries, they identified the causes, rated the severity of stress and craving, and indicated the context of the report (location, activity, companions). **Results:** The main reasons given for stress events were conflict (19% of stress events), just thinking about stressful things (18%), and problems with money (17%). Reasons did not differ significantly by sex, although there was a trend for men to report “having too much to do” more frequently than women (17% vs. 10%). In terms of context, women reported arguing during stress events more than men (9% vs. 8%) despite there being no sex difference in the base rates of arguing (assessed via RPs). Women tended to report walking or riding more often in stress events compared to men (29% vs. 28%) and less often in RPs (20% vs. 22%). Craving increased linearly across stress-severity ratings (RPs, opioids: $F(1,550) = 1336$, $p < 0.001$; RPs, cocaine, $F(1,550) = 294$, $p < 0.001$; stress events, opioids: $F(1,79)=19.2$, $p < 0.001$; stress events, cocaine: $F(1,79)=6.4$, $p < 0.05$). For opioid craving in RPs, the increase as a function of stress was greater for women than men, $F(4,550)=29.8$, $p < 0.001$. **Conclusions:** Information about these sex differences in daily-life stress and craving may help in the development of treatments that are better tailored for men and women. **Financial Support:** NIDA-IRP

Abstract - ID: 455 **Author(s):** Verena Metz **(Presenter)**, Columbia University and NYSPI
Jermaine Jones, Columbia University College of Physicians and Surgeons
Jeanne Manubay, Columbia University
Maria Sullivan, Alkermes, Inc.
Shanthi Mogali, Columbia University and NYSPI
Andrew Segoshi, New York State Psychiatric Institute
Gabriela Madera, Columbia University
Kirk Johnson, Xoma Corporation
Sandra Comer, Columbia University and NYSPI **Title:** Effects of ibudilast on subjective, reinforcing and analgesic effects of oxycodone and drug craving in recently detoxified adults with opioid dependence **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Behavior **Aims:** This study was designed to examine the influence of ibudilast (ibu), a non-selective phosphodiesterase inhibitor, on subjective, reinforcing and analgesic effects of oxycodone (oxy) and drug craving in human volunteers diagnosed with opioid dependence (DSM IV).**Methods:** Non-treatment seeking male opioid users (n=11) underwent an inpatient detoxification with morphine, followed by randomization to maintenance on placebo (0mg ibu BID) and ibu (50mg BID) in a cross-over design. Under each maintenance dose, 6 experimental sample and choice sessions were completed involving an oyx self-administration paradigm (0mg, 15mg, 30mg oral oxy/70kg). Subjective effects of oxy and drug craving were measured with visual analog scales (VAS) and a Drug Effects Questionnaire. The cold pressor test was used to produce pain, and a modified progressive-ratio choice procedure was used to measure the reinforcing effects of oxy. Mixed-model ANOVAs were used for comparisons of mean in-between and within-subjects effects.**Results:** Under ibu vs. placebo, ratings of drug liking following 15mg of oxy were decreased significantly (p=0.012). The mean drug breakpoint value was also significantly lower in the ibu vs. the placebo condition under the 15mg oxy dose (p=0.035), with a trend for the 30mg oxy dose (p=0.099). Heroin craving was significantly reduced under ibu versus placebo (0mg oxy: p < 0 .001, 15mg oxy: p < 0 .001, 30mg oxy: p=0.016), and similar effects were observed for tobacco and cocaine craving. Furthermore, mean subjective pain ratings (McGill Pain Questionnaire) were lower in the active ibu condition (p=0.018 for 15mg oxy, p=0.046 for 30mg oxy). **Conclusions:**

In a non-treatment seeking OUD population ibu has demonstrated significant decrease in drug liking, mean drug breakpoint value (at 15mg oxy) and significant decrease in craving across several addictive agents (heroin, tobacco and cocaine). Ibu also has shown enhancement of analgesia with the 15mg oxy dose.

Financial Support: NIDA DA09236, DA037842 & Medicinova.

Abstract - ID: 456 **Author(s):** Georgiy Bobashev **(Presenter)**, RTI International
Lee Hoffer, Case Western Reserve University
Kira Tebbe, Yale University **Title:** Polydrug use among opioid users: Results from the national and local studies **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Epidemiology **Aims:** 1. To estimate patterns of polydrug use among opioid users from a National Survey on Drug Use and Health (NSDUH) and an ethnographic study of heroin users in Ohio . 2. To evaluate the change in national patterns over time. **Methods:** Cluster analysis methods were used to identify patterns of polydrug use in terms of the types of trugs and in terms of frequency of use. **Results:** We will present National and local patterns of polydrug use among opiate and heroin users. Data from the National Survey of Drug Use and Health (NSDUH) have shown that among opioid users over 80% have reported the use of other drugs. Advanced clustering algorithms uncovered distinct patterns among opioid users who use one or more other drugs (including alcohol). One of the patterns could be interpreted as heavy polydrug users who daily or almost daily use prescription opioids, other illegal substances, as well as marijuana and alcohol. The largest group included non-daily use of prescription opiates, alcohol and very occasional use of the other drugs. Other patterns vary in terms of the numbers, types and frequency of drug use but provide a distinct classification of use types. These patterns changed little over the last several years. The analyses of polydrug patterns among heroin users in Cleveland, OH area show similarities with the national patterns, but also indicate that the availability heroin and crack in the area is very high, similar to marijuana availability. **Conclusions:** We present national polydrug patterns among opioid users. From prevention perspective understanding the use of multiple drugs highlights distinct pathways to opioid addiction, such as transition from prescription opiates to heroin and then to other drugs, or from recreational use of multiple lighter drugs to heroin and prescription opiates. From the treatment perspective addressing polydrug use uncovers a bigger challenge than the treatment of just opioid dependence. **Financial Support:** An R01DA025163 from NIDA

Abstract - ID: 457 **Author(s):** Margo Godersky, Boston University School of Public Health
Alexander Walley, Boston University School of Medicine
Timothy Heeren, Boston University School of Public Health
Michael Winter, Boston University School of Public Health
Meg Sullivan, Boston University School of Medicine
Seville Meli, Boston University School of Public Health
Richard Saitz **(Presenter)**, Boston University School of Public Health **Title:** The importance of self-medication with substances in people with HIV infection and substance dependence **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** AIDS/Immune **Aims:** To explore prevalence and factors associated with self-medication (SM) with substances in people with HIV infection and substance dependence. **Methods:** In the Boston ARCH study we enrolled adults in HIV care who met criteria for substance dependence or who reported ever injecting drugs. During one interview we assessed self-medication (SM) with alcohol and illicit drugs (including misuse of prescription drugs) by asking, "In the past three months, have you used any of the following to treat pain or discomfort?" We compared those who reported SM to those who did not in bivariate analyses. Significant results at $p < 0.05$ are reported. **Results:** Of 250 adults, 248 had data on SM: 37% were female, 50% black, 25% Latino; 36% reported fair to poor health; 89% had CD4 cells >200; 50% reported SM with alcohol or other drugs. Those reporting SM were older (50 vs 47 yrs), less likely to be employed (11 vs 21%), and less likely to be taking antiretroviral medication or to have viral suppression while taking it (60 vs 81%). Those reporting SM reported more symptoms: of pain (severity mean 3 vs 2 and interference with activities 4 vs 2, on 1-10 scales), of HIV (mean scale score 11 vs 8), of depression (37 vs 23% scoring positive on the 2-item Patient Health Questionnaire), and of anxiety (57 vs 33% positive on the Overall Anxiety Severity and Impairment Scale). Past 30-day substance use was more common among those reporting SM: tobacco (88 vs 69%), heavy drinking (66 vs 35%), cocaine (42 vs 18%), opioid (35 vs 11%), sedative (14 vs 4%), marijuana (59 vs 29%), injection drugs (18 vs 4%), and any substance dependence (92 vs 70%). **Conclusions:** Self-medication (SM) with alcohol and other substances was common and associated with more use of every substance in people with fairly well-controlled HIV infection. That SM was associated with mental health symptoms, pain, and worse HIV disease control, suggests that better attention to symptoms might reduce substance use and improve clinical outcomes. **Financial Support:** NIAAA U01AA020784

Abstract - ID: 458 **Author(s):** Emanuel Krebs **(Presenter)**, BC Centre for Excellence in HIV/AIDS
Benjamin Enns, BC Centre for Excellence in HIV/AIDS
Jeong Min, BC Centre for Excellence in HIV/AIDS
Richard Rawson, UCLA-ISAP
Yih-Ing Hser, UCLA-ISAP
Bohdan Nosyk, BC Centre for Excellence in HIV/AIDS **Title:** High-value policy interventions in California's publicly funded treatment of opioid use disorder: A cost-effectiveness analysis **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** Less than half of the individuals receiving opioid use disorder (OUD) treatment in California (CA) in 2014 received evidence-based opioid agonist treatment (OAT). Regulations for OAT in CA are more stringent than existing federal regulations. We aimed to determine the cost-effectiveness of CA's publicly funded treatment of OUD and assess the value of policy interventions. **Methods:** We used a semi-Markov model populated with state-level treatment and criminal justice linked administrative data (2006-10). Modeled scenarios included (1) CA's clinical guidelines, (2) CA's current practice, (3) a 25% improvement in OAT retention, and (4) immediate access to maintenance-oriented OAT for all. For each scenario we estimated societal costs (in 2016 USD) and quality-adjusted life-years (QALYs) for a representative individual over a lifetime horizon.**Results:** Scenario 4 resulted on average in lower costs ($22,101 [95% credible intervals: $10,271, $34,637]) and higher QALYs gained (0.16 [0.14, 0.17]) compared to scenario 3. Scenario 3 resulted in lower costs ($5,142 [-$14,577, $24,033]) and higher QALYs gained (0.21 [0.17, 0.25]) compared to scenario 2, and scenario 1 was associated with higher costs and lower QALYs gained compared to all scenarios. Immediate access to maintenance-oriented OAT for all compared to current practice resulted in higher costs for treatment ($10,264 [$9,314, $11,242]) and health resource use ($7,092 [-$21,824, $36,054]) that were offset by crime-related cost savings ($44,600 [$42,053, $47,281]), realized because of the lower costs of criminality associated with the reduced time spent out of treatment. In this scenario, total lifetime savings for CA OUD treatment entrants in 2014 could be as high as $1.5 billion. **Conclusions:** Immediate access to maintenance-oriented treatment for all may be more effective and less costly than California's current practice for publicly-funded opioid use disorder treatment. **Financial Support:** U.S. National Institutes of Health (NIH) R01DA031727 (PI: Nosyk) R01 DA032551 (PI: Nosyk) P30DA016383 (PI: Hser)

Abstract - ID: 459 **Author(s):** Johannes Thrul **(Presenter)**, UCSF
Noah Gubner, UCSF
Louisa Holmes, State University of New York at Binghamton
Danielle Ramo, UCSF
Pamela Ling, UCSF **Title:** Differences in co-use of cigarettes with alcohol vs. marijuana among young adults: A daily diary study **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Other Drug Category:** Multiple substance use **Topic:** Behavior **Aims:** Cigarette smoking is associated with both alcohol and marijuana use. Cigarettes and alcohol have heightened rewarding effects when co-used, but less is known about drivers of cigarette and marijuana co-use. We investigated reasons for co-use along with detailed assessments of patterns and timing of use occasions. **Methods:** We used smartphones to collect self-reports from 35 diverse young adult smokers in the San Francisco Bay Area (age M=22, 54% male, 40% White, 60% daily smokers). Participants completed a baseline survey and 30 daily assessments of tobacco, alcohol, and marijuana use, including detailed questions about co-use (e.g., smoking cigarettes while using another substance) covering the previous day. Participants completed 68% of these assessments, contributing a total of 718 days (20.5 days per participant). Analyses used descriptive statistics, t-tests, and multilevel models accounting for clustered data. **Results:** At baseline, participants reported a strong increase in pleasure from smoking cigarettes under the influence of alcohol (M=4.48±0.62 on scale from 1–strong decrease to 5–strong increase), but not marijuana (M=3.32±1.11). Increased pleasure from smoking cigarettes after drinking was reported by 94% of individuals who drank alcohol; while responses varied for marijuana. Cigarette use was reported on 94% of the 718 days, alcohol use on 42%, and marijuana use on 45%. On 45% of co-use days, the majority of cigarettes were smoked under the influence of alcohol (vs. 16% for marijuana). In multilevel models predicting extent of co-use and controlling for demographics and smoking behavior, pleasure from co-using cigarettes and marijuana and extent of co-use approached significance (p=.067). **Conclusions:** Results suggest there are important differences how and why cigarettes are co-used with alcohol versus marijuana. Increased pleasure from smoking cigarettes when drinking may contribute to heavier smoking during drinking episodes for most participants. In contract, pleasure from smoking cigarettes under the influence of marijuana was variable, and may contribute to co-use in only certain individuals. **Financial Support:** National Cancer Institute CA-U01-154240 California Tobacco-Related Disease Research Program 25FT-0009

Abstract - ID: 460 **Author(s):** Brett Ginsburg **(Presenter)**, University of Texas Health Science Ctr at San Antonio **Title:** Effect of JWH-018 on prepulse inhibition of startle response **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Marijuana/Cannabinoids **Topic:** Behavior **Aims:** Synthetic cannabinoid use has increased over the past decade, leading to an increase in emergency department visits. Psychotomimetic effects including agitation, confusion, hallucinations and delusions are among the toxic effects reported that lead to the need for emergency care. Sensorymotor gating as assessed using prepulse inhibition of the startle response is diminished by psychotomimetics and in humans suffering from psychosis. Here, we determine the effect of a synthetic cannabinoid on prepulse inhibition of the startle response and the ability of a CB1 antagonist to reverse these effects.**Methods:** Adult male mice (C57/BL6) were tested for prepulse inhibition of the startle response to 120 dB tone exposure after no prepulse, or after prepulses of 74, 82, or 86 dB. Prepulses occurred for 15ms, 100ms before the 120dB tone. Startle response was measured during the 200ms period after the 120dB tone. Measures included time to onset of a response, maximal response, time to maximal response, and average response. Mice were tested following administration of JWH-018 (vehicle, 0.3, 1.0, 3.0 mg/kg), with at least one week between each test. Doses were administered in a mixed order so that no mouse received the same sequence of treatments.**Results:** JWH-018 produced dose-dependent decreases in the onset of the startle response. The 3 mg/kg dose produced an increase in the time to maximal response, a decrease in the intensity of the maximal response, and a decrease in the average response. Expressed as a percentage of control, the 86dB prepulse decreased the maximal startle response by 39%. Administration of 3 mg/kg JWH-018 decreased the maximal startle response (in the absence of a prepulse) by 26% and decreased the maximal response following the 86dB prepulse by 62‰**conclusions:** These results suggest that JWH-018 can blunt prepulse inhibition of startle, which is inconsistent with effects of other psychotomimetics. Thus, sensorymotor gating may be enhanced by synthetic cannabinoids, despite the occurrence of other psychotomimetic effects.
Financial Support: Department of Defense (JPC5): FA8650-15-C-6589

Abstract - ID: 461 **Author(s):** Kristen McLaurin **(Presenter)**, University of South Carolina
Rosemarie Booze, University of South Carolina
Charles F Mactutus, University of South Carolina **Title:** Protracted sex differences in the core components of executive function in the HIV-1 transgenic rat
Abstract Category: Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Sex Differences **Aims:** Approximately 73% of individuals with human immunodeficiency virus type 1 (HIV-1) will be 50 years or older by 2030 (Smit *et al.,* 2015). Although women represent a larger population of individuals living with HIV-1, they remain underrepresented in clinical and preclinical studies of HIV-1 associated neurocognitive disorders (HAND). Therefore, we sought to elucidate the effect of biologic sex on the core components of executive function, including sustained attention, flexibility, and inhibition, in the HIV-1 transgenic (Tg) rat at an advanced age. We hypothesized that biologic sex and genotype would affect the core components of executive function. **Methods:** Intact Fischer (F344/N) rats (Male (*n*=31): HIV-1 Tg, *n*=15; control, *n*=16; Female *(n*=36): HIV-1 Tg, *n*=18, control, *n*=18*)* were assessed at 18 months of age. All animals had prior experience on a stimulus detection task. Animals were challenged with signal durations of 10, 100, 1000 msec for 5 consecutive days to assess sustained attention. Reversal learning was subsequently assessed for up to 60 days to examine flexibility and inhibition. **Results:** At 18 months of age, signal detection revealed a prominent duration x measure x sex x genotype interaction [$F(2,126)=8.8$, $pGG < 0.001$]. A rightward shift in signal detection was observed in control females (55 msec) compared to HIV-1 Tg females (70 msec) and in control males (10 msec) compared to HIV-1 Tg males (70 msec). Reversal learning identified similar profound rightward shifts in signal detection, dependent on sex and genotype, suggesting deficits in flexibility and inhibition. **Conclusions:** The factor of biologic sex is a moderator of the influence of the HIV-1 transgene on signal detection at an advanced age, providing a strong foundation for examining the influence of comorbid substance abuse in older HIV-1 seropositive individuals. **Financial Support:** NIH grants R01DA013137, R01HD043680, R01MH106392

Abstract - ID: 462 **Author(s):** Aaron Dora-Laskey **(Presenter)**, University of Michigan
Patrick Carter, University of Michigan
James Cranford, University of Michigan
Anne Buu, University of Michigan
Maureen Walton, University of Michigan-Addiction Research Center
Marc Zimmerman, University of Michigan
Rebecca Cunningham, University of Michigan **Title:** Daily patterns of substance use and violence among a high-risk urban sample **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Behavior **Aims:** This study examined daily patterns of substance use and violence among emerging adults. **Methods:** Participants (n=352) from a 2-year study (Flint Youth Injury Study) of drug-using youth seeking ED care (for assault or other reasons) were enrolled in a 2nd study (FYI-2), in which they were randomized to complete daily or weekly assessments. This paper presents daily data (n=162); 19 items measuring substance use and violence (aggression and victimization, with peers or partners) were collected via either IVR (*N*=81) or text (*N*=81) over 90-days. **Results:** Participants [*N*=162; age=24.4; 62.3% African-American; 67% public assistance; 59% ED visit for assault] completed an average of 48.3 daily reports [SD=26.9; range=1-89]. Aggregating across the 90-days, prevalence of substance use was: 78% alcohol, 75% marijuana (MJ), and 17% illicit drugs; rates for non-medical prescription opioid, stimulant, and sedative use were 25%, 15%, and 19%. On average, participants reported 10 days of alcohol and 27 days of MJ use, with alcohol use highest on weekends. Of note, 34% of drinking days involved binge drinking, 5% involved concurrent opioid use. No weekend/weekday differences were noted for MJ. During the 90-day period, 27% of the sample reported violence, with 65% reporting one violent day and 53% of violence days occurring on weekends. Among 118 violence days, 42% were with a partner (58% non-partner); 61% involved aggression (58% victimization); and 53% involved severe violence (e.g., beat up, gun/knife use). Among those involved with violence, 45% reported using drugs, alcohol, or both in the 3 hours before the incident. Alcohol (OR=4.6, *p*p **Conclusions:** Among a high-risk sample, MJ use was more frequent than alcohol. Alcohol or MJ consumption increased the risk for violence, likely reflecting acute pharmacological effects (particularly for alcohol) and/or social ecological factors related to substance use. **Financial Support:** NIDA R01DA035183, CDC 1R49CE002099, and NIDA K23DA039341.

Abstract - ID: 463 **Author(s):** Carmen Masson **(Presenter)**, UCSF
Ida Chen, UCSF
James Sorensen, UCSF at Zuckerberg San Francisco General Hospital
Isabel Allen, UCSF
Evan Kletter, Baymark
Mandana Khalili, UCSF **Title:** Correlates of trust in online health information among patients in opioid treatment **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Technology Issues **Aims:** Despite the potential of the internet for improving access to health information, little is known about how marginalized groups use the internet for health information searches. This study describes internet use and examines correlates of trust in online health information among opioid dependent patients. **Methods:** Participants (N =195) recruited from an urban opioid treatment program completed an interviewer-administered survey on their use of and attitudes toward communication technologies. Using multivariate logistic regression we examined the association between technology acceptance constructs including performance expectancy, effort expectancy (i.e. ease of use), social influence, and facilitating conditions and trust in online health information adjusted for sociodemographic covariates (age, sex, race/ethnicity). **Results:** The sample was 47% women, 35% racial/ethnic minority, 72% had a high school education or less, 45% homeless in the past six months, with an average age of 39.3 (SD = 11.11). 82% had used the internet to search for health information at least once in the past 3 months. In multivariable analysis, effort expectancy [Adjusted Odds Ratio (AOR) = 1.10; 95% CI = 1.01-1.20] was positively associated with trust in online health information. In contrast, being homeless in the past six months (AOR = 0.42; 95% CI = 0.20-0.93) was negatively associated with trust in online health information. **Conclusions:** Those who found the internet easy to use were more likely to trust online health information. While individuals who had experienced homeless were less likely to view online health information as trustworthy. Use of the internet is rapidly expanding among vulnerable populations rendering it a promising means for delivering health care interventions. However, technology-based interventions for this population should consider not only its ease-of-use but also the influence of trust in technology on the acceptance and uptake of these interventions**Financial Support:** NIDA R21DA038304, UG1DA015815

Abstract - ID: 464 **Author(s):** Lauryn Walker **(Presenter)**, Virginia Commonwealth University
Briana Mezuk, Virginia Commonwealth University **Title:** Impact of mandatory minimum sentencing on crack and powder cocaine use **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Policy **Aims:** The Anti-Drug Abuse Act of 1986 (ADAA) set mandatory minimum prison sentences for drug charges. Under this law, 5g of crack cocaine was equivalent to 500g of powder cocaine for sentencing purposes. This 100:1 ratio was reduced to 18:1 under the Fair Sentencing Act of 2010 (FSA). The study assessed the impact of mandatory minimum sentences on crack and powder cocaine use under the differential sentencing initiated by ADAA and then reduced by FSA. The main hypothesis is that both crack and powder cocaine use decreased after ADAA, with a larger decrease in crack vs. powder cocaine. The second hypothesis is that crack use increased after FSA, while powder cocaine use was unchanged. **Methods:** Data come from the National Survey on Drug Use and Health. The 1985 & 1988 waves (N=6,518) were used to examine the impact of the ADAA; the 2009 & 2011 waves were used to examine the impact of the FSA (N=43,961). Weighted multivariable logistic regression was used to estimate the proportional change in past-year use of crack cocaine and past-year use of powder cocaine before and after implementation of each law. Z-tests were used to test for equality of coefficients across the estimates for change in crack vs. change in powder cocaine us**Results:** Use of crack did not significantly decline after the ADAA (odds ratio (OR): 0.88, p=0.52); use of powder cocaine was also unchanged (OR: 0.84, p=0.14). Additionally, there was no difference in the change of crack vs. powder cocaine use (Z-score: 0.18, p=0.85). Crack use declined after the FSA (OR: 0.57, $p < 0.01$), as did powder cocaine (OR: 0.81, $p < 0.01$). The difference between the decline in crack and powder cocaine after the FSA was not appreciable (Z-score: 1.89, p=0.06). **Conclusions:** Despite differential penalties for crack and powder cocaine use under the ADAA, there was no differential impact on use of cocaine. The reduction in penalties under the FSA did not differentially impact use: both forms of cocaine decreased over this period. These mandatory minimum policies have had little impact on powder or crack cocaine use in the US population. **Financial Support:** NSDUH is supported by SAMSHA; this analysis was not supported by any funding.

Abstract - ID: 465 **Author(s):** Jane Pearson **(Presenter)**, National Institute of Mental Health
Lisa Colpe, National Institute of Mental Health
Michael Schoenbaum, National Institute of Mental Health **Title:** National scope of adults in substance use treatment who attempt suicide **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** substance use treatment **Topic:** Treatment **Aims:** Despite decades of treatment advances for substance use (SU) and mental health problems, the US suicide rate has increased 24% rate in the past 15 years. To mobilize leaders and providers in care systems to change this trend, the authors, in support of the National Action Alliance for Suicide Prevention have strategically begun to model potential prevention approaches and their benefits, using population-based data from publically available sources. **Methods:** The initial step in modelling is identifying at risk individuals in various 'boundaried' populations or treatment settings. Colpe et al. (2014) described an approach based on individuals' characteristics (e.g., age, type of risk factors) to determine the settings with high proportions of individuals at risk. The next step involves modelling the benefits of prevention efforts. Lynch (2014) illustrated how the effects of interventions applied to the number of adults who attempted suicide in the emergency care setting, provided an estimate of the national potential benefits of reduced re-attempts and deaths due to the intervention. For a number of treatment settings, using the frequency of suicide attempts and deaths for individuals accessing the setting, and applying the benefit of known interventions, can be calculated to examine reduced suicide attempts (morbidity) and suicide deaths (mortality) nationally. For this presentation, we describe the first step in identifying individuals with suicide ideation and attempts who also access SU treatment. **Results:** Using the National Survey on Drug Use and Health (NSDUH) 2008-2012 surveys, over 26% of US adults in SU treatment, or 446,000 individuals, report having suicidal ideation in the past year. 5% of individuals who reported being in SU treatment also report a suicide attempt in the past year. This was 9% of all the surveyed adults reporting an attempt in the past year. The SU rate of attempts approximates the 6% reported by those in mental health outpatient treatment. **Conclusions:** Using the NSDUH national estimates, nearly 1 in 10 US adults who report attempting suicide in the past year also accessed SU services. SU providers have a critical opportunity for improve risk detection, and apply effective interventions to reduce suicide morbidity and mortality. **Financial Support:** Authors completed these analyses as a part of their government duties.

Abstract - ID: 466 **Author(s):** Paul Regier **(Presenter)**, University of Pennsylvania
Kanchana Jagannathan, University of Pennsylvania
Jesse Suh, University of Pennsylvania
Teresa Franklin, University of Pennsylvania
Daniel Langleben , University of Pennsylvania
Stefanie Darnley, University of Pennsylvania
Elliott Sturgis-Berkowitz, University of Pennsylvania
Kyle Kampman, University of Pennsylvania
Charles O'Brien, University of Pennsylvania, VA Medical Center
Anna Rose Childress, University of Pennsylvania **Title:** Failure of extinction in limbic regions predicts more drug use **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Imaging **Aims:** The healthy brain decreases a conditioned response to repeated cues when the signaled outcome is omitted [extinction (EXT)]. In contrast, a failure of EXT has been linked to pathology (e.g., autism, anxiety), such that brain response to cues persists *despite repetition*. Preclinical evidence has shown a persistent response to drug cues in the absence of drug reward; however, clinical research on the brain's response to repeated drug cues and its relationship to subsequent drug use has been limited. **Methods:** Patients with cocaine-use disorders (CD, n=73) and healthy controls (n=39) were evaluated on a fast event-related BOLD fMRI paradigm. All subjects were exposed to 24 cues (500ms) for each category (cocaine, sexual, aversive, neutral) for one half of the task, which were then repeated in the second half. Pre-planned contrasts compared the change in response across the task. Hierarchical clustering was used to create 3 outcome groups: Good (< 4 0% cocaine+ urines), Mid (50-85% cocaine+), and Poor (>85% cocaine+). A one-way ANOVA (3 cocaine outcome groups + controls, age as a covariate) was calculated for each cue condition, and superthresholded clusters from each main effect of group were extracted and plotted. **Results:** Controls exhibited EXT to repeated cues, while CD subjects had a failure of EXT, and even *increased response* to repeated drug cues in several limbic regions. Results were similar for the other cues. However, there was heterogeneity within the CD subjects. The Good group showed EXT, similar to controls; while the Poor group specifically increased brain response to cocaine cues. **Conclusions:** These findings demonstrate that only some individuals with severe CD have a failure of EXT to repeated drug cues. Those with better treatment outcomes had brain patterns similar to controls, while those with the most drug use showed specific increases to cocaine cues. The repeated-cue task may be used to reveal persistence of responding in the vulnerable brain, and could eventually be used to identify individuals would benefit from treatments specifically targeting this pathology. **Financial Support:** T32 NIDA Training Grant; NIDA U54 DA039002 (Cocaine Cooperative Medication Development Center)

Abstract - ID: 467 **Author(s):** David Ledgerwood **(Presenter)**, Wayne State University
Leslie Lundahl, Wayne State University
Mark Greenwald, Wayne State University
Cynthia Arfken, Wayne State University
Manuel Tancer, Wayne State University
Jonathan Cohn, Wayne State University **Title:** Depression among people living with HIV/AIDS receiving smoking cessation treatment **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** AIDS/Immune **Aims:** Depression symptoms are prevalent among people living with HIV/AIDS (PLWHA) and among nicotine dependent smokers. PLWHA who smoke are at a startlingly high risk for smoking-related illness and mortality, but the role of depression in smoking and cessation among PLWHA is unknown. **Methods:** We examined psychosocial and clinical factors related to baseline depression symptoms (using clinical cut-off of the Beck Depression Inventory – II) in PLWHA (N = 84; 36.9% women) seeking treatment in an ongoing smoking cessation trial examining the efficacy of adding contingency management to a standard treatment that includes counseling and extended release bupropion. **Results:** High depression scores were significantly associated with worse scores on all subscales of the RAND Short Form Survey (SF36; physical, physical role limitations, emotional role limitations, energy/fatigue, emotional well-being, social functioning, pain and general health; all p's < .05). Depression was not associated with demographic (gender, age) or smoking (Fagerstrom score, number of cigarettes/day, smoking urges, reasons for quitting) variables with the exception of nicotine withdrawal ($t(82) = -10.25$, $p < .001$). After accounting for baseline daily cigarettes smoked and initial treatment group assignment (contingency management vs. treatment as usual), PLWHA with high depression scores were more likely than those with low depression to be initial treatment responders (OR = 2.955, CI = 1.00-8.73).**Conclusions:** Depressed PLWHA who smoke face numerous health challenges and may respond better to multi-faceted smoking cessation interventions (in this case bupropion coupled with social contact and possible tangible reinforcement) than less depressed PLWHA. **Financial Support:** NIH R01 DA034537, Joe Young, Sr./Helene Lycaki Funds (State of Michigan), and Detroit Wayne Mental Health Authority

Abstract - ID: 468 **Author(s):** Jacqueline Duperrouzel **(Presenter)**, Florida International University
Ileana Pacheco-Colon, Florida International University
Catalina Quintero-Lopez, Florida International University
Samuel Hawes, Florida International University
Raul Gonzalez, Florida International University **Title:** Material-specific sex differences in relationships between cannabis use and episodic memory among adolescents **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Sex Differences **Aims:** Research on the relationship between cannabis use (CU) and episodic memory suggests possible sex differences. However, few studies have examined material-specific sex differences when investigating associations between CU and memory, particularly among adolescents early in their exposure to cannabis. The current study examines sex as a potential moderator of the relationship between CU and various aspects of episodic memory.**Methods:** Participants were 401 adolescents (ages 14-17) at-risk for CU escalation. As part of a larger battery, lifetime amount of CU was assessed via self-report and memory performance was assessed using the Wechsler Memory Scales-IV, Logical Memory and Designs subtests. After controlling for alcohol and nicotine use, a series of regressions were conducted with CU, sex, and their interaction as IVs and a measure of memory performance as the DV.**Results:** Interaction effects were not significant for the LMI, LMII, and DEII subscales; however, a significant sex x CU interaction was observed for DEI (?= -.44, *p*=.03). Follow-up simple slope analyses showed no relationship between CU and DEI for males (?= -.08, *p*=.33); but, the relationship between CU and DEI performance approached significance for females (?= -.18, *p*=.06). Next, we examined the same relationships on individual subtest raw scores, also controlling for age. The only significant sex X CU interaction was observed on immediate recall of spatial information (?=-.50, *p*=.02). CU was associated with performance for females (?= -.21, *p*=.03), but not males (?=.09, *p*=.33). **Conclusions:** Our results extend growing evidence of sex differences in effects of CU on neurocognitive performance and suggest that CU is associated with material-specific sex differences in episodic memory performance, with adolescent females being most affected. Future studies should aim to understand the underlying mechanisms for these findings, as well as the influence of age of onset.**Financial Support:** R01 DA031176, R01 DA033156, and CNS-1532061

Abstract - ID: 469 **Author(s):** Raimondo Bruno, University of Tasmania
Amy Peacock **(Presenter)**, National Drug and Alcohol Research Centre
Briony Larance, University of South Wales
Nichola Lintzeris, Drug and Alcohol Services, South Eastern Sydney Local Health District
Robert Ali , WHO Collaborating Centre for the Treatment of Drug and Alcohol Problems
Louisa Degenhardt, National Drug and Alcohol Research Centre **Title:** Severity of dependence scale: Diagnostic cut-off for pharmaceutical opioid dependence
Abstract Category: Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Dependence **Aims:** The Severity of Dependence (SDS) scale is a commonly adopted screening tool for possible drug dependence. However, there is no established cut-off score for identification of dependence associated with pharmaceutical opioids. As such, the aim of the present study was to validate the SDS, identifying a diagnostic cut-off indicative of possible pharmaceutical opioid dependence. **Methods:** Australian adults who regularly tampered with pharmaceutical opioids (n=428) completed the SDS regarding pharmaceutical opioid use in the preceding three months. Receiver Operating Characteristic curve analysis was used to determine the most appropriate SDS cut-off score for use as an indicator of opioid dependence, relative to DSM-5 opioid use disorder and ICD-10 and ICD-11 opioid dependence diagnosis, as assessed via the Composite International Diagnostic Interview.**Results:** Receiver Operating Characteristic curve analysis demonstrate that SDS values of 3, 4, and 5 or greater respectively provide a cut point values with sensitivity greater than 80% for CIDI-diagnosed cases of DSM-5 mild, moderate and severe opioid use disorder respectively. Values of 4 provide similarly sensitive cut-points for cases of ICD-10 or 11 dependence. **Conclusions:** The SDS cut-off for heroin dependence (score ?5) is often applied in screening for pharmaceutical opioid dependence. The current findings indicate that this cut-off is appropriate for identifying severe dependence. However, for the purposes of screening a cut-off of 3 should be adopted to ensure detection of possible mild or greater severity pharmaceutical opioid dependence. **Financial Support:** This study received untied educational grant funding from Mundipharma. The funder has no role in the design, conduct or interpretation of the study's findings. AP, LD and BL are supported by NHMRC research. The National Drug and Alcohol Research Centre at UNSW Australia is supported by funding from the Australian Government under the Substance Misuse Prevention and Service Improvements Grant Fund.

Abstract - ID: 470 **Author(s):** Emily Jutkiewicz **(Presenter)**, University of Michigan
Amy Friedman, Wayne State University **Title:** Adolescent delta(9)-tetrahydrocannabinol exposure enhances sensitivity to the reinforcing effects of cocaine
Abstract Category: Original Research **Abstract Detail:** Animal Study **Drug Category:** Marijuana/Cannabinoids **Topic:** Behavior **Aims:** Aims: Marijuana is the most popular illegal drug used in America among adolescents. Exposure to the main psychoactive ingredient in marijuana, ?9-tetrahydrocannabinol (THC), during adolescence may have enduring effects on behavior into adulthood. This study investigated the effects of chronic adolescent exposure to THC on the reinforcing effects of cocaine and sensitization to the psychomotor stimulating effects of cocaine in male Sprague-Dawley rats. We hypothesized that adolescent THC exposure would potentiate all of the behavioral effects of cocaine.**Methods:** Methods: During adolescence (P28-45), rats were given once daily i.p. injections of either vehicle or 1 mg/kg THC (N=8-10 per treatment group in each behavioral assay). On P90, we analyzed cocaine self-administration behavior by evaluating (1) within-session cocaine dose-effect curves on a fixed ratio 5 (FR5) schedule of reinforcement, (2) acquisition of a small dose of cocaine (0.1 mg/kg/inj) on a FR1 schedule of reinforcement, (3) breakpoints on a progressive ratio schedule of reinforcement, and (4) locomotor activity sensitization to cocaine.**Results:** Results: THC exposure during adolescence potentiated the reinforcing effects of small cocaine doses and enhanced the acquisition of cocaine self-administration with small cocaine doses as determined by repeated measures, factorial ANOVA. There was no difference in locomotor sensitization to cocaine, but rats treated with THC during adolescence showed an overall increased response to the psychomotor stimulating effects of cocaine. **Conclusions:** Conclusion: Together, these results demonstrate that exposure to THC during adolescence may alter the sensitivity to the reinforcing effects of cocaine, suggesting that adolescent THC exposure produces long-lasting changes in the brain, specifically in reward systems. **Financial Support:** This work was supported by funds from the University of Michigan Substance Abuse Research Center and by start-up funds to Jutkiewicz.

Abstract - ID: 471 **Author(s):** Kathleen Garrison **(Presenter)**, Yale School of Medicine
Sarah Yip, Yale University
Iris Balodis, McMaster University
Kathleen Carroll, Yale School of Medicine
Marc Potenza, Yale School of Medicine
Suchitra Krishnan-Sarin, Yale School of Medicine **Title:** Reward-related frontostriatal activity and smoking behavior among adolescents in treatment for smoking cessation **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Adolescent **Aims:** Tobacco use is often initiated during adolescence and continued into adulthood despite desires to quit. A better understanding of the neural correlates of abstinence from smoking in adolescents may inform more effective smoking cessation interventions. Neural reward systems are implicated in tobacco-use disorder, and adolescent smokers show reduced reward-related ventral striatal activation related to increased smoking. Therefore, this study evaluated reward processing in adolescent smokers in fMRI before and after smoking cessation treatment and in relation to within-treatment abstinence from smoking**Methods:** Reward processing was evaluated in adolescent smokers using a monetary incentive delay task in fMRI before and after smoking cessation treatment (n=14). Self-report of smoking was collected weekly using Time Line Follow Back. fMRI data were analyzed in SPM12 and marsbar was used to extract ROI data. Repeated measures ANOVAs were used to test changes in ROI activity pre- to post-treatment, and correlations were tested between these changes and percent days of abstinence during treatment. An exploratory analysis in a larger sample of adolescents with only pre-treatment fMRI (n=28) evaluated how reward processing was related to behavioral inhibition and activation scales**Results:** Adolescent smokers showed pre- to post-treatment increases in reward anticipation-related activity in the nucleus accumbens, insula and medial prefrontal cortex (win anticipation: p=.005, loss anticipation: p=.006). Greater increases in ROI activity were correlated with larger percent days of smoking abstinence during treatment (p=.018-.039 by ROI). **Conclusions:** These findings suggest that reduced smoking during treatment is associated with a "recovery of function" of frontostriatal responses to nondrug reward anticipation in adolescent smokers, although a comparison with adolescent nonsmokers is warranted. **Financial Support:** National Institute on Drug Abuse grants P50DA009241, K12DA00167, RL1AA017539, K01DA039299; American Heart Association grant 14CRP18200010; National Center on Addiction and Substance Abuse.

Abstract - ID: 472 **Author(s):** Nadia Wang **(Presenter)**, National Taiwan University, Epidemiology and Preventive Medicine
Po-Hsiu Kuo, National Taiwan University, Epidemiology and Preventive Medicine
Wei-J Chen, National Taiwan University
Chuan-Yu Chen, National Taiwan University, Epidemiology and Preventive Medicine **Title:** Childhood's pro-alcohol environment and sensation seeking in relation to drinking problems in early adolescence and young adulthood **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Behavior **Aims:** Although personality traits have been implicated in problematic drinking in young population, their potential effects through developmental stages were less addressed so far. The present study aims to explore potential effects of sensation seeking on drinking behaviors in early adolescence and young adulthood. **Methods:** A total of 802 sixth graders were recruited from 17 public elementary schools in Taipei city in 2006 (T1), with follow-up in middle school (T2: 7th grade, T3: 8thgrade), and 19 year-old (T4)(response rates: 94.4% and 69.2%). Information pertaining to individual sociodemographics (T1), family drinking behaviors (T1), sensation seeking (T2), and alcohol-related behaviors/problems were collected via self-administered questionnaires. Complex survey analyses and multiple logistic regression analyses were performed to evaluate association estimates. **Results:** Over 40% the participants had drank at least once in the 12 months preceding the 8th grade assessment and 8.9% had binge drinking in young adulthood. Having drinking families (e.g., elder sibling: aOR=1.95, 95% CI=1.21-3.13), not living with both parents (aOR=2.24, 95% CI=1.03-4.89), and having high level of sensation seeking (aOR=2.63, 95% CI=1.42-4.85) in late childhood predicted subsequent past-year drinking behaviors; nevertheless, these estimates became nonsignificant once childhood-onset drinking (aOR=5.46, 95% CI=3.15-9.46) was taken into account. Having higher sensation seeking may elevate the risk of binge drinking in young adulthood by 294% (95% CI=1.07-14.45, $p < 0$ .05). **Conclusions:** Pro-alcohol family context in childhood and sensation seeking traits may increase subsequent drinking behaviors in early adolescent and binge drinking in young adulthood. Such elevated risks can be operated through early-onset alcohol initiation. **Financial Support:** Ministry of Science and Technology, TAIWAN (R.O.C.) (95-2314-B-400-009-MY3, 104-2314-B-010-008-MY3)

Abstract - ID: 473 **Author(s):** Nayeli Paez-Martinez **(Presenter)**, Instituto Politécnico Nacional
Yepci Yee-Rios, Instituto Politécnico Nacional
Sergio Montes, Instituto Politécnico Nacional **Title:** Environmental enrichment restores oxidative balance in animals exposed to toluene: Comparison with melatonin **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Inhalants **Topic:** Treatment **Aims:** 1) To evaluated the oxidative stress in the hippocampus and prefrontal cortex of mice exposed to toluene. 2) To analyze the antioxidant capacity of environmental enrichment in mice with history of toluene exposure. 3) To compare the putative antioxidant capacity of environmental enrichment with that produced by melatonin. **Methods:** Swiss-Webster male mice, 5 weeks old, were exposed chronically to toluene (0 or 4000ppm, 30 min/day/4 weeks). Subsequently, neurochemical tests were conducted to measure some markers of oxidative stress, at the hippocampus and the prefrontal cortex. In the second part of the study we evaluated the putative antioxidant capacity of environmental enrichment and melatonin, through a toluene challenge, in mice with history of toluene exposure. **Results:** Data showed that chronic toluene exposure increases levels of oxidative stress. Conversely, environmental enrichment recovered oxidative balance in those animals with a previous history of toluene administration. Furthermore, results showed that antioxidant capacity of environmental enrichment was similar to that produced by melatonin administration. **Conclusions:** Alterations in oxidative balance could represent intermediaries in the cascade of effects induced by toluene. Data suggest that these neurochemical alterations could be reversed through environmental enrichment. Environmental enrichment could represent a non-pharmacological treatment candidate, with similar efficacy of a pharmacological treatment, that could be further studied for the rehabilitation of inhalant users. **Financial Support:** This work was supported by Instituto Nacional de Psiquiatria Ramon de la Fuente Muñiz, Instituto Politecnico Nacional and Instituto Nacional de Neurologia y Neurocirugia.

Abstract - ID: 474 **Author(s):** Anna Rose Childress **(Presenter)**, University of Pennsylvania
Kanchana Jagannathan, University of Pennsylvania
Paul Regier, University of Pennsylvania
Jesse Suh, University of Pennsylvania
Zach Monge, University of Pennsylvania
Teresa Franklin, University of Pennsylvania
Reagan Wetherill, University of Pennsylvania
Kimberly Young, University of Pennsylvania
Stefanie Darnley, University of Pennsylvania
Elliott Sturgis-Berkowitz, University of Pennsylvania
Michael Gawrysiak, Delaware State University
Regina Szucs-Reed, University of Pennsylvania
Daniel Langleben , University of Pennsylvania
Kyle Kampman, University of Pennsylvania
Charles O'Brien, University of Pennsylvania, VA Medical Center **Title:** Passion "de novo"? In cocaine patients, neutral videos that signal cocaine videos can themselves rapidly come to evoke mesolimbic activation – and this new learning is strongly linked to future relapse **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Imaging **Aims:** Cocaine patients with a heightened mesolimbic brain response to cocaine cues may have poor drug use outcomes. A new paradigm enabled us to test whether 1) neutral cues that simply signal the arrival of cocaine CUES could themselves come to trigger mesolimbic activation – and 2) whether this newly-learned brain response to previously neutral cues would also be linked to poor outcome. **Methods:** Using BOLD fMRI, we scanned stabilized cocaine inpatients (n=27) during repeated exposure to 6 sec COCAINE videos and 6 sec NEUTRAL videos (12 and 6 repetitions, respectively). In the design, NEUTRAL videos were always immediately followed by a COCAINE video clip. Pre-planned contrasts (SPM 8 pipeline) measured the change in brain response to the NEUTRAL videos, from the first half to the second half of the 6 minute task (Neut2-Neut1), and for two outcome subgroups: GOOD (< 30% cocaine urines pos/missing across 12 outpt. weeks; n=9); vs. POOR (>90% cocaine urines pos/missing; n=13)**Results:** Strikingly, brain response in mesolimbic (peak t, v. pallidum, 4.64) and visual cortical (peak t, 5.31) regions to the NEUTRAL videos was indeed higher in the second half of the task – and only in the POOR urine outcome group (all t values thresholded 2 **Conclusions:** Our ability to quickly learn new associations between stimuli we encounter would usually confer a survival advantage, and it has thus been evolutionarily conserved. Ironically, cocaine patients who demonstrate this form of evolutionary fitness – who rapidly acquire a “passion de novo” to neutral cues signaling cocaine cues – proceed to worse drug use outcomes. Second-order cue paradigms could be used to identify patients at high relapse risk, and to screen candidate medications targeting the underlying mesolimbic vulnerability. **Financial Support:** NIH/NIDA U54 DA039002 Cocaine Cooperative Medication Development Center; Commonwealth of Pennsylvania Department of Health CURE Addiction Center of Excellence: Brain Mechanisms of Relapse and Recovery; NIH/NIDA RO1 DA039215.

Abstract - ID: 475 **Author(s):** Lesia M. Ruglass **(Presenter)**, CUNY Graduate School of Public Health and Health Policy
Alina Shevorykin, Pace University
Naomi Dambreville, CUNY Graduate School of Public Health and Health Policy
Ayman Baig, The City College of New York
Robert Melara, The City College of New York **Title:** Neural and behavioral correlates of attentional bias and cue reactivity among adults with cannabis use disorders **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Dependence **Aims:** Research indicates that individuals with substance use disorders display a heightened *attentional bias* towards drug-related cues. These drug-related cues, in turn, are consistently related to increases in subjective craving and physiological arousal as well as impaired inhibitory control and are directly proportional to the quantity and frequency of the substance used. This pilot study examined behavioral and electrophysiological correlates of attentional bias and cue reactivity among individuals with cannabis use disorder (n = 21) and healthy controls (n = 19). **Methods:** Participants were evaluated to rule out any DSM-IV Axis I disorders. They then completed a modified visual attention task in which they had to make a decision about the orientation of a target line while ignoring temporally flanking lines and cannabis-, positive-, negative-, and neutral-images. While completing the task, participants' behavioral responses and brainwaves (EEG/ERP) were measured**Results:** A preliminary mixed repeated measures ANOVA of behavioral data examining the garner effect revealed a significant interaction between group and stimuli ($F = 3.73$; $p = .042$) indicating that cannabis users had lower levels of accuracy across all image types compared to healthy non-users, suggesting interference. A three-way interaction between group, stimuli, and task condition approached significance ($F = 1.98$; $p = .097$), suggesting the accuracy difficulties experienced by the cannabis users were worse during the more difficult task. **Conclusions:** Findings suggest cannabis use is associated with poorer selective attention and inhibitory control compared to healthy non-users. Electrophysiological data will also be presented. Implications for the development of interventions designed for individuals with cannabis use disorders will be discussed.**Financial Support:** APA ProDIGS and The City College of New York City Seeds Fund

Abstract - ID: 476 **Author(s):** Dace Svikis **(Presenter)**, Virginia Commonwealth University
Steven Ondersma, Wayne State University-Psychiatry and Behavioral Neurosciences
Pamela Dillon, Virginia Commonwealth University
Michael Weaver, University of Texas Health Science Center **Title:** A comparison of computer and therapist-delivered SBIRT for alcohol/drugs in an urban primary care setting **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Treatment **Aims:** The present study was a 4-arm RCT comparing computer-directed and therapist-delivered brief interventions for heavy/problem drinking and drug use in patients attending an urban primary care clinic. **Methods:** Participants were 713 primary care patients who completed an anonymous computer health survey and met criteria for heavy/problem drinking and/or drug use. Those providing informed consent were randomized to: computer assessment only (CA), assessment plus computer-directed intervention (CACI); assessment plus therapist-delivered intervention (CATI) or a minimal screening-only standard care control group (SC). SC participants answered no substance-use related questions until 3 and 6 month follow-up, when Timeline Follow-back data on alcohol and other drug use were obtained. The sample was two-thirds female and three-fourths African American. Analyses compared 7-day point prevalence rates of alcohol use, binge drinking and illicit drug use across the 4 study groups, stratified by the primary substance identified using a computer algorithm at baseline. **Results:** The algorithm placed N=343 (48%) of participants into a heavy alcohol use subgroup abd N=371 (52%) were placed in an illicit drug use subgroup. Within the alcohol use subgroup, 7-day point prevalence abstinence trends for any use favored the CACI condition (e.g., 55% abstinence at 6 months, vs. 44%, 41% and 42% for CATI, CA, and SC, respectively), but did not reach significance. Similarly, 7-day point prevalence binge abstinence also showed non-significant advantages for CACI at 3-months which reached significance at the 6-month follow-up (87% abstinence for CACI vs. 75%, 63%, and 75% for CATI, CA, and SC; $p < .02$). No group differences were found for illicit drug use at either 3 or 6 month follow-up.. **Conclusions:** .No group differences were found on illicit drug use, with similar rates of use across the 2 intervention and 2 control groups, mirroring most other SBIRT trials.. However, the computer-delivered intervention was associated with significantly less binge drinking at the six-month follow-up. Additional analyses are underway comparing other outcome measures such as frequency (days) of use and urinalysis drug use assays. **Financial Support:** This research was supported by R01 DA026091.

Abstract - ID: 477 **Author(s):** Devika Govindarajah **(Presenter)**, Centre for Addiction and Mental Health
Robert Mann, Centre for Addiction and Mental Health
Bernard LeFoll, University of Toronto
Gina Stoduto, Centre for Addiction and Mental Health
Christine Wickens, Centre for Addiction and Mental Health
Marilyn Huestis, NIDA
Bruna Brands, Health Canada **Title:** Sex-dependent effects of cannabis on physiological response and subjective drug effects in young adults **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Sex Differences **Aims:** Few studies have examined the influence of sex on cannabis effects in humans. The purpose of this study was to examine the sex-dependent effects of smoked cannabis on physiological measures, subjective ratings of drug effects and mood states in young adult volunteers. **Methods:** The data were derived from a double-blind, placebo controlled clinical trial that assessed the effects of smoked cannabis on the driving simulator performance of regular cannabis users (1-4 days per week) between the ages of 19 and 25. Participants were asked to smoke a single cannabis cigarette (12.5% THC) as they normally would. Measures included the concentration of delta-9-tetrahydrocannabinol (THC) in the blood, heart rate, Visual Analog Scale (VAS) measures of high and effect, the Addiction Research Centre Inventory (ARCI) short form, and arousal, positive mood and elation from the Profile of Mood States (POMS)**Results:** Data from participants in the active condition (n=67, average age= 22.2 yrs, 72% male, 28% female) were included in this analysis. There was no significant time by sex interactions on the subjective drug effects high ($p= 0.392$), effect ($p= 0.298$), sedation ($p= 0.854$), euphoria ($p= 0.266$), arousal ($p= 0.666$), positive mood ($p= 0.252$) and elation ($p= 0.872$). Significant time by sex interactions were observed for heart rate ($p=0.011$) and concentration of THC in the blood ($p=0.012$). **Conclusions:** After a single smoked dose of cannabis, males reached higher THC levels and showed greater increases in heart rate than females. No sex differences were observed on self-reported measures of drug effects or mood. These findings suggest that further studies on the typology of cannabis smoking in males and females are warranted.**Financial Support:** Canadian Institutes of Health Research

Abstract - ID: 478 **Author(s):** James Sottile **(Presenter)**, Palo Alto University
Kimberly Babson, VA Palo Alto Health Care System
Danielle Morabito, VA Palo Alto Health Care System
Mallory Loflin, National Center for PTSD, Dissemination & Training Division
Marcel Bonn-Miller, VA Palo Alto Health Care System **Title:** Coping-oriented cannabis use interacts with PTSD symptoms to predict veteran psychosocial functioning **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Dependence **Aims:** Cannabis is the substance that veterans with posttraumatic stress disorder (PTSD) report using at problematic levels most frequently (PERC, 2015). Similarly, PTSD is the most common co-occurring psychological disorder among veterans with a cannabis use disorder (CUD; Bonn-Miller et al., 2012). Veterans report use of cannabis specifically to manage PTSD symptomatology (Earleywine & Bolles, 2014); however, little is known about the effects of this "coping-oriented" substance use on psychosocial functioning. We sought to address this gap by examining the interactive effects of PTSD symptoms and coping-oriented cannabis use motives on psychosocial functioning. **Methods:** Participants were 45 veterans (M_{age} = 47.22, *SD* = 15.39) with a CUD and insomnia diagnosis who completed assessments that included the PTSD Checklist (PCL-5), Alcohol Use Disorder Identification Test (AUDIT), Inventory of Psychosocial Functioning (IPF), and Comprehensive Cannabis Motives Questionnaire (CMMQ). **Results:** An interaction was observed following a test with the PROCESS macro (Hayes, 2013), even after accounting for co-occurring alcohol use problems (AUDIT; β= .37, p = .05). Specifically, PTSD symptoms were associated with poorer psychosocial functioning among those with high (β = 1.92, p = .01), relative to low (β = 0.15, p = .82), coping motives. **Conclusions:** This study provides preliminary data to suggest that maladaptive coping strategies employed by individuals with heightened PTSD symptomatology may lead to greater impairment across several domains of functioning. Providing alternative, non-cannabis, coping strategies for this population appears prudent. **Financial Support:** This study was supported by a VA Clinical Science Research and Development Career Development Award (CSR&D CDA-2), awarded to Dr. Babson (CX001023).

Abstract - ID: 479 **Author(s):** Silvana Mazzella **(Presenter)**, Prevention Point Philadelphia, Temple University
Jerry Stahler, Temple University **Title:** A case study of the public response to the opioid overdose epidemic: The Philadelphia story **Abstract Category:** Program Descriptions **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Policy **Aims:** Heroin overdoses have more than tripled nationally between 2010 and 2014 (DHHS, 2016), with Philadelphia's overdose epidemic exceeding that of most other urban areas. For example, Philadelphia's overdose mortality rate in 2014 was 42 deaths per 100,000 people compared to New York City's 9 deaths per 100,000 people. We describe Philadelphia's public response to this overdose crisis that involved the creation of a broad based task force and development of a strategic plan informed by best practices. **Methods:** Prevention Point Philadelphia with the support of the Philadelphia Health Department reviewed other overdose prevention strategies throughout the nation, identified potential stakeholder groups to compose an ideal community task force, and developed proposed overarching goals, objectives, and strategies. **Results:** The goal is to reduce the number of drug overdose deaths in Philadelphia by 50% in the next five years, with six strategies identified to achieve this overarching goal--Prioritize Overdose as a Public Health Priority and Build Capacity to Respond; Increase Public Awareness by Targeting Multiple Audiences; Make Life-Saving Medication Accessible to Those Most at Risk or Able to Save a Life; Improve Access to Drug Treatment by Reducing Barriers and Increasing Resources; Support and Facilitate Pilot Initiatives to Reduce Fatal and Non-Fatal Overdose; Train and Educate Within Systems to Intervene to Reduce Overdose. As a result of the advocacy of the Task Force, the Mayor's Office in collaboration with this coalition established a time limited three month Mayor's Task Force to Combat Opioids and Overdose to strengthen the original plan and develop an implementation and evaluation strategy.**Conclusions:** Creating a broad-based coalition of community stakeholders and city agencies with strong backing from the Mayor's office represents the best approach to mobilize the needed resources to address this crisis. The lessons learned in Philadelphia should be relevant to other US cities that are similarly struggling to form public and private partnerships in response to this drug crisis.**Financial Support:** none

Abstract - ID: 480 **Author(s):** Lamisha Muquit **(Presenter)**, Palo Alto University
Nancy Haug, Palo Alto University
Steven Linder, VA Palo Alto Health Care System **Title:** Public perceptions of fentanyl on Twitter **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Other **Aims:** Misuse of Fentanyl, a synthetic opioid typically prescribed for pain, is becoming a serious public health concern. According to the Centers for Disease Control (2015), fentanyl overdoses have increased by 80% in 2013 and continue to rise each year. The aim of this study is to examine public perception and temporal trends of the increased use of fentanyl on a social media platform in order to: 1) gain a better understanding of current attitudes toward fentanyl and 2) inform psychoeducation efforts**Methods:** A Twitter search of the term "fentanyl" was conducted to qualitatively examine tweet content related to fentanyl use. Recent tweets (n = 1000) were extracted on 11/18/16 using NCapture and analyzed using NVivo 11.0 for Mac. Tweet content was coded utilizing grounded theory to allow for a bottom-up inductive approach and identify themes related to discussion of fentanyl use. **Results:** Grounded theory analysis resulted in 20 open codes; these were reduced to nine themes: Policy and Regulation (n=266), Overdose (n=219), Crisis and Impact on Community (n=202), Trafficking (n=199), Adulteration (n=198), Harm Reduction and Education (n=195), Medical and Prescribing Concerns (n=152), and Law Enforcement (n=151). Temporal trends for fentanyl discussions on social media will be examined in relation to these themes. **Conclusions:** The findings suggest that Twitter is being utilized as a forum by lay persons and professional providers in the United States and Canada to discuss health concerns regarding fentanyl use. The themes identified indicate that there is a perceived need for information and awareness of fentanyl (e.g. risks, overdose, and policies). Psychoeducation on the risks of Fentanyl might include consequences of misuse, comorbid substance use, and signs of overdose. **Financial Support:** None

Abstract - ID: 481 **Author(s):** Yi-Lung Chen **(Presenter)**, National Taiwan University
Shang-Chi Wu, National Taiwan University, Epidemiology and Preventive Medicine
Wen-Ing Tsay, Taiwan Food and Drug Administration
Yen-Tyng Chen, National Taiwan University
Po-Chang Hsiao, National Taiwan University
Ya-Hui Yu, National Taiwan University
Te-Tien Ting, National Taiwan University
Chuan-Yu Chen, National Taiwan University, Epidemiology and Preventive Medicine
Yu-Kang Tu, National Taiwan University
Jiun-Hau Huang, National Taiwan University
Hao-Jan Yang, Chung Shan Medical University, Taiwan
Chung-Yi Li, National Cheng Kung University
Carol Strong, National Cheng Kung University
Cheng-Fang Yen, Kaohsiung Medical University, Taiwan
Chia-Feng Yen, Tzu Chi University, Taiwan
Jui Hsu, Taiwan Food and Drug Administration
Wei-J Chen, National Taiwan University **Title:** E-cigarettes use in a country with high prevalence of tobacco smoking: A population-based study **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Epidemiology **Aims: Aims:** Although e-cigarettes have been explicitly banned in Taiwan since 2014, anecdotal reports of e-cigarettes use remain common. This study aims to investigate the prevalence and correlates of e-cigarettes use among adolescents and adults. **Methods: Methods:** Subjects were 17837 participants from a national survey in 2014 in Taiwan, with 4445 aged 12 to 17 years and 13392 aged 18 to 64 years. A computer-assisted self-interview was implemented in tablet computers with touch screen. The questionnaire consists of questions on sociodemographic, substances use, source of the substances, alcohol use problems, and depression. **Results: Results:** The lifetime prevalence for different patterns of tobacco use in adolescents and adults, respectively, were: (1) 0.2% and 0.1% for e-cigarettes only; (2) 3.2% and 28.2% for cigarettes only; and (3) 0.6% and 2.1% for dual use. Among those who initiated use of e-cigarettes more than one year ago (n = 248), 64.5% reported no use in the past one year. Compared with tobacco non-users, ever users of e-cigarettes had a similar profile of correlates to that of users of cigarettes only, including more depression symptoms, more alcohol use problems, and more use of analgesics, sedatives, and illicit drugs. **Conclusions: Conclusion:** E-cigarettes users are more likely to come from conventional cigarettes users and from adolescents than adults, with two thirds of e-cigarettes having quitted use in the past one year. E-cigarettes users also exhibit a profile of sociobehavioral correlates similar to cigarettes users, implying the need for the intervention to terminate their continuous tobacco use. **Financial Support:** This work was supported by a grant from the Food and Drug Administration, Ministry of Health and Welfare, Taiwan (DOH102-FDA-61303).

Abstract - ID: 482 **Author(s):** Shang-Chi Wu **(Presenter)**, National Taiwan University, Epidemiology and Preventive Medicine
Chia-Mei Kuo, National Taiwan University, Epidemiology and Preventive Medicine
Kevin Chien-Chang Wu, National Taiwan University, Epidemiology and Preventive Medicine
Tzu-Pin Lu, National Taiwan University, Epidemiology and Preventive Medicine
Wei-J Chen, National Taiwan University **Title:** Standardized mortality ratio and rate ratio of hospitalization among illicit drug offenders identified from integrated national databases from 2009 to 2013 in Taiwan **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Epidemiology
Aims: To evaluate the risks of hospitalization and mortality among drug offenders via linking the databases of illicit drug offenders across different government departments in Taiwan. **Methods:** We merged illicit-drug-related criminal records from Ministry of Justice with records of administrative punishment from Ministry of the Interior, including drug offenders arrested for using either schedule I/II or schedule III/IV illicit drugs, from 2009 to 2013. These offenders (131,529 cases, aged 18 to 49 years) were then linked with Cause of Death Data and the National Health Insurance Research Database from 2010 to 2013, respectively. Age- and sex-specific standardized mortality ratio (SMR) and rate ratio (RR) of hospitalization of the offenders were calculated by comparing with the counterparts of the general population. **Results:** The SMRs for drug offenders from 2010 to 2013 were 5.93, 6.12, 5.84 and 5.61, respectively. Regarding hospitalization rates, an enormous increase (RR ? 10) was found in: 1) sexually transmitted diseases, 2) psychosis (especially drug- and alcohol-related psychosis), 3) bacterial endocarditis, 4) genitourinary system diseases (cystitis, orchitis and vice testicular inflammation), and 5) poisoning by tranquilizers. Meanwhile, a moderate increase ($5 < RR < 10$) was observed in: 1) viral hepatitis, 2) emotional mental illness and maladaptation, 3) brain edema and hypoxia meteorosis, 4) myocardial infarction and heart failure, 5) pancreatic diseases, and 6) trauma. **Conclusions:** In this first ever trial of linking judicial records of illicit drug offenders with their health and mortality data in Taiwan, drug offenders exhibited substantial increases in both mortality and hospitalization rates. **Financial Support:** Ministry of Science and Technology, Taiwan

Abstract - ID: 483 **Author(s):** Marilyn Lake **(Presenter)**, University of Cape Town
Jonathan Ipser, University of Cape Town
Lara van Nunen, University of Cape Town
Edythe London, UCLA
Dan Stein, University of Cape Town
Samantha Brooks, University of Cape Town
Steve Shoptaw, UCLA **Title:** Pre-intervention risky decision-making as a predictor of relapse in methamphetamine users undergoing Contingency Management **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Other **Aims:** Risky decision-making is strongly associated with substance dependence and may be a significant contributing factor hampering the success of several treatment interventions. Our aim was to assess risky decision-making of methamphetamine dependent users in the context of an 8-week Contingency Management (CM) intervention. We hypothesised that individuals who relapsed on the CM programme would demonstrate significantly greater risky decision-making on behavioural risk-taking tasks at pre-intervention assessment relative to abstinent individuals. **Methods:** A total of 14 frequent methamphetamine users (9 males and 5 females) completed risk-taking measures including the Balloon Analogue Task (BART) and Iowa Gambling Task (IGT) during baseline screening, prior to commencing the CM intervention. Participants were incentivised to maximise their performance in both tasks with use of monetary compensation, which ranged between approximately 0-10 on each task depending on the total average score obtained on the task. Performance on both measures were further analysed using ANOVA and ANCOVA statistical methods**Results:** Relapse participants made risky choices significantly more often, representing greater risky decision-making, relative to abstinent participants on both the IGT (F=5.678, p=.035) and on the BART (F=11.093, p=.001). **Conclusions:** Preliminary findings suggest that individuals demonstrating riskier decision-making are less likely to remain abstinent during the CM programme. These findings potentially have valuable clinical significance, as performance on such tasks could be used as a diagnostic tool to identify suitable individuals for CM and other types of treatment interventions. **Financial Support:** The abstract is sponsored by CPDD fellow member, Dr Thomas Crowley.

Abstract - ID: 484 **Author(s):** Sally Hunt **(Presenter)**, University of New South Wales
Frances Kay-Lambkin, University of Newcastle
Katherine Mills, University of New South Wales
Louise Thornton, University of New South Wales
Maree Teesson, University of New South Wales **Title:** eClipse: An online portal to facilitate access to evidence-based eHealth treatments for substance use and mental health comorbidity **Abstract Category:** Program Descriptions **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Treatment **Aims:** Currently, treatment access for mental health and alcohol/other drug use problems is unacceptably low in the general population (approximately 30% of those in need), and when accessed, evidence-based treatment is only provided in approximately 10% of cases. Online treatment programs stand to overcome structural, geographical, and some attitudinal barriers to treatment access, but potential end users cite difficulties in navigating through the myriad of online sites and programs available in the mental health space. The eCliPSE online portal aims solve this issue by facilitating access to evidence-based online screening and eHealth treatments for people experiencing comorbid mental health and substance use problems, and the clinical services supporting them. Currently, treatment access for mental health and alcohol/other drug use problems is unacceptably low in the general population (approximately 30% of those in need), and when accessed, evidence-based treatment is only provided in approximately 10% of cases. Online treatment programs stand to overcome structural, geographical, and some attitudinal barriers to treatment access, but potential end users cite difficulties in navigating through the myriad of online sites and programs available in the mental health space. The eCliPSE online portal aims solve this issue by facilitating access to evidence-based online screening and eHealth treatments for people experiencing comorbid mental health and substance use problems, and the clinical services supporting them**Methods:** The eCliPSE portal was developed to improve access to evidence-based online treatment programs for comorbid mental health and substance use problems. Central to the success of the portal was engagement with service providers and consumers of mental health and drug/alcohol services to create a clinical pathway to care that supports end users to use the eCliPSE resources. Clinician-specific resources were built into the portal to support mental health and drug/alcohol clinicians to better address comorbidity in clients of their service. The portal was implemented in two local health districts in NSW Australia. **Results:** The development and implementation of the eCliPSE portal in conjunction with NSW Health will be discussed. **Conclusions:** eMental Health is ideally suited to high prevalence disorders such as depression and substance abuse and is evolving into service delivery to link Australians with evidence based treatments. The dissemination of evidence based eHealth tools through the eCliPSE portal has demonstrated that people with comorbid mental health and substance use problems will engage with an online intervention and that such an intervention can successfully be implemented on a large sale. **Financial Support:** This project was funded by the NSW Ministry of Health, Mental Health and Drug and Alcohol Office

Abstract - ID: 485 **Author(s):** Lian-Yu Chen **(Presenter)**, Taipei City Hospital
Silvia Martins, Columbia University Mailman School of Public Health
Eric Strain, Johns Hopkins University School of Medicine
Ramin Mojtabai, Johns Hopkins Bloomberg School of Public Health, Department of Mental Health
Carla Storr, University of Maryland School of Nursing **Title:** Sex and age differences in risk factors of marijuana involvement during adolescence **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Prevention **Aims:** To examine whether there are sex and age differences in psychosocial risk factors of marijuana use during adolescence. **Methods:** Data were drawn from 57,767 adolescents (8^{th} and 10^{th} graders) from the 2012–2013 Monitoring the Future study. We examined the association between socio-demographic and behavioral correlates with different frequencies of past-year marijuana use (non-use, occasional use: < 1 0 time, frequent use: 10-39 times, and regular use: 40+ times). We further investigated whether these associations were similar for boys and girls of different ages.**Results:** Overall, 20.6% of the adolescents had used marijuana in the past year: 12.1% reported occasional marijuana use, 4.3%frequent use, and 3.8% regular use. Girls were less likely to be frequent and regular marijuana users (frequent use: OR=0.83 [0.75, 0.93]; regular use: OR=0.41 [0.36, 0.48]) while no sex difference was noted for occasional use. Also, the odds of deviant behaviors were higher as the frequencies of marijuana use were higher. Compared to younger girls, older boys and girls had higher association between all levels of marijuana use and low self-esteem, low perceived harm, peer influence and perceived easy access. Besides, younger boys were more likely than younger girls to report an association between regular marijuana use with low self-esteem, peer influence, and perceived easy access but not with perceived low harm.**Conclusions:** Findings suggest that the relationship between a number of psychosocial correlates of marijuana use and frequency of marijuana involvement varies across sex and age groups. These variations ask for a nuanced approach to prevention of marijuana involvement in different groups of youth. **Financial Support:** This study was supported by the U.S. National Institutes of Health- National Institute on Drug Abuse (NIDA) K24 DA023186 (P.I.: Dr. Strain) and R01DA037866 (P.I.: Dr. Martins) and also by the Eunice Kennedy Shriver National Institute of Child and Human Development R01HD060072 (P.I.: Dr. Martins). NIDA and NICHD have no further role in study design; in the collection, analysis and interpretation of data; in the writing of the report; or in the decision to submit the paper for publication.

Abstract - ID: 486 **Author(s):** Anne-Sophie Wiet **(Presenter)**, Université de Bordeaux
Jacques Dubernet, Université de Bordeaux
Fuschia Serre, Université de Bordeaux
Melina Fatseas, Centre Hospitalier Charles Perrens
Elizabeth Monthioux, Centre Hospitalier Charles Perrens
Sophie Auriacombe, Université de Bordeaux
Marc Auriacombe, Université de Bordeaux **Title:** Diagnosis and treatment of Wernicke's encephalopathy in patients with alcohol use disorder: Literature review and case series **Abstract Category:** Literature Review **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Treatment **Aims:** Cognitive impairment may decrease treatment efficiency of alcohol use disorder (AUD). Describe symptoms and treatment modalities of Wernicke's encephalopathy as a potential cause for cognitive impairment in subjects with AUD. **Methods:** Systematic literature review and a description of 8 cases of patients with AUD treated outpatient with thiamine for Wernicke's encephalopathy. **Results:** 53 papers were selected. For diagnosis (30 studies) a large variability of clinical signs was reported, with the classic triad: confusion, ataxia, ophthalmoplegia, but also cognitive impairment. Context of appearance of these symptoms is important, and patients presenting malnutrition (e.g. digestive surgeries, cancers) should be considered at increased risk. MRI may show abnormalities but may also be normal. For treatment (23 studies), thiamine was the most frequently reported treatment, with large heterogeneity in the dosage. Most authors recommended use of parenteral thiamine 1500mg/d. Outcome was rarely reported. Among the eight patients with a diagnosis of AUD and suspicion of Wernicke's encephalopathy, the most common clinical signs were cognitive impairment, cerebellar syndrome and confusion. The clinical context for the appearance of the symptoms was mainly malnutrition. Treatment used was outpatient parenteral thiamine (between 100mg and 1000mg/d for 8 days). A majority of patients presented a partial or complete remission on cognitive impairment. **Conclusions:** Considering the difficulty of Wernicke's encephalopathy's diagnosis, and the safety pattern of thiamine, with a low risk of adverse effects, this treatment may be considered when Wernicke's encephalopathy is probable. This may be feasible as outpatient in addiction treatment settings. There is need for further studies to evaluate impact on AUD outcome. **Financial Support:** Supported by internal funds.

Abstract - ID: 487 **Author(s):** Maria Lucia Souza-Formigoni, Universidade Federal de São Paulo
Ana Paula Leal Carneiro **(Presenter)**, Universidade Federal de São Paulo
Ana Regina Noto, Universidade Federal de São Paulo, Department of Psychobiology
José Carlos Fernandes Galduroz, Universidade Federal de São Paulo **Title:** The supera distance-learning course: A ten-year Brazilian experience on training professionals in screening and brief intervention to substance users **Abstract Category:** Program Descriptions **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Policy **Aims:** In Brazil, most of the graduate courses do not include specific contents about substance use related problems. Considering this the Universidade Federal de Sao Paulo in partnership with the Brazilian National Secretary on Drug Policy (SENAD) developed a distance learning course targeted to health and social work professionals named “SUPERA”, meaning System for screening of substance abuse, referral, brief intervention and follow-up**Methods:** The 120 hour-course includes a virtual learning environment in which the participants have access to: theoretical material including seven modules on: Epidemiology/cultural aspects of substance use; Psychopharmacology; Screening and Brief Intervention (SBI); Treatment modalities for drug-related problems; National system of Health and Social Work networks. In the site the participants have access to videos with examples of SBI sessions and to discussion forums moderated by a group of tutors who are also available to solve their doubts using messages, chats and phone. **Results:** From 2006-2016 we developed 10 editions of the course and more than 500.000 professionals enrolled to the 110.000 places available. Out of them 60% were approved. We also offered a post-course support on how to implement SBI in their workplaces. The professionals considered the course very good, since it had improved their knowledge on substance abuse and changed their concepts and attitudes regarding drug users. They also acted as multipliers of the acquired knowledge in their workplace.**Conclusions:** This 10 year-experience shows that distance learning courses may be a good tool to provide training on substance use to health and social work professionals making it possible to reach people from isolated places, a significant need for countries with continental dimensions such as Brazil. **Financial Support:** SENAD, AFIP, Fapunifesp, UNIFESP

Abstract - ID: 488 **Author(s):** Sergio Fernandez-Artamendi **(Presenter)**, Universidad Loyola Andalucía
Víctor Martínez-Loredo, University of Oviedo, Addictive Behaviors Group
Irene Pericot, University of Vermont
Jose Ramón Fernández-Hermida, University of Oviedo **Title:** Reliability and validaty of the GAIN-SS to detect problem drinking and problem gambling with Spanish adolescents **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** Alcohol and Gambling **Topic:** Adolescent **Aims:** Addictive behaviors in adolescents often appear with other comorbid psychosocial problems and mental disorders. A quick, appropriate and comprehensive screening of these issues at treatment entry is crucial to deliver suitable interventions. In this context, the GAIN-SS has shown to be a reliable and valid tool for screening of psychopathology and substance use problems with American adolescents. In our study, we aimed at validating the European Spanish version with a big sample of Spanish adolescents, in a computerized version. Also, we aimed at assessing its validity with regards to alcohol and gambling problems. **Methods:** A total of 1,463 adolescents participated in the study (51.1% male). Participants were evaluated with the European Spanish version of the GAIN-SS. This instrument is a short screener for internalizing (IDS), Externalizing (EDS) and Substance Disorders (SDS), Crime and Violence (CVS) and Total Disorder (TDS). Participants completed the South Oaks Gambling Screener Revised for Adolescents (SOGS-RA) for problem gambling and the Rutgers Alcohol Problems Index (RAPI) for problem drinking. Data analysis: Psychometric properties of GAIN-SS subscales and global scale were calculated, with Cronbach's Alpha for reliability. Validity measures regarding addictive behaviors (gambling and drinking) were calculated with correlations between GAIN-SS last-year subscales and SOGS-RA and RAPI. **Results:** Reliability of GAIN-SS subscales (Cronbach' Alphas: EDS 0.71; IDS 0.74; SDS 0.75; CVS 0.55) were moderate, with the exception of CVS, which resulted low. Reliability of global TDS subscale was 0.93, indicating excellent value. Regarding its validity to detect problem gambling and problem drinking, correlations indicated that SDS subscale presented the highest correlations with RAPI scores (.548, $p < .001$), followed by CVS (.342, $p < .001$). Regarding problem gambling however, correlations were significant ($p < .01$), but very low for all subscales (< .19). Results indicate that GAIN-SS is a reliable screener that can additionally help detecting problem drinking in Spanish adolescents, by means of SDS subscale. However, it seems that problem gambling is not detected by GAIN-SS and additional screening should be conducted. **Conclusions:** The European Spanish version of the GAIN-SS has shown excellent reliability with Spanish adolescents, and its SDS subscale can help detecting problem drinking. However, GAIN-SS subscales do not help in the detection of problem gambling in this sample of teenagers, suggesting additional evaluation is necessary. **Financial Support:** This project has been funded by the Ministry of Health, Social Services and Equality of Spain (MSSSI-12-2012/131) and the Ministry of Economy and Competitiveness of Spain (MINECO-15-PSI2014-56114-P)

Abstract - ID: 489 **Author(s):** Carmen Stomberg **(Presenter)**, The Grünenthal Group
Klaus Wening, The Grünenthal Group
Sebastian Schwier, The Grünenthal Group
Brandon Presley, NMS Labs **Title:** Abuse-deterrent pseudoephedrine to hinder one-pot conversion to methamphetamine **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Prevention **Aims:** Abuse of consumer pseudoephedrine (PSE) products is a known issue as prevailing formulations do not adequately impede extraction and one-pot conversion (OPC) to methamphetamine (MA). This study introduces a new abuse-deterrent formulation (ADF) for PSE tablets based on Grünenthal's INTAC® technology. ADF properties of new formulations were characterized at NMS Labs. **Methods:** 6 different new tablet formulations (120 mg PSE) and two comparators: non-ADF C1 (*Sudafed®),* ADF C2 (*Nexafed*®) were manipulated (mechanically, chemically) and extracted into different media under various conditions. PSE was converted to MA by applying different methods: **a)** lab OPC **b)** optimized OPC **c)** indirect OPC: PSE extraction with subsequent conversion. Various chemical reagents, amounts, temperatures and reaction times were investigated to identify optimal conditions. Samples were analyzed via LC-MS/MS to investigate PSE extraction and MA yields. **Results:** Both comparators were very easily crushed within 5 to 10s and exhibit 100% PSE release within 15min. 63% of the theoretical amount of MA was produced from C1 *via* method a); C2 yielded to 62% MA. Applying similar conditions to all 6 *INTAC*® tablets, no measurable MA was created. Subsequent optimization of OPC for each product (method b) led to maximum yields of 100% (C1) and 77% (C2). Best performing *INTAC*® formulation yielded only 39% MA after further and precarious optimization. Also preliminary extraction (method c) did not lead to higher MA yields for *INTAC*® tablets (at the most 8.5%). For C1, 100% was gained using method c). **Conclusions:** Formulations to deter misuse of PSE incl. conversion into MA were successfully developed, characterized by a specialized lab and compared to marketed PSE products. An unexceptional clandestine chemist is able to gain 62-100% MA from marketed PSE products using a non-optimized OPC lab method. Conversion from INTAC® led to negligible conversion to MA applying such lab OPC method. Merely a trained chemist with fully developed lab equipment would be able to gain 39% from best INTAC® formulation. **Financial Support:** Grünenthal Empolyee

Abstract - ID: 490 **Author(s):** Maria Lucia Souza-Formigoni, Universidade Federal de São Paulo
Isabel Cristina Cespedes **(Presenter)**, Universidade Federal de São Paulo
José Carlos Fernandes Galduroz, Universidade Federal de São Paulo
Tatiana Wscieklica, Universidade Federal de São Paulo
Patricia Varela, Universidade Federal de São Paulo
João Bosco Pesquero, Universidade Federal de São Paulo **Title:** Polymorphisms and stressors associated with alcohol dependence **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Genetics **Aims:** The reasons that lead an individual to become dependent on alcohol and / or other drugs have been the subject of intense discussions, within a multifactorial perspective, about the importance of each factor or its associations to the development of this behavior. This study aimed to evaluate the influence of some biological factors (polymorphism of genes: dopaminergic, CRFergic, noradrenergic and glucocorticoid receptors) and psychosocial factors (the perception and history of stress) on the development of alcohol dependence. **Methods:** One hundred twenty-four individuals without alcohol dependence and 221 with alcohol dependence associated or not with other drugs, who were inpatients at the Bezerra de Menezes Treatment Center (São Bernardo do Campo, SP, Brazil) participated in the study. They filled out the following instruments: AUDIT, Drinking Situations Inventory (DSI), Life Experience Survey (LES), Childhood Trauma Questionnaire (CTQ), Perceived Stress Scale (PSS) and allowed the collection of oral shaved for genetic analysis. **Results:** Alcohol dependents had a similar profile to that of controls: they were mostly white males, with high school/higher education background, belonging to middle socioeconomic class. All dependents made heavy use of alcohol, most commonly associated with cocaine or marijuana. The events associated with pleasant emotions, social pressure for drinking, and impulses / temptations were the major triggers of drinking for dependents. They presented higher averages of physical neglect and emotional, physical and sexual abuse than the control group, as well as had more negative experience and reaction to stressful events. The dependents also demonstrated a higher prevalence of polymorphisms in neural dopaminergic (DRD1, DRD2, DRD3, DRD5; COMT, TH, DDC; SL6A3), noradrenergic (A1BG, A2M; DDC, DBH; SL6A2) and CRFergic circuits (CRHR1, CRHR2) than controls. **Conclusions:** Both genetic and environmental risk factors are associated with alcohol disorders. **Financial Support:** FAPESP, AFIP, CNPq

Abstract - ID: 492 **Author(s):** Amelia Goodfellow **(Presenter)**, UCLA
Curtis Bone, Yale School of Medicine
Mani Vahidi, UCLA
Melvin Rico, UCLA Family Medicine
Lillian Gelberg, UCLA Family Medicine **Title:** The prevalence and impact of sexual violence among Latino men in federally qualified health centers with a history of risky drug use **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** Sexual violence among risky drug users **Topic:** Sex Differences **Aims: The CDC estimates that sexual Violence affects approximately 25% of women in the United States and 2% of men at some point in their lives. Multiple long term effects of SV have been well described among women however, there is a paucity of literature that explores long term sequelae of SV among men. A recent meta-analysis stated information is specifically lacking with Latino men. The aim of this study is to assess the relationship between SV and psychological distress among Latino men with a history of risky drug use Methods: In a cohort of patients screened with the ASSIST tool in California federally qualified health centers, 334 patients with a history of risky drug use were identified, 210 of those participants were men and 124 were women. Individuals who reported having "been raped" were classified as having a history of SV. We used descriptive statistics to characterize the study population and stratified logistic regression analysis to determine whether the relationship between SV and psychological distress is mediated by gender and ethnicity Results: Among 210 men included in the study, 71 (34%) were Latino, 47 (22%) were African American (AA) and 83(40%) were Caucasian. When all men were considered, 52(25%) reported history of SV and 18(25%) Latino men reported a history of SV. The odds of psychological distress among men with history of SV was 1.7 however the odds of SV among Latino men with history of SV was 3.0*. Among female participants, odds of psychological distress were 0.45* for AA women compared to non-AA women.Conclusions: These data offer insight into a population that has not been well described; Latino men with history of risky drug use who have experienced sexual violence. The data demonstrate increased prevalence of SV among Latino men with history of risky drug use compared to the general population (25% vs 5%) and suggest Latino men may be at increased risk of psychological distress after experiencing SV. African American women had decreased odds of psychological distress which suggests response to SV may be mediate by gender and ethnicity. Further exploration with survivors of SV from these demographics may offer additional insight into factors that promote psychological recovery after experiencing sexual violence.** **Financial Support:** NIH

Abstract - ID: 493 **Author(s):** Robert Lew, Sunovion Pharmaceuticals Inc.
Cristian Constantinescu, Molecular NeuroImaging LLC
Daniel Holden, Yale University
Evan Morris, Yale University
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Vincent Carroll, Institute for Neurodegenerative Disorders
Olivier Barret, Molecular NeuroImaging LLC
Gilles Tamagnan, Molecular NeuroImaging LLC
Kenneth Koblan, Sunovion Pharmaceuticals Inc.
Seth C. Hopkins **(Presenter)**, Sunovion Pharmaceuticals Inc. **Title:** Dramatically slower onset of DAT occupancy by dasotraline compared to methylphenidate
Abstract Category: Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Imaging **Aims:** Drugs that increase dopamine levels may be associated with stimulant effects and abuse. Drugs with faster onset kinetics are associated with greater drug liking. Dasotraline (DAS) is a novel and potent inhibitor of human dopamine and norepinephrine transporters currently being investigated to evaluate its use in treating the symptoms of ADHD in children and adults, and Binge Eating Disorder in adults. DAS is characterized by slow oral absorption and elimination with low potential for abuse. However, it remains unclear whether intravenous (IV) administration would facilitate rapid elevation of dopamine levels associated with stimulant drugs. This study uses PET imaging in rhesus monkeys to compare the onset of DAT occupancy and elevation of synaptic dopamine levels following IV administration of DAS or methylphenidate (MPH). **Methods:** Reductions in ^{18}F-FE-PE2I (DAT radiotracer) binding in striatum over time induced by DAS or MPH estimated their respective brain entry rates in rhesus monkeys. Reductions in ^{11}C-raclopride (D2 radiotracer) binding estimated synaptic dopamine elevations. **Results:** IV administration of DAS (0.1 and 0.2 mg/kg) resulted in striatal DAT occupancies of 52% and 66%, respectively, while MPH (0.1 and 0.5 mg/kg) achieved occupancies of 70% and 88%. Brain entry rates of DAS were slower (23.0 ± 3.2 and 14.7 ± 1.7 min, respectively) than for MPH (2.95 ± 0.18 and 2.5 ± 0.4 min) in N=3 animals. Elevations in synaptic dopamine (45-65 min post drug administration) were lower following DAS IV administration (6%) compared with MPH IV (21%) in N=2 animals.**Conclusions:** These results demonstrate slower onset of DAT occupancy following IV administration of DAS versus MPH, resulting in lower elevations of synaptic dopamine by DAS compared to MPH. We conclude that IV administered DAS is unlikely to support the rapid increase in synaptic dopamine responsible for the abuse liability of stimulants like MPH. **Financial Support:** Sponsored by Sunovion Pharmaceuticals Inc.

Abstract - ID: 494 **Author(s):** Stephanie Peglow **(Presenter)**, Eastern Virginia Medical School and Yale University
Marilyn Stoler, Yale University
William Becker, Yale University **Title:** Medical marijuana laws and sedative/hypnotic overdose mortality in the United States **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Policy **Aims:** Expanding access to medical marijuana has been suggested as a harm reduction strategy for the opioid epidemic and has been associated with decreased opioid overdose deaths in the United States. Sedative/hypnotics have followed a similar trajectory to opioids in recent years and have significantly contributed to overdose deaths in the United States. The purpose of this study was to determine the association between medical marijuana laws and sedative/hypnotic deaths. **Methods:** Longitudinal data of enacted state medical marijuana laws and state-level death certificates from all 50 states and DC from 1999-2014 were analyzed. All deaths coded with sedative/hypnotic poisoning as the primary cause or contributing cause of death were used to calculate death rates per 100,000. The analysis was performed for two death rate outcomes: unintentional and intentional deaths (combined), and unintentional deaths only. State, year, presence of a state prescription monitoring program (PMP) and poverty rates by state and year were controlled in the model. **Results:** States with a medical marijuana law had 7.80% (95% CI 1.23,17.82) annual increase in sedative/hypnotic combined mortality compared to states without a medical marijuana law, and a 16.42% (95% CI 4.40, 29.82) increase in unintentional mortality. Poverty rate was not significantly associated with mortality in either group. The presence of a PMP in a state was associated with a -7.20% (95% CI -15.90, -0.07) decrease in mortality in the combined death group and -14.15% (95% CI -22.31, -6.33) decrease in the unintentional death group. In the model that examined whether the number of years since implementation of a medical marijuana law was associated with a linear trend of increasing or decreasing mortality rates demonstrated no apparent linear trend. **Conclusions:** Medical marijuana laws are associated with increased rates of sedative/hypnotic overdose deaths; this relationship did not strengthen over time. Further study is necessary to explore these relationships and the mechanisms underlying them. **Financial Support:** This research was supported by the Veterans Administration Mental Illness Research, Education and Clinical Center (MIRECC).

Abstract - ID: 496 **Author(s):** Curtis Bone **(Presenter)**, Yale School of Medicine
Lori Bastian, Yale University
Amelia Goodfellow, UCLA
William Becker, Yale University
Lillian Gelberg, UCLA Family Medicine **Title:** Tobacco use and debilitating pain: Understanding sex and gender differences in a primary care cohort with a history of risky drug use **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Sex Differences **Aims: Tobacco use and chronic pain are common co-occurring condition affecting approximately 50 million people in the United States. A growing body of literature suggests an association between tobacco use and chronic pain but conflicting evidence exists regarding whether this relationship is mediated by sex and gender. The aims of this study are to: 1) assess the relationship between smoking and debilitating pain and 2) to determine whether the relationship between smoking and pain is mediated by sex and gender among primary care patients with history of risky drug use.Methods: In a cohort of primary care patients screened with the ASSIST tool, 334 patients with a history of risky drug use were identified and enrolled into the study. Individuals who smoked one half pack per day or more were classified as "smokers" and individuals who agreed or strongly agreed that pain limited their daily activities were classified as experiencing "debilitating pain." Descriptive statistics and logistic regression were utilized to characterize study participants, assess the relationship between tobacco use and pain, and to evaluate sex and gender as a mediator of this relationship Results: Among 210 men and 124 women include in the study, 65 (31%) men and 25 (20%) women reported current smoking while 52(25%) men and 44 (35%) women reported debilitating pain. The odds of reporting debilitating pain were greater (OR 2.0 p=0.002) among individuals who were smokers. However, stratified analysis demonstrated sex differences in the association between smoking and pain: women (OR 3.6 p=0.006) and men (OR 1.74 p=0.09). Potential confounders of the relationship between smoking and pain include sexual violence among women (OR 4.29 p=0.004 and OR 3.38 p=0.002) and homelessness among men (OR 2.85, p=0.009 and OR 4.44 p < 0 .001) as they are both associated with smoking and pain.Conclusions: There is an established association between pain and smoking however the role that sex and gender plays in this relationship is not clear. These data demonstrate the role of sex and gender as an effect modifier in the relationship between smoking and pain. This study also introduces potential confounding variables (sexual violence and homelessness) in the relationship between gender, smoking and pain. Future research should explore the potential benefits of addressing history of SV and homelessness in treatment of tobacco addiction and chronic pain.** **Financial Support:** NIH

Abstract - ID: 497 **Author(s):** Jean-Marc Alexandre **(Presenter)**, Université de Bordeaux
Christophe Rassis, Centre Hospitalier Charles Perrens
Fuschia Serre, Université de Bordeaux
Melina Fatseas, Centre Hospitalier Charles Perrens
Marc Auriacombe, Université de Bordeaux **Title:** A survey of potential internet gaming disorder extended to screen use in a community sample **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** internet gaming **Topic:** Epidemiology **Aims:** To describe screen use in a community sample of a medium-sized city in Aquitaine, France and to explore for potential problematic screen use based on DSM5 internet gaming disorder. **Methods:** A cross-sectional survey was conducted among the 7400 inhabitants of a sub-urban city in Aquitaine, France. Two specific questionnaires were developed. A self-questionnaire for adolescents/adults (age 13 and above) and a parent-filled-questionnaire for children aged 12 and under. The questionnaires explored screen type used (television, computer, smartphones, tablets, handled game console) and problematic use for adolescents/adults in the past 12 months based on the 9 DSM-5 *Internet Gaming Disorder* criteria. **Results:** 893 questionnaires were returned (response rate 37%) and 835 were valid (348 adolescents/adults; 487 children). The sample was comparable to the total community on age, sex, and education. There was a widespread access and regular use of all types of screens in daily life activities, among the whole sample. Among the adolescents/adults sample 76 (22%) reported 1 criteria for screen use disorder, 56 (16%) 2+ criteria, 21 (6%) 3+ criteria, 7 (2%) 4+ criteria, and 5 (1%) 5+ criteria, the current threshold suggested for a diagnosis of *Internet Gaming Disorder*. These subjects used all types of screens. Difficulties reported were not limited to gaming, but included use for communication, social networking, work, and research on the Internet. **Conclusions:** In this community sample, use of all types of screens for recreational and work related activities was common. Among those reporting at least one criterion for use disorder, a minority only met the current threshold suggested for internet gaming disorder. Gaming was only one among many activities reported as problematic. Further research is needed to determine how IGD should progress**Financial Support:** Martignas city and internal funds from Univ. Bordeaux.

Abstract - ID: 498 **Author(s):** Camille Cibiel-Heintz **(Presenter)**, Université de Bordeaux
Fuschia Serre, Université de Bordeaux
Melina Fatseas, Centre Hospitalier Charles Perrens
Marc Auriacombe, Université de Bordeaux **Title:** Associations between employment and addiction type and severity **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** all substances **Topic:** Epidemiology **Aims:** To examine prospective associations between employment status, employment and financial resources and severity and type of addiction in a sample of individuals entering treatment for addiction. **Methods:** Patients entering treatment for addiction were recruited in an outpatient addiction treatment clinic (Bordeaux, France). Addiction severity and type, employment characteristics and employment/support difficulties were assessed with the Addiction Severity Index (ASI) at treatment intake and after 18 months. **Results:** 2143 patients seeking treatment for substance and non-substance addictions were included, 68% male, 38 y.o. (SD=11). At baseline, employment status was not associated with ASI severity score for the main problem use (t=-1,62, p=0.11). The ASI score of the employment/support domain was linked to the type of addiction. Patients with opiate addiction had higher impairment scores (3.3, SD=2.2), while patients treated for tobacco addiction had lower impairment scores (1.5, SD=1.9). The Employment/support domain score was correlated with addiction severity (Pearson r= 0.14, p < 0 .001), even after controlling for age, gender, type of addiction and employment income. In a sub-sample of 147 patients re-evaluated at 18 months follow-up, patients presented a significant improvement of addiction severity (t=-12.14, p < 0 .001), that was not associated with employment status (t=0.26, p=0.79), nor with evolution of severity for Employment/support domain (Pearson r= -0.09, p=0.41). **Conclusions:** As part of a comprehensive treatment of addiction, employment and financial councelling appears beneficial for all patients treated for an addiction, as severity of addiction is correlated with difficulties concerning employment and financial resources. However in the French social and economic setting of this study to have a job was not associated with lower addiction severity, nor with higher improvement during treatment. How this may apply in other social and economic settings is to be studied**Financial Support:** PHRC 2006, MILDT 2010

Abstract - ID: 499 **Author(s):** Shane Perrine **(Presenter)**, Wayne State University
Alana Conti, Wayne State University **Title:** Effects of single prolonged stress on ethanol drinking and striatal function and neurochemistry in animals **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Alcohol **Topic:** Mechanisms of Action **Aims:** Studies demonstrate that those with posttraumatic stress disorder (PTSD) demonstrate higher rates of alcoholism and alcohol use disorders (AUDs) and the comorbidity worsens outcomes and treatment. One mechanism to have recently come into focus to explain the compounded effects of comorbid PTSD+AUD is impaired cortical activation that leads to loss of top-down control of the striatum, a region that governs reward and habit responding in addictive disorders, such as AUD. **Methods:** We have addressed this knowledge gap by examining striatal activation in comorbid PTSD+AUD, using the single prolonged stress (SPS) rodent model of PTSD, in a collection of studies. The effects of SPS on (1) ethanol sensitization and drinking behaviors, (2) striatal function and neurochemistry using magnetic resonance imaging modalities, and (3) striatal levels of post-synaptic density (PSD)-95, dopamine D2 receptor (D2R), and cannabinoid receptor 1 (CB1) were determined in adult, male Sprague Dawley rats or C57Bl/6 mice**Results:** We find that SPS blunts ethanol-induced behavioral sensitization and enhances binge ethanol consumption. Imaging studies show that SPS decreases cortical glutamate levels while increasing striatal N-acetylaspartate and enhancing amygdalar neural activity, which collectively may reflect the loss of top-down cortical control of reward and fear/anxiety based behaviors. At the level of the striatum, we find increased PSD-95, decreased D2R, and decreased CB1 levels in animals exposed to SPS and chronic ethanol, which is consistent with altered synaptic plasticity, an addiction-like phenotype, and a potential mechanism underlying comorbid PTSD+AUD, respectively**Conclusions:** The collection of findings here provide validity for our animal model of comorbid PTSD+AUD and mechanistic evidence implicating an overactive striatum, resulting from compromised cortical (excitatory glutamate) and striatal (inhibitory CB1) control, in the co-occurrence of these disorders. **Financial Support:** Wayne State University Departments of Psychiatry and Behavioral Neurosciences and Neurosurgery and VA Merit Award 1I01RX001511.

Abstract - ID: 500 **Author(s):** Mayra Pachado, Universidade Federal do Rio Grande do Sul
Alice Willhelm, Universidade Federal do Rio Grande do Sul
Luciano S. P. Guimarães, Universidade Federal do Rio Grande do Sul
Flavio Pechansky, Center for Drug and Alcohol Research, Federal University of Rio Grande do Sul
Felix Kessler **(Presenter)**, Center for Drug and Alcohol Research, Federal University of Rio Grande do Sul
Rosa M. M. de Almeida, Center for Drug and Alcohol Research, Federal University of Rio Grande do Sul **Title:** Causal pathways between impulsiveness, crack cocaine use consequences and attention-deficit/hyperactivity disorder **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Behavior **Aims:** To examine whether lifetime crack cocaine use consequences mediate the relationship between self-reported impulsiveness and attention-deficit/hyperactivity disorder (ADHD). **Methods:** This was a cross-sectional study. Participants were crack cocaine users (?N =182; $M?_{age}?$= 31.7, ?SD?=8.5;) under treatment at a public inpatient facility in Brazil. They were assessed using Barrat Impulsiveness Scale (BIS) (attentional, motor and non-planning subscales) to measure impulsivity traits; a standardized Crack Cocaine Use Questionnaire to measure crack cocaine use related consequences; and the Adult Self-Report Scale-ASRS to measure current symptoms of ADHD. Preliminary correlations were conducted to assess the relationship among all included variables and mediation analyses were conducted to assess the mechanistic influence of lifetime crack cocaine use consequences on the relationship between impulsivity traits and ADHD symptoms. **Results:** Participants reported a mean of 8.89±2.68 lifetime crack cocaine consequences and a mean score in the ASRS of 31.63±12.42. It was found significant correlations between all BIS subscales and ASRS score ($p < 0$ .01). Correlations between motor and non-planning impulsivity and lifetime crack cocaine use consequences were also significant ($p < 0$ .05). In two separate simple partially mediation analysis lifetime crack cocaine use consequences mediated the relationship between impulsivity trait and ADHD current score symptoms (motor impulsiveness: R(2)=0.43 and non-planning impulsiveness: R(2)=0.41). Lifetime crack cocaine use consequences did not mediate the relationship between attentional impulsivity and current ADHD symptoms. **Conclusions:** Crack cocaine use consequences function as a pathway between impulsiveness and ADHD. We found support for impulsiveness as a risk factor for lifetime crack cocaine use consequences which can lead to a higher likelihood to have current ADHD symptoms. These findings are of clinical relevance in order to plan successful interventions to help crack cocaine users in their recovery. **Financial Support:** Brazilian Secretariat of Drug Policies

Abstract - ID: 501 **Author(s):** Sarah Heil **(Presenter)**, University of Vermont
Alexis Matusiewicz, University of Vermont
Heidi Melbostad, University of Vermont
Stacey Sigmon, University of Vermont
Lauren Macafee, University of Vermont
Stephen Higgins, University of Vermont **Title:** Increasing effective contraceptive use among opioid-maintained women at risk for unintended pregnancy **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Perinatal **Aims:** Nearly 80% of opioid-exposed pregnancies are unintended, due in part to alarmingly low rates of effective contraceptive use among opioid-using women (< 1 0%). We developed an intervention to increase prescription contraceptive use by opioid-maintained (OM) women. Usual care in many OM clinics involves distribution of contraceptive information and referrals to community family planning providers. The intervention adds (1) the World Health Organization's (WHO) contraception protocol and (2) financial incentives for attendance at follow-up visits. Pilot data strongly supported the initial efficacy of this intervention, with 5-fold higher rates of self-reported prescription contraceptive use in the experimental vs. control conditions at the end of the 6-month intervention (94% vs. 13%). A fully randomized controlled Stage II trial is now ongoing to rigorously evaluate the efficacy of the different components of this innovative intervention**Methods:** Ninety-two OM women at risk for unintended pregnancy have been randomly assigned to one of three study conditions: (1) usual care; (2) usual care+WHO contraception protocol; or (3) usual care+WHO contraception protocol+financial incentives for attendance. The primary outcome is verified prescription contraceptive use at the end of the 6-month intervention. **Results:** Preliminary results suggest a graded effect, with 15% vs. 37% vs. 58% verified prescription contraceptive use at 6 months across the three conditions, respectively, and statistically significant differences between the first and last conditions at this time. Use of the most effective prescription contraceptives, IUDs and implants, is also graded (0% vs. 30% vs. 46%), as are number of pregnancies (5 vs. 4 vs. 1).**Conclusions:** Preliminary results suggest the experimental interventions increase prescription contraceptive use, but that financial incentives provide added efficacy. **Financial Support:** R01 DA036670, T32 DA07242, P20 GM103644

Abstract - ID: 502 **Author(s):** Jose Parra-Cardona **(Presenter)**, Michigan State University
Maria Parker, University of Vermont
James Anthony, Michigan State University **Title:** Extra-medical use of prescription pain relievers: US-born vs. non-US-born residents of 'First Nation' heritage
Abstract Category: Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** Pain relievers **Topic:** Ethnic Differences
Aims: In our lines of BITUSA (Born in the USA) research on ethnic self-identification (ESI) and becoming a newly incident drug user, we identified 'First Nation' 12-to-24-year-olds as a subgroup that is distinctive for: (1) higher incidence rates for starting to use prescription pain relievers extra-medically (EMPPR), and (2) large differences between US-born and non-US-born residents of 'First Nation' heritage. This study delves into this important subgroup of young people in the United States, noting that many of the non-US-born also identify with Mexican heritage and/or were born in Mexico. Here, we describe EMPPR incidence estimates for these BITUSA/ESI subgroups, with a focus upon those with Mexican origins.

Methods: The National Surveys on Drug Use and Health assessed cross-sectional samples of 12-to-24-year-old non-institutionalized United States civilians via computer-assisted self-interviews between 2002 and 2009. Analysis-weighted nationally representative study estimates and 95% confidence intervals (CI) were derived from the Restricted-use Data Analysis System for four year-pairs.

Results: For each year-pair, approximately 18 non-US-born 12-to-24-year-olds started using EMPPR of 1,000 individuals at risk for initiating EMPPR use (95% CI = 11, 29). For US-born counterparts, the estimate is 48 (95% CI = 41, 57). This large risk difference between groups is statistically robust (RD = 30.0; $p < 0.05$).

Conclusions: This investigation confirms trends of EMPPR use previously reported in the literature, which indicate disproportionate rates of use among individuals of 'First Nation' heritage. Current findings expand previous reports indicating that US-born residents of Mexican heritage are at a particularly high risk for EMPPR use. Relevant questions for future research are identified such as the need to examine the possibility that 'First Nation" US-born residents of Mexican heritage experience a specific pattern of vulnerability consisting of considerable cultural and contextual stressors. **Financial Support:** NIDA K01DA036747 (JRPC); K05DA015799 (JCA); T32DA007242 (MAP); Michigan State University

Abstract - ID: 503 **Author(s):** Cecilia Bergeria **(Presenter)**, University of Vermont
Sarah Heil, University of Vermont
Allison Kurti, University of Vermont
Taylor Ochalek, University of Vermont
Stephen Higgins, University of Vermont **Title:** Cannabis use in pregnant and recently postpartum cigarette smokers and nonsmokers **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Perinatal **Aims:** Despite numerous risks, ~13% of pregnant women are cigarette smokers. Non-pregnant cigarette smokers are three times more likely to use cannabis when compared to those who do not smoke cigarettes. It is unclear if cannabis use differs between pregnant cigarette smokers and nonsmokers and whether use differs across pregnancy and into the postpartum (PP) period. High rates and/or persistent use of cannabis by pregnant cigarette smokers could result in additional toxicant exposure for the mother and offspring. Thus, the purpose of this study is to examine the prevalence and pattern of cannabis use across pregnancy and the PP period among cigarette smokers and nonsmokers.**Methods:** This is a secondary analysis of an ongoing clinical trial comparing "Best Practices" alone to "Best Practices" plus financial incentives contingent on cigarette smoking abstinence. Pregnant women (52 cigarette smokers, 24 nonsmokers) completed assessments during pregnancy and through at least 12 weeks PP. At assessments, participants provided self-report and biochemical measures (breath CO, urine cotinine) of cigarette use. Urines from five assessments (intake, late pregnancy, 4, 8 and 12 weeks PP) were later tested for THC using Enzyme Multiplied Immunoassay Technique.**Results:** Overall, pregnant cigarette smokers had a higher prevalence of THC positive urines compared to nonsmokers (30% vs. 12%), $p < .05$. Among women who ever tested positive for THC, pregnant cigarette smokers were THC-positive at significantly more assessments (3.7 vs. 2.1), $p < .05$. There was no effect of time on THC-positive urine samples. **Conclusions:** Similar to the non-pregnant population, pregnant and recently PP cigarette smokers appear to have higher rates of cannabis use compared to nonsmokers. Furthermore, this difference tends to persist through pregnancy and into the PP period. This suggests that some proportion of pregnant and PP smokers may face additional risk for toxicant exposure. **Financial Support:** R01HD075669

Abstract - ID: 504 **Author(s):** Joy Scheidell **(Presenter)**, New York University School of Medicine
Christopher Frueh, University of Hawaii at Hilo
Maria Khan, New York University School of Medicine **Title:** Childhood traumatic experience and criminal justice involvement among women: Evaluating mediation by drug use and depression **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Epidemiology **Aims:** We examined drug use and depression as mediators of the relationship between childhood trauma and criminal justice involvement (CJI) among women. **Methods:** Using data from Wave I (age 7^{th}-12^{th} grade), III (age 18-26) and IV (age 24-32) of the National Longitudinal Study of Adolescent to Adult Health (n=12,288 with sample weights), we measured nine childhood traumas: neglect; emotional, physical, or sexual abuse; parental incarceration and binge drinking; and witnessed, threatened with, or experienced violence. Indicators of each were summed. We examined associations between an ordinal trauma score exposure and lifetime history of arrest and incarceration. Mediators were Wave III drug use (past year marijuana, cocaine, methamphetamine use, and prescription painkiller misuse since Wave I) and depression. We compared associations between trauma and CJI (c) with associations further adjusting for mediators (c') and interpreted attenuation to suggest mediation. We calculated the mediation ratio as the percent change in estimate ((c-c')/c). **Results:** After adjusting for sociodemographics, each unit increase in trauma score was associated with a 25% increase in odds of arrest (adjusted odds ratio (AOR)=1.25, 95%CI: 1.16-1.34). Additionally adjusting for drug use attenuated the AOR to 1.19 (95%CI: 1.10-1.29; mediation ratio of 20%). Further adjustment for depression did not materially change the estimate (AOR: 1.18, 95%CI: 1.09-1.28). Trauma was strongly associated with incarceration (AOR: 1.34, 95%CI: 1.21-1.49 for each one unit increase). Adjustment for drug use attenuated the AOR to 1.30 (95%CI: 1.17-1.45; mediation ratio of 10%). Further adjustment for depression did not change the estimate (AOR 1.29, 95%CI: 1.16-1.43). **Conclusions:** Childhood trauma may be an important determinant of CJI, and trauma-related drug use appears to explain some but not all of the association. Women in the criminal justice system should be reached with drug treatment and programs to address prior trauma.**Financial Support:** R01DA036414

Abstract - ID: 505 **Author(s):** Maria Khan **(Presenter)**, New York University School of Medicine
Joy Scheidell, New York University School of Medicine
Danielle Ompad, New York University
Kelly Quinn, New York University School of Medicine **Title:** Childhood parental incarceration and adulthood drug use, sexually transmitted infection, and arrest risk among Blacks and Hispanics in the US: Assessment of moderation by mentorship **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Epidemiology **Aims:** We examined whether deleterious effects of having a parent incarcerated on a child's subsequent health may be mitigated by having a mentor in late adolescence among blacks and Hispanics, groups at disproportionate incarceration risk. **Methods:** We used data from Waves I (age 7th-12th grade), III (age 18-26 years) and IV (age 24-32 years) of the National Longitudinal Study of Adolescent to Adult Health (n=4,522 black and Hispanic participants) to estimate associations between parental incarceration before age 18 years (assessed Wave IV) and adulthood past year marijuana use, any cocaine use, past year STI, and participant arrest (assessed Wave IV), among those with a mentor with whom the respondent was very or quite close, those with a non-close mentor, and those with no mentor (assessed Wave III). We adjusted for sociodemographic factors, multiple prior traumas, and baseline outcome risk (e.g., cocaine models adjusted for Wave I cocaine use). **Results:** Associations between parental incarceration and drug use/STI were stronger for those with a close or non-close mentor versus no mentor: marijuana use (close mentor adjusted odds ratio (AOR): 1.92, 95% CI: 1.24-2.96; non-close mentor AOR: 1.59; 95% CI: 0.87-2.91; no mentor AOR: 0.86, 95% CI: 0.53-1.41); cocaine use (close mentor AOR: 1.78, 95% CI: 1.09-2.92; non-close mentor AOR: 2.51, 95% CI: 1.40-4.94; no mentor AOR: 1.60, 95% CI: 0.85-2.99); STI (close mentor AOR: 2.58, 95% CI: 1.36-4.90; non-close mentor AOR: 2.59; 95% CI: 1.08-6.25; no mentor AOR: 1.64, 95% CI: 0.79-3.41). Parental incarceration-participant arrest associations were stronger among those with no mentor (AOR: 4.05, 95% CI: 2.89-5.68) and a non-close mentor (AOR: 3.03; 95% CI: 1.79-5.15) versus a close mentor (AOR: 1.83, 95% CI: 1.20-2.79). **Conclusions:** Mentorship is associated with protection against arrest but increased drug and STI risk among minorities. Further research is needed to best understand how mentorship can protect health. **Financial Support:** R01DA036414

Abstract - ID: 506 **Author(s):** Edward Nunes **(Presenter)**, Columbia University and NYSPI
Michael Gordon, Friends Research Institute
Peter Friedmann, Baystate Health
Mei-Chen Hu, Columbia University Medical Center, Department of Psychiatry
Joshua Lee, New York University School of Medicine
Donna Chen, University of Virginia
Marc Fishman, Mountain Manor Treatment Center
Tamara Boney, University of Pennsylvania
Donna Wilson, Baystate Health
Charles O'Brien, University of Pennsylvania **Title:** Relapse to opioid dependence after inpatient or outpatient treatment: Protective effect of injection naltrexone
Abstract Category: Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** Opioid dependence is often treated with short term hospitalization and detoxification followed by counseling alone without medication assisted treatment (MAT). More evidence is needed to confirm the expectation that the rate of relapse would be high after short term inpatient detoxification without follow-up MAT. The objective was to examine relapse to opioid dependence in a randomized, multi-site effectiveness trial of extended-release injection naltrexone, (XR-NTX) vs community-based treatment as usual (TAU) without medication, where some patients initiated treatment as inpatients and others as outpatients who had already achieved abstinence. We hypothesized that the rate of relapse in the TAU condition would be highest, and the protective effect of injection naltrexone (i.e. the difference in relapse between the naltrexone and TAU conditions) greatest among those initiating treatment as inpatients.**Methods:** Multi-site, randomized effectiveness trial of extended-release injection naltrexone (XR-NTX) vs community-based treatment as usual (TAU) without medication, as a function of the type of clinical service where treatment was initiated--short-term inpatient (N = 59), long-term inpatient (N = 48), or outpatient (N = 201). Inpatients typically were admitted to treatment actively using opioids and were detoxified before study randomization. Outpatients presented already abstinent for varying periods of time. The primary outcome was Relapse (binary), defined as return of regular opioid use ascertained by urine or self-report. Logistic regression was used to model Relapse as a function of treatment assignment (XR-NTX vs TAU) and clinical service type where treatment was initiated (short term inpatient vs long term inpatient vs outpatient).**Results:** One month after randomization, the treatment by clinical service type interaction was significant (chi-square = 6.36, p = 0.042). Relapse rates on TAU by setting were: short-term inpatient: 63%; long term inpatient: 14%; outpatient: 28%. On XR-NTX relapse rates after one month were low (< 12%) across all three settings. At the end of the 6 month trial, there was a main effect of treatment (chi-square(2) = 13.36, p = .0003), and a main effect of clinical service type (chi-square(2) = 6.15, p =0.046), and site by treatment was not significant. Relapse rates on TAU were high across all treatment-initiation settings (short term inpatient 77%; long term inpatient 59%; outpatient 61%), while XR-NTX exerted a modest protective effect against relapse across settings (short term inpatient: 59%; long term inpatient 46%; outpatient 38%).**Conclusions:** Among patients with opioid use disorder, short term inpatient treatment is associated with a high rate of rapid relapse within the first month after discharge, and naltrexone protected against relapse. These findings support the recommendation that detoxification should be followed by medication assisted treatment. Even outpatients, presenting already abstinent from opioids, experienced substantial relapse over 6 month follow up, and benefitted from prophylaxis with medication.**Financial Support:** National Institute on Drug Abuse multiple R01 mechanism (R01DA024549; R01DA024550; R01DA024553; R01DA024554; R01DA024555; K24DA022412. Alkermes, Inc. provided medication for the study

Abstract - ID: 507 **Author(s):** Alissa Coffey **(Presenter)**, Penn State College of Medicine
V.B Krishnamurthy, Penn State College of Medicine
S Yadav, Penn State College of Medicine
J Singh, Penn State College of Medicine
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E. F. Saunders, Penn State College of Medicine
A.N Vgontzas, Penn State College of Medicine
E. Bixler, Penn State College of Medicine
Roger Meyer, Penn State College of Medicine, Psychiatry **Title:** Sleep disturbances in subjects with opioid use disorder on buprenorphine **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** Aims: Sleep disturbances are highly prevalent in subjects with opioid use disorder and can lead to relapse. Buprenorphine is a treatment of opioid dependence, and a recent federal mandate will increase its availability. However, overall sleep quality and sleep disturbances in this population are largely unknown. In this study, we sought to find the prevalence of poor sleep quality and characterize the sleep deficits seen in patients with opioid use disorder on buprenorphine (OUDs). Hypotheses: Poor sleep quality is more prevalent in OUDs than healthy controls (HC). OUDs exhibit specific sleep disturbances such as increased sleep latency (SL) and decreased total sleep time (TST) and sleep efficiency (SE) compared to HC. **Methods:** Methods: OUDs (n=91) were recruited from a buprenorphine maintenance program in central Pennsylvania. Subjects completed a sociodemographic survey and the Pittsburgh Sleep Quality Index (PSQI). HC (n=27) with no history of substance use disorders in the past year were recruited through advertisement at Hershey Medical Center. We used chi-square tests, t-tests and Mann-Whitney U tests to compare demographics and prevalence, sleep disturbances and PSQI scores between the groups. **Results:** Results: PSQI scores >5 were more prevalent in OUDs (78%) than in HC (7%). OUDs had prolonged SL, decreased TST and SE, and higher scores on PSQI SL, TST, SE, sleep quality, sleep disturbance, daytime dysfunction and sleep medication need. PSQI total score correlated positively with severity of depression/anxiety and negatively with the number of rehab admissions. Anxiety severity and number of rehab admissions explained 22% of PSQI total score variability in a linear regression model. **Conclusions:** Conclusion: Specific sleep issues are highly prevalent in OUDs on buprenorphine, warranting clinical attention. Severity of anxiety and fewer rehab admissions may predict poorer sleep quality in ODS. **Financial Support:** Department of Psychiatry, Penn State College of Medicine

Abstract - ID: 508 **Author(s):** Amy Loree **(Presenter)**, VA Connecticut/Yale University School of Medicine
Kimberly Yonkers, Yale University-Psychiatry
Steven Ondersma, Wayne State University-Psychiatry and Behavioral Neurosciences
Kathryn Gilstad-Hayden, Yale University-Psychiatry
Steve Martino, Yale University-Psychiatry **Title:** Satisfaction, alliance and intervention experience: Comparing provider- vs. computer-delivered brief, motivational interventions for substance use among childbearing-aged women **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Treatment **Aims:** Screening, brief intervention, and referral to treatment (SBIRT) delivered in person or electronically (eSBIRT) is recommended for identifying women who use substances and helping them reduce/discontinue their use. However, it is not known how eSBIRT compares to SBIRT with respect to patients' experience of satisfaction and therapeutic alliance with brief interventions. It is also unknown if SBIRT and eSBIRT deliver similar components of the brief intervention. **Aims**: To compare satisfaction and alliance ratings following receipt of SBIRT and eSBIRT and to compare intervention components received in both SBIRT groups. **Hypothesis**: Satisfaction and alliance ratings and intervention components will be similar across SBIRT groups. **Methods:** The present investigation used data collected as part of a multi-factorial randomized clinical trial (N = 439) comparing SBIRT, eSBIRT, and enhanced usual care for childbearing aged women receiving care in a reproductive health clinic. Participants in the SBIRT and eSBIRT groups completed satisfaction and alliance ratings following a single-session motivational intervention targeting substance use. Trained raters independently rated audio recorded SBIRT sessions for the presence of six major intervention components. Raters also rated the occurrence of these components in the eSBIRT program. Descriptive analyses and t-tests were used to examine differences between groups. **Results:** Participants in both groups were very satisfied and felt allied with the intervention; though SBIRT participants were significantly higher in a few categories of each domain. Motivational intervention components received by each group were similar. **Conclusions:** Findings suggest that participant satisfaction and alliance with SBIRT and eSBIRT are comparable, and that participants are exposed to similar intervention elements regardless of delivery method. **Financial Support:** Interprofessional Advanced Fellowship in Addiction (Office of Academic Affiliations, U.S. Department of Veterans Affairs) awarded to Loree; NIDA R01 DA1049398 awarded to Yonkers & Martino.

Abstract - ID: 509 **Author(s):** Amy Johnson **(Presenter)**, Virginia Commonwealth University
Matthew Banks, Virginia Commonwealth University
S. Stevens Negus, Virginia Commonwealth University **Title:** Effects of amphetamine maintenance on abuse-related behavioral effects of MDPV and methamphetamine in rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Treatment **Aims:** Maintenance on the dopamine transporter (DAT) substrate amphetamine decreases cocaine use clinically and blunts the abuse-related behavioral and neurochemical effects of cocaine in rats as measured by intracranial self-stimulation (ICSS) and *in vivo* microdialysis of nucleus accumbens (NAc) dopamine (DA) levels. The current study tested the effectiveness of 7-day amphetamine maintenance in rats to decrease abuse-related behavioral and neurochemical effects of two other abused DAT ligands, the selective DAT uptake inhibitor methylenedioxypyrovalerone (MDPV) and the DAT substrate and DA releaser methamphetamine (MA). We hypothesized that MDPV and MA would increase NAc DA concentrations and facilitate baseline ICSS and that amphetamine maintenance would blunt these effects.**Methods:** Male Sprague-Dawley rats were used for all studies. For ICSS, rats were implanted with electrodes targeting the medial forebrain bundle, and responding on a lever was reinforced by pulses of electrical brain stimulation in a frequency-rate ICSS procedure. Effects of MDPV and MA (0.1-1.0 mg/kg) were determined before and after 7-day treatment with saline or 0.32 mg/kg/hr amphetamine (n = 6 each) delivered by a subcutaneously implanted minipump. Data were analyzed by two-way ANOVA followed by a Holm-Sidak post hoc test. For microdialysis, separate groups of rats were implanted with cannulae targeting the NAc, and dialysates were analyzed for concentrations of DA before and after administration of MDPV or MA (0.1-1.0 mg/kg, n = 6 per dose)**Results:** MDPV and MA dose-dependently facilitated ICSS and increased NAc DA levels. Amphetamine maintenance produced a submaximal facilitation of ICSS throughout treatment. However, in contrast to previous results with cocaine, MDPV and MA retained efficacy to produce a further abuse-related facilitation of ICSS. Microdialysis studies are ongoing.**Conclusions:** Completed studies suggest that amphetamine maintenance has weaker efficacy to blunt abuse-related effects of MDPV and MA than of cocaine. **Financial Support:** Supported By: R01DA026946 and T32DA007027

Abstract - ID: 510 **Author(s):** Eric Woodcock **(Presenter)**, Wayne State University
Jeffrey Stanley, Wayne State University
Vaibhav Diwadkar, Wayne State University
Dalal Khatib, Wayne State University
Mark Greenwald, Wayne State University **Title:** Effects of pharmacological stress-induction among non-treatment-seeking cigarette smokers **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Behavior **Aims:** Stress often potentiates cigarette smoking behavior, yet mechanisms remain poorly understood. In this study, we examined pharmacological stress effects on nicotine seeking behavior among non-treatment seeking cigarette smokers. **Methods:** Current smokers (breath CO >= 5ppm; 10+ cigarettes/day; Fagerstrom [FTND] >= 4), not using other substances (breath alcohol- and urinalysis-verified), and without other Axis I disorders (MINI-6) were deemed eligible. Enrolled subjects (N=21) completed 2 experimental sessions under double-blind, oral dosing conditions: active stressor (yohimbine 54mg + hydrocortisone 10mg; YOH+HYD) and placebo (random order). Physiological, subjective and neuroimaging (fMRI and ^{1}H fMRS) data were collected. In each session, subjects completed an 11-trial choice progressive ratio task; on each trial s/he could earn 1 cigarette puff (preferred brand; 'nicotine seeking') or money ($0.25 units). Repeated measures ANOVA and bivariate correlations were used to analyze data. **Results:** The modal subject was an African-American (71%) male (86%) aged 28 years who smoked 16 cigarettes/day (FTND=6). YOH+HYD induced physiological stress responses [Condition x Time interactions: diastolic (*p*pppsF(1,17)=4.65, *p*p=.75). In the YOH+HYD condition, withdrawal relief-motivated craving positively correlated with nicotine seeking in less dependent subjects (r=.63), whereas baseline expired CO positively correlated with nicotine seeking in more dependent subjects (r=.66). **Conclusions:** YOH+HYD induced physiological stress responses in all subjects, but only increased nicotine seeking in less dependent subjects. Stress-induced cigarette craving and pre-session smoking levels correlated with nicotine seeking among less and more dependent subjects, respectively. Neuroimaging results will be discussed. **Financial Support:** Funding generously provided by NIDA (F31 DA040369; awarded to EAW) and Wayne State University School of Medicine (New Investigator Grant; awarded to EAW).

Abstract - ID: 511 **Author(s):** Howard Chilcoat **(Presenter)**, Indivior Inc.
Theodore Cicero, Washington University in St. Louis
Matthew Ellis, Washington University in St. Louis **Title:** Understanding use of buprenorphine without a prescription **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** Since approval of buprenorphine for treatment of opioid dependence, there has been concern about its abuse and diversion. Although there is substantial evidence of diverted buprenorphine used without a prescription, there is a need to understand whether this use reflects abuse or self-treatment by those with Opioid Use Disorder (OUD) who cannot get access to treatment via medical channels. **Methods:** Individuals previously in treatment for OUD and initially surveyed in the RADARS® System's Survey of Key Informants Patients (SKIP) Program were contacted by email and given a link to an online survey about their use of buprenorphine. Closed- and open-ended questions asked about use of buprenorphine with and without a prescription, reasons for use, route of administration and access to buprenorphine prescribers in the past year and lifetime.**Results:** There were 303 individuals who completed the survey: 110 reported use of buprenorphine both with and without a prescription, 65 used only without a prescription, 53 used only with a prescription, and 75 reported no buprenorphine use. Reported buprenorphine use among those without a prescription (n=175) included: single-ingredient tablets (68%), buprenorphine/naloxone tablets, and buprenorphine/naloxone film (75%). The most common reasons for use without a prescription were consistent with therapeutic use: prevent withdrawal (79%), maintain abstinence (67%), or wean self off drugs (53%). Many indicated they did not have access to other drugs (54%) or their drugs of choice were not available (41%). Nearly half (52%) reported using buprenorphine to get high or alter mood but few indicated that it was their drug of choice to get high (4%)**Conclusions:** Although use of buprenorphine without a prescription was common in this sample of individuals previously in treatment for OUD, the reasons for most non-prescription use were consistent with therapeutic use. Although abuse of buprenorphine occurs, these findings suggest that a significant portion of diversion of buprenorphine may reflect an unmet treatment need.**Financial Support:** This research was supported by Indivior, Inc.

Abstract - ID: 512 **Author(s):** Mark Smith **(Presenter)**, Davidson College
Andrea Robinson, Davidson College
Gaylen Fronk, Davidson College
Huailin Zhang, Davidson College
Scott Tonidandel, Davidson College **Title:** The effects of social influence on cocaine self-administration in female rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Behavior **Aims:** Preclinical studies conducted in male rats report that social contact can either facilitate or inhibit drug intake depending on the behavior of social partners. For instance, cocaine self-administration is facilitated in male rats with a social partner with access to cocaine, but cocaine self-administration is inhibited in male rats with a partner without access to cocaine. The purpose of the present study was to (1) examine the effects of social contact on cocaine self-administration in female rats, (2) examine the behavioral mechanisms by which social contact influences cocaine self-administration, and (3) examine whether the estrous cycle moderates the effects of social contact on cocaine self-administration. **Methods:** Female rats were assigned to either isolated or pair-housed conditions in which a social partner either had access to cocaine or did not have access to cocaine. Pair-housed rats were tested in custom-built operant conditioning chambers that allowed both rats to be tested simultaneously in close physical contact separated by a wire screen. Estrous cycle was monitored daily immediately prior to each cocaine self-administration session. **Results:** Rats housed with a social partner with access to cocaine self-administered more cocaine than isolated rats and rats housed with a partner that did not have access to cocaine. A behavioral economic analysis of the dose-response data indicated that these differences were driven by differences in the intensity of cocaine demand across groups. Specifically, rats housed with a partner with access to cocaine exhibited greater levels of consumption at lower unit prices relative to rats in the other groups. Multivariate modeling revealed that the estrous cycle did not moderate the effects of social contact on cocaine intake. **Conclusions:** These findings indicate that (1) social contact influences the effects of cocaine self-administration in females in a manner similar to that previously reported in males, (2) these effects are due to differences in the effects of social contact on the intensity of cocaine demand, and (3) these effects are consistent across all phases of the estrous cycle. **Financial Support:** Supported by NIDA grant DA031725

Abstract - ID: 513 **Author(s):** Andrea Robinson **(Presenter)**, Davidson College
Huailin Zhang, Davidson College
Alexander Casimir, Davidson College
Mark Smith, Davidson College **Title:** The effects of estradiol and progesterone on heroin self-administration in ovariectomized rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Opiates/Opioids **Topic:** Behavior **Aims:** A large body of literature reports that stimulant intake is increased by estradiol and decreased by progesterone, indicating that ovarian hormones can both positively and negatively modulate drug self-administration. Relatively few studies have examined the effects of ovarian hormones on heroin self-administration, but the available data suggest that these effects may differ from those seen with stimulants. The purpose of the present study was to (1) examine the effects of estradiol, progesterone, and their combination on heroin self-administration in ovariectomized female rats and (2) examine the behavioral mechanisms contributing to these effects. **Methods:** Female rats were ovariectomized, implanted with intravenous catheters, and treated daily with (1) vehicle, (2) estradiol, (3) progesterone, or (4) a combination of estradiol and progesterone. All rats were then trained to self-administer heroin on a fixed ratio (FR1) schedule of reinforcement and heroin intake was examined over a 100-fold range of doses. **Results:** Heroin self-administration was characterized by an inverted U-shaped dose-effect curve in all groups. Heroin intake varied significantly across groups, with progesterone-treated rats exhibiting the highest levels of heroin intake and estradiol-treated rats exhibiting the lowest levels of heroin intake. A behavioral economic analysis of the dose-response data indicated that differences between groups were driven by significant differences in the elasticity of demand for heroin across groups, with progesterone-treated rats being least sensitive to increases in unit price and estrogen-treated rats being most sensitive to increases in unit price**Conclusions:** These data indicate that progesterone facilitates heroin self-administration and that estradiol inhibits heroin self-administration in female rats. These effects differ from those reported for stimulants, and emphasize that the effects of ovarian hormones on drug self-administration vary across drug class.
Financial Support: Supported by NIDA grant DA031725

Abstract - ID: 514 **Author(s):** Aimee Campbell **(Presenter)**, Columbia University and NYSPI
Traci Rieckmann, Oregon Health and Science University
Sheila Markwardt, Oregon Health and Science University
Edward Nunes, Columbia University and NYSPI **Title:** Clinician attitudes, social norms, and intention to use Internet-delivered addiction treatment **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Technology Issues **Aims:** Internet-delivered interventions (IDI) for substance use disorders show promise for increasing access to treatment. Understanding addiction treatment staff experiences with IDI is essential for devising effective implementation methods. This study describes clinician attitudes, social norms, and intention to use IDI following participation in a National Drug Abuse Treatment Clinical Trials Network trial of Internet-delivered Therapeutic Education System (TES). **Methods:** Data are drawn from clinicians (N=129) within 10 outpatient programs following participation in an effectiveness trial of TES. Clinicians were assigned patients per usual program procedures. TES consists of 62 multimedia modules grounded in the Community Reinforcement Approach. Linear regression models tested the association between having at least one TES patient on caseload and three outcomes: attitudes towards, program social norms, and intention to use IDI (standardized scales -3 to 3). Covariates were site, race/ethnicity, job type, and recovery status. **Results:** 46 clinicians (36%) had at least one TES patient; among these, TES was discussed in 87% of sessions. In fully-adjusted regression models, clinicians with TES patients were more likely to report positive attitudes towards IDI than clinicians without TES clients (?=.50, p=.02). Clinicians not in recovery (72%) and with TES patients reported more positive social norms compared to those without TES patients (?=1.08, p=.01); a similar result was found for intention. Clinicians in recovery and with a TES patient were more likely to report less positive social norms than clinicians without TES patients, although not significant (?=-.96, p=.10). Intention to use IDI was lower in clinicians in recovery who had TES clients compared to clinicians without TES clients (?=-1.04, p=.02). **Conclusions:** Exposure to patients receiving IDI was associated with more positive attitudes towards use of technology, a promising finding for enhancing integration of IDI in addiction settings. Findings suggest clinicians in recovery were less open to technology-based treatment, replicating previous research. Clinicians in recovery may find additional training useful on how IDI can be integrated with traditional addiction treatment. **Financial Support:** NIH/NIDA U10 DA013035; K24 DA022412; U10 DA015815

Abstract - ID: 515 **Author(s):** Ayana Jordan **(Presenter)**, Yale University **Title:** The use of the Black Church to improve treatment access for Blacks with SUD **Abstract Category:** Program Descriptions **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Ethnic Differences **Aims:** Black adults use alcohol at lower rates compared with their white counterparts, with nicotine and illicit drug use at the same rate; however, Blacks are more likely to suffer negative drug-related consequences. Blacks are less likely to initiate substance abuse treatment when compared with other racial groups. Stigma in accessing substance abuse treatment, mistrust of the medical system, and lack of health care coverage have all been cited for low treatment engagement among Blacks. The Black Church, a highly trusted entity in Black communities, is a novel and promising setting for the recruitment and treatment of Blacks with substance use disorders (BSD). Delivery of an effective web based intervention, CBT4CBT, shown to decrease the use of alcohol and illicit substances in the clinical setting, is a promising strategy for delivering evidence-based therapies in the Black church. Aims for the study are (1) To conduct focus groups (N=30) with key stakeholders to identify existing programs for BSD both within the community and Black churches, (2) To conduct in-depth interviews (N=20) with BSD to (a) identify societal and cultural factors of stigma related to substance use; (b) understand factors that prevent BSD from seeking treatment; and (c) assess attitudes towards receiving help for SUD within the Black church setting; and (3) To design and conduct an online survey for BSD (N=100) to (a) quantify what percentage of BSD would be willing to use a web-based intervention; (b) how BSD would prefer to receive the web-based intervention (self-administered, facilitated by clergy in the church setting, facilitated by substance abuse counselor in the church setting, or not offered in the church at all); and (c) identify what population of BSD are willing to engage in substance use help in the church setting. **Methods:** N/A given Program Descriptions Category **Results:** N/A given Program Descriptions Category **Conclusions:** This project is intended to inform feasibility and implementation of evidence-based therapies within novel settings, like the Black church. Data obtained will aid the development of innovative strategies to engage an underserved population, which is highly relevant to reducing and ultimately eliminating health disparities. Project supported by Yale and NIDA.**Financial Support:** Yale University Learning for Early Careers in Addiction & Diversity Program funded by NIDA

Abstract - ID: 516 **Author(s):** Alan Budney **(Presenter)**, Geisel School of Medicine at Dartmouth
Dustin Lee, Johns Hopkins Medicine
Denise Walker, University of Washington
Mary Brunette, Geisel School of Medicine at Dartmouth
John Hughes, University of Vermont
Samantha Auty, Geisel School of Medicine at Dartmouth
Jean-Francoise Etter, University of Geneva
Catherine Stanger, Dartmouth College **Title:** Simultaneous vs. sequential approaches to target tobacco use during treatment of cannabis use disorder **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Treatment **Aims:** Approximately 50-60% of those enrolling in treatment for cannabis use disorder (CUD) report regular use of tobacco. Tobacco use is a negative predictor of cannabis abstinence outcomes during treatment, and in addition, can contribute to numerous types of future adverse health outcomes. Our group has developed and piloted an integrated treatment approach to addressing cannabis and tobacco use in persons with CUD. This study is the first controlled trial evaluating its efficacy. **Methods:** Sixty-seven adults seeking treatment for CUD, who reported regular tobacco use and expressed some interest in quitting tobacco, were randomized to receive a tobacco intervention (TI) simultaneous with CUD treatment (SIMULT) or sequential to completing the CUD treatment (SEQ). All participants received an initial 12-weeks of computerized MET, CBT, and abstinence-based CM. The TI comprised computerized behavioral counseling tailored for tobacco and cannabis users and nicotine-replacement therapy (NRT). The TI was not available to SEQ participants until Week 13. **Results:** Treatment retention and participation did not differ between conditions. Cannabis abstinence and self-reported days of cannabis use were similar across conditions during and at end of treatment. More participants in the SIMULT condition made a tobacco quit attempt (50% vs. 39%) during weeks 1-12, but tobacco reduction and abstinence were low and similar across conditions. More participants in the SIM engaged in the TI (62% vs. 30%) and initiated NRT use (41% vs. 25%).**Conclusions:** These preliminary findings demonstrate that CUD outpatients will engage in interventions for tobacco use. Clear evidence for differential outcomes between the two approaches tested was not observed. More potent TIs should be explored using control conditions with no TI or repeated assessments of tobacco use to more clearly assess impact on cannabis outcomes. **Financial Support:** NIDA R01DA032243, T32DA037202

Abstract - ID: 517 **Author(s):** Jeremy Hill **(Presenter)**, Lewis Katz School of Medicine at Temple University
Viviana Zuluaga-Ramirez, Lewis Katz School of Medicine at Temple University
Malika Winfield, Lewis Katz School of Medicine at Temple University
Sachin Gajghate, Lewis Katz School of Medicine at Temple University
Yuri Persidsky, Lewis Katz School of Medicine at Temple University **Title:** Effects of GPR55 activation on neural stem cell proliferation, differentiation, and immune responses to chronic inflammation **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Marijuana/Cannabinoids **Topic:** AIDS/Immune **Aims:** New neurons are produced by neural stem cells (NSCs) within the adult hippocampus. Numerous diseases including major depressive disorder (MDD) and HIV-1 associated neurocognitive disorder (HAND) are associated with decreased rates of adult neurogenesis. A hallmark of these conditions is a chronic release of neuroinflammatory mediators by activated resident glia. Recent studies have shown a neuroprotective role on NSCs of cannabinoid receptor activation. GPR55, a candidate cannabinoid receptor, is activated by numerous cannabinoids including Delta-9-THC. Yet, little is known about the effects of GPR55 activation on neurogenesis especially in response to inflammation and HIV-1 infection. In the present study we examined NSCs exposed to HIV-1 and inflammatory cytokines to assess inflammation-caused effects on NSC proliferation and differentiation and the ability for GPR55 agonists to attenuate NSC injury. **Methods:** Protective effects of GPR55 agonists were assessed after treating an *in vitro* non-proliferating phenotype of human NSCs with inflammatory cytokines and HIV-1 related neurotoxic proteins (gp120, tat). NSC proliferation was evaluated via BrdU incorporation. NSC differentiation and neurogenesis was determined via FACS analysis of NSC markers (Nestin, Sox2, DCX, GFAP, NeuN)**Results:** Results showed an increase in proliferation rates induced by GPR55 agonist treatment as well as rescued neurogenesis rates after treatment with inflammatory mediators. *In vivo* studies showed reduced numbers of proliferating cells in GPR55 KO animals as compared to WT. Direct intrahippocampal administration of GPR55 agonists *in vivo* increased NSC proliferation and neurogenesis. **Conclusions:** These results suggest a neuroprotective role of GPR55 activation on NSCs *in vitro* while *in vivo* studies demonstrate a necessity for GPR55 signaling under homeostatic conditions. **Financial Support:** AA15913, DA007237

Abstract - ID: 518 **Author(s):** Denise Vidot **(Presenter)**, University of Miami
Krystal Sardinas, University of Miami Miller School of Medicine
Abenaa Jones, Johns Hopkins Bloomberg School of Public Health, Department of Mental Health
Sarah Messiah, University of Miami **Title:** Eating behaviors, weight loss practices and marijuana use among emerging adults **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Epidemiology **Aims:** Emerging adults have the highest prevalence of marijuana use and unhealthy weight loss practices (UWLP) compared to other age groups in the United States (US). Despite concurrent high marijuana use and epidemic levels of overweight/obesity, diabetes, and cardiovascular disease, there is a gap in the literature describing weight loss practices and eating behavior among marijuana users. Our aim is to examine such practices in a population-based sample of US emerging adults. **Methods:** A cross-sectional analysis of 18-to-25 year olds (N=2,395) from the 2009-2014 National Health and Nutrition Examination Surveys was conducted. Marijuana use was categorized as never (reference group), past (previously but not within the last 30-days; PMU), and current ≥1 day in the last 30-days; CMU) use. UWLP was defined as the report of either use of laxatives, fasting, non-prescription diet pills, or engaging in a liquid diet. Adjusted (age, gender, ethnicity, survey year) odds ratios (AOR) for the relationship between marijuana use and unhealthy weight loss practices were estimated via logistic regression analysis. **Results:** The majority were either PMU (33.9%) or CMU (25.2%). More PMU considered themselves overweight (38.9%) than CMU (30.8%) and never users (35.7%; p=001). Similarly, more PMU wanted to lose weight (51.0%) than CMU (42.8%) and never users (50.1%; $p < 0$ .001). More never users (38.5%) actively tried to lose weight in the last year compared to 26.0% of current and 36.7% of past users. CMU had a 4-fold higher odds of engaging in UWLP than never users (AOR: 4.4, 95% CI: 1.45-13.3). **Conclusions:** Results suggest that CMU have higher odds of UWLP despite lower perception of overweight status compared to never users. Future studies should examine the mechanisms of this relationship. **Financial Support:** NA

Abstract - ID: 519 **Author(s):** Philip Smith **(Presenter)**, CUNY School of Medicine
Neelam Prashad, CUNY School of Medicine
Lunden Sara, CUNY School of Medicine
Christine Sheffer, Roswell Park Cancer Institute
Adam Leventhal, University of Southern California
Sherry McKee, Yale School of Medicine **Title:** Development of a measure for affect during cigarette smoking anticipation **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Behavior **Aims:** Anticipatory affect is the emotional states that individuals' experience while expecting a significant event. In the context of substance use, individuals often experience a range of emotional states each with specific valence and salience when expecting to use a particular substance. Such affective experiences are likely to have trait and state components, and might play an important role in initiating, maintaining, and extinguishing substance use. The aim of this study was to conduct an initial investigation into the development of a measure of positive, high activation (e.g. excitement) trait anticipatory affect for cigarette smokers**Methods:** An iterative process was used to modify the Positive and Negative Affect Schedule to develop the Behavioral Anticipatory Affect Measure (BAAM). Past-month cigarette smokers were recruited through Amazon Mechanical Turk, an online worker platform. Respondents were asked to rate levels of affect while expecting to smoke a cigarette. Affect levels ranged in both valence and saliency. Respondents were re-administered the questionnaire after 1 week to examine test-retest reliability. Analyses examined variability, internal consistency, discriminant validity for positive, high activation affect, and test-re-test reliability. **Results:** Participants (n=197; n=97 men, n=100 women) were primarily white (86%); 81% completed both administrations. Variability covered the full range of the scale (1-5; higher scores = stronger affect), with a slightly right-skewed distribution. The initial administration showed high internal consistency (alpha = 0.92) and high discriminant validity in relation to negative affect and low-activation. Results were confirmed after 1 week (alpha = 0.90); Test-retest reliability was good (alpha = 0.80).**Conclusions:** Our initial examination of the BAAM demonstrated sound statistical and psycho-metric properties among cigarette smokers. Further analyses will explore concurrent/discriminant validity in relation to other cigarette-smoking variables, and predictive validity in relation to change in smoking behavior over time. **Financial Support:** NIMHD (R01 MD007054), NCI (P20 CA192993 and P20 CA192991), NIDA/NIAAA (K12 DA031050)

Abstract - ID: 520 **Author(s):** Jesse Hinckley **(Presenter)**, University of Colorado School of Medicine, Department of Psychiatry
Christian Hopfer, University of Colorado School of Medicine
Michael Stallings, University of Colorado
John Hewitt, University of Colorado
Susan Young, University of Colorado School of Medicine, Department of Psychiatry **Title:** Endorsing cannabis as drug of choice is associated with increased use of other illicit drugs: A longitudinal analysis **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Epidemiology
Aims: The aims of this study are to (1) evaluate use patterns of alcohol and cannabis during adolescent (13-18), transition (19-23), and young adult (24-28) years and (2) determine if drug of choice is associated with concurrent drug use to evaluate a substitution effect. **Methods:** Use patterns of alcohol, cannabis, and 9 illicit drugs were assessed by standardized interviews in participants of a community-based longitudinal twin study at 5-year intervals (1998-2014; DA011015). Mean ages at time of interview were 16.67, 21.68, and 26.33 years during adolescent, transition, and young adult years, respectively. Use was defined as using a substance 6 or more times. We assessed *drug of choice* (DOC) by asking which drug one would use most often if money or availability was not a problem. Group comparisons by DOC were conducted using standard independent samples t-tests (DA032555, DA035804). **Results:** Of the 2117 subjects 16.1% report alcohol use, 9.8% report cannabis use, and 31.6% report alcohol and cannabis use in adolescence. By transition years 52.3% report alcohol use, 1.3% report cannabis use, and 37.1% report alcohol and cannabis use, similar to young adulthood. Endorsing cannabis as current DOC is associated with more frequent use of cannabis during each age range ($p < 0.01$) but with lower frequency of alcohol use during adolescence ($p=0.03$). Frequency of alcohol use is similar regardless of DOC during transition and young adult years. Endorsing cannabis as DOC is also associated with number of illicit drugs used in transition and young adult years ($p < 0.01$ and $p < 0.01$, respectively). **Conclusions:** Endorsing cannabis as DOC is associated with decreased frequency of alcohol use during adolescence. However, there is no significant difference in alcohol use during later years and cannabis as DOC is associated with an increased number of illicit drugs used, which are contrary to substitution effect. **Financial Support:** DA011015, DA032555, DA035804

Abstract - ID: 521 **Author(s):** Shrinidhi Subramaniam **(Presenter)**, Johns Hopkins University School of Medicine
Anthony DeFulio, Western Michigan University
Brantley Jarvis, Johns Hopkins University School of Medicine
August Holtyn, Johns Hopkins University School of Medicine
Kenneth Silverman, Johns Hopkins University **Title:** Delay discounting, financial choices, and drug use in a therapeutic workplace **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Behavior **Aims:** To describe the relation between delay discounting, spending, and drug use in unemployed, opioid-dependent adults enrolled in a study evaluating employment-based reinforcement of oral naltrexone adherence. **Methods:** Participants (N = 67) completed a hypothetical discounting task in which they made choices between earning a small amount of money immediately or $1000 after 1 of 7 delays. Quantitative analysis was used to calculate summary measures of discounting. Participants were invited to attend the therapeutic workplace where they could earn ~$10 per hour for attendance/engagement with job-skills training for 20 hr/week for 30 weeks. Earnings were exchangeable for gift cards at the end of each weekday. Average daily balance and percentage of balance spent were calculated for each participant. Participants were asked to provide urine samples for opiate and cocaine urinalysis 3 x week. Percentage of samples negative for opiates and cocaine categorized participants as infrequent users, frequent users of one drug, or frequent users of two drugs. **Results:** Delay discounting area under the curve was not significantly correlated with average daily balance (r=-0.09), percentage of daily balance spent (r=0.09), or percentage of cocaine- (r=0.11) or opiate-negative (r=-0.02) urine samples (ps>.05). Those with infrequent drug use or frequent use of one drug spent a smaller proportion of their daily earnings, $F(2,64)=3.44$, $p?p^2=0.10$, and maintained a higher daily balance, $F(2,64)=3.24$, $p?p^2=0.09$, than those who frequently tested positive for both drugs. **Conclusions:** Delay discounting and financial choices were unrelated, perhaps because of pressure to spend money immediately due to chronic unemployment. However, frequent drug users maintained a lower daily balance and spent more of their daily earnings than less frequent drug users. Money-management may be an appropriate skill to teach in substance-abuse treatment. **Financial Support:** R01DA019386; R01DA037314; T32DA007209

Abstract - ID: 522 **Author(s):** Henry Young **(Presenter)**, University of Florida
Mirsada Serdarevic, University of Florida
Hannah Crooke, University of Florida
Joseph Tyndall, University of Florida
Linda Cottler, University of Florida **Title:** Assessing the risk of opioid abuse among individuals with high emergency department utilization **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Epidemiology **Aims:** As emergency medicine is among the top prescribing specialty of opioids to adults in the US, it is important to understand if the ED population is at increased risk to abuse opioids. The aim of this study is to assess if ED superutilizers (ED SU) are at greater risk of opioid abuse than non SU. **Methods:** HealthStreet Community Health Workers (CHW) interviewed adult individuals residing in northeast Florida from November 2011 to November 2016. The assessment elicited risk factors for opioid overdose including binge drinking, illicit drug use, sedative use, mental illness, and prescription of pain medication. Individuals with an average of 4 or more emergency department visits in the last 12 months were identified as super utilizers. Descriptive statistics were used to assess risk of opioid abuse by healthcare utilization.**Results:** Among 6839 individuals included in this analysis, approximately 43% were male and 62% were African-American; 962 individuals met criteria for ED super utilizers. Binge drinking was similar between ED SU and non ED SU (25% vs 24%). However ED SU were more likely to report lifetime (60% vs 51%) and current use of illicit drugs (23% vs 17%) and lifetime (55% vs 47%) and current (21% vs 16%) marijuana use. They also reported higher rates of past 30 day prescription opioids (66% vs 46%) and sedatives (16% vs 8%). ED SU also had a significantly higher rate of mood (56% vs 32%) and mental health disorders (16% vs 7%) than non-super utilizers**Conclusions:** In our population, ED super utilizers were at increased risk of opioid abuse and were exposed to prescribed controlled substances at a higher rate. Future research should assess the use of alternative therapies for managing pain in the emergency department once risks are identified. **Financial Support:** NIDA T32 Grant Recipient. Grant Number T32DA035167.

Abstract - ID: 523 **Author(s):** Meredith Berry **(Presenter)**, Johns Hopkins University School of Medicine
Mary Sweeney, Johns Hopkins University School of Medicine
Matthew Johnson, Johns Hopkins School of Medicine **Title:** Testing a novel prospective memory training program in substance users **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Behavior **Aims:** Individuals with substance use disorders exhibit deficits in prospective memory and working memory. Prospective memory is the ability to implement future intentions, and working memory is a critical underlying component of prospective memory. Deficits in prospective and working memory likely play an integral role in substance use treatment failures, as substance use treatment requires implementation of future intentions (e.g., attending group therapy sessions, taking medications, avoiding situations known to trigger drug use). Improvements in prospective memory and working memory, therefore, constitute a viable target for intervention. **Methods:** We developed a novel prospective memory training program which incorporates working memory. Participants (n=5, recruitment is ongoing) enrolled in an outpatient substance use disorder treatment program participated in 30 sessions (each lasting approximately one hour) of the novel prospective memory training program. **Results:** Results show that prospective memory and working memory performance within the training program improved across the 30 training sessions. Self-report data also indicated that the prospective memory training program helped to develop memory strategies, and participants reported improvements in remembering tasks in their day-to-day lives. Treatment acceptability and satisfaction ratings were high. Preliminary results of other outcomes measures assessed before and after the prospective memory training program (e.g., delay discounting) will be presented. **Conclusions:** These data support the development of this intervention as an adjunctive therapy for substance use disorders. **Financial Support:** NIDA R01DA035277 NIDA K24DA023186 NIDA T32DA07209

Abstract - ID: 524 **Author(s):** Brittany Brakenhoff **(Presenter)**, Ohio State University
Natasha Slesnick, Ohio State University
Quiong Wu, Ohio State University **Title:** Substance-using mothers experiencing suicidal thoughts: Impact of parenting behaviors on child behavior problems **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Other **Aims:** Suicidal thoughts and behaviors are common among women with a substance use disorder (SUD) (Marshall, Galea, Wood, & Kerr, 2013). Additionally, a significant number of women substance users have children in their care. While the negative impact of maternal substance use on child outcomes has been documented, little is known about how the co-occurrence of suicidal ideation influences child outcomes (Hser, Evans, Metchik-Gaddis, & Messina, 2013). In attempting to unravel the complex influence of maternal SUD and suicidality on children, the current study explored whether parenting behaviors among mothers with a SUD varied in their protective effects on children's problem behaviors depending upon mother's suicidality. It was hypothesized that higher maternal acceptance, autonomy promotion and monitoring would be associated with fewer child problems, but that the effects would vary depending on the mother's suicidality. **Methods:** The sample included 183 treatment seeking women with a SUD who had a child in their care. Mothers' ages ranged from 22 to 54 years (M = 33.9) and the target children's ages ranged from 8 to 16 (M = 11.5). Nearly half of the mothers reported opioids as their drug of choice (89 mothers, 48.6%), 60 mothers (32.8%) reported alcohol and 34 mothers (18.6%) reported cocaine as their drug of choice. Twenty-one percent of mothers reported current suicidal ideation and 33 percent had attempted suicide in the past. A series of hierarchical linear regression analyses were applied with child depressive symptoms, externalizing problems, and internalizing problems as the outcome variables. **Results:** Findings showed maternal autonomy promotion, maternal acceptance and parental monitoring were associated with decreased child behavior problems. However, the presence of maternal suicidal ideation presented unique risk in which children generally did not benefit from positive parenting behaviors. **Conclusions:** The findings suggest that children of mothers with a SUD and who are also suicidal could benefit from different parenting strategies than children of mothers who are not suicidal. This study suggests that suicidal ideation is a unique risk factor that should be addressed with both mothers and children when mothers seek substance use treatment. **Financial Support:** This work has been supported by NIDA grant R01DA023062, N. Slesnick, PI.

Abstract - ID: 525 **Author(s):** Naama Levy-Cooperman **(Presenter)**, Altreos Research Partners Inc.
Michael Gillespie, Teva Pharmaceuticals, Inc.
Megan Shram, Altreos Research Partners Inc.
Laura Rabinovich-Guilatt, Teva Pharmaceuticals, Inc.
Kerri Schoedel, Altreos Research Partners Inc. **Title:** PK/PD correlation in hydrocodone ER abuse potential studies **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** None **Aims:** Drug formulations with slower kinetics may reduce abuse potential; however, pharmacokinetic (PK) and pharmacodynamic (PD) data may be weakly correlated at the individual subject level. We examined PK/PD correlations in 2 human abuse potential studies of hydrocodone extended release (HER) employing CIMA® Abuse-Deterrence Technology. **Methods:** Post hoc analysis of 2 single-dose, randomized, double-blind, crossover studies of 45 mg oral and intranasal HER. Oral study: intact HER, crushed HER, hydrocodone powder, and placebo. Intranasal study: milled HER, hydrocodone powder, milled Zohydro ER, intact oral HER, and placebo. PK parameters: peak plasma concentration (C_{max}), time to C_{max} (T_{max}), area under plasma concentration-vs.-time curve from 0 to 4 hours (AUC_{0-4h}), and abuse quotient (AQ; C_{max}/T_{max}). PD parameters: peak effect (E_{max}) for "at the moment" Drug Liking visual analog scale (VAS), Overall Drug Liking (ODL) VAS, and Take Drug Again (TDA) VAS. PK/PD correlations were examined using Pearson correlation coefficients (*r*) and scatter plots for each treatment and all treatments combined. **Results:** In the oral study, positive correlations were seen for all treatments combined, including "at the moment" Drug Liking E_{max} vs. C_{max} (*r*=0.7135), AQ (*r*=0.6230), and AUC_{0-4h} (*r*=0.7361). Inverse correlations were seen for hydrocodone T_{max} vs. E_{max} of "at the moment" Drug Liking (*r*=?0.6981), ODL (*r*=?0.5771), and TDA (*r*=?0.5635) VAS. PD AQ ("at the moment" Drug Liking E_{max}/time to E_{max}) did not show correlation with PK AQ (*r*=?0.0830). PK/PD correlations were lower in intranasal vs. oral study. Correlations were weaker for individual treatments, particularly intact oral HER, in both studies. **Conclusions:** In this exploratory post hoc analysis, PK and PD effects correlated more strongly than in previous reports, potentially because of slow kinetics and lack of abuse-related effects with oral intact HER. **Financial Support:** Sponsored by Teva Branded Pharmaceutical Products R&D, Inc. (Frazer, PA).

Abstract - ID: 526 **Author(s):** Francois Lamy **(Presenter)**, Wright State University
Raminta Daniulaityte, Wright State University
Amit Sheth, Wright State University
Ramzi W. Nahhas, Wright State University
Alan G. Smith, Wright State University
Silvia Martins, Columbia University Mailman School of Public Health
Robert Carlson, Wright State University **Title:** Using Twitter to monitor negative effects of cannabis and synthetic cannabinoid products **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Epidemiology **Aims:** Changes in U.S. cannabis policy combined with the frequent appearance of new synthetic cannabinoids have contributed to new trends in cannabis use and a range of adverse effects. This study uses Twitter data related to cannabis, marijuana edibles, marijuana concentrates and synthetic cannabinoids to compare sentiment expressed in personal communication tweets and to identify mentions of adverse effects.**Methods:** Tweets were collected 03/01/2015-12/01/2016 using Twitter API. Tweets were categorized by cannabis-type product, source (personal communication, retail, news) and sentiment (positive, neutral, negative) using the eDrugTrends platform. Tweets identified as personal communications and expressing negative sentiment were further processed to extract mentions of negative effects.**Results:** EDrugTrends collected 67,832,051 tweets during the study period and classified 1,607,352 tweets as U.S-geolocated personal communications expressing negative sentiment for the cannabis-type products monitored. Most cannabis (78.8%), marijuana edibles (50.2%), and marijuana concentrates (71.4%) related tweets expressed positive sentiment. In contrast, most synthetic cannabinoid tweets expressed negative sentiment (80.7%). The two most frequent negative effect categories mentioned in negative tweets were: 1) addiction (0.15%) and overdose (0.13%) for cannabis; 2) addiction (30.3%) and overdose (5.87%) for synthetic cannabinoids; 3) overdose (0.14%) and hallucination (0.14%) for marijuana edibles, and; 4) cough (0.09%) and nausea (0.09%) for marijuana concentrates.**Conclusions:** These results illustrate the differences in opinion and the variety and frequency of adverse effects for each cannabis type and synthetic cannabinoids as discussed by Twitter users. The study demonstrates the ability of Big Data content analysis to capture relevant data for drug abuse research. **Financial Support:** Financial support was provided by NIDA (R01DA039454; Daniulaityte, PI; Sheth, PI)

Abstract - ID: 527 **Author(s):** Claudia Rafful **(Presenter)**, UCSan Diego
Richard S Garfein, UCSan Diego
Jazmine Cuevas, UCSan Diego
Shelly Sun, UCSan Diego
Sonia Jain, UCSan Diego
Steffanie Strathdee, UCSan Diego
Dan Werb, UCSan Diego **Title:** HIV risk behaviors and providing recent injection initiation assistance among people who inject drugs in the San Diego – Tijuana border region **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Epidemiology **Aims:** To study the association between recent (i.e., past 6 months) HIV-related risk behaviors and initiating others into injection drug use (IDU) among people who inject drugs (PWID). Efforts to prevent IDU are increasingly focused on the role that PWID play in initiating others into injecting. This is particularly relevant in settings with a high prevalence of IDU and related HIV risk behaviors, including U.S.-Mexican border cities.**Methods:** *Preventing Injecting by Modifying Existing Responses* (PRIMER) is a multi-cohort study assessing social and structural factors associated with PWID providing injection initiation assistance. The present analysis included data from two participating cohorts (*Study of Tuberculosis, AIDS, and Hepatitis C Risk* [STAHR II] in San Diego and *Proyecto El Cuete IV* in Tijuana). Eligible participants were ? 18 years old and reported IDU within the month prior to study enrollment. Cross-sectional analyses were performed at the PRIMER baseline defined as the visit when the injection initiation questions were first introduced. Logistic regression analyses were conducted to assess the association between count of recent injection-related HIV risk behaviors (e.g., distributive/receptive syringe sharing, dividing drugs in a syringe, paraphernalia sharing) and reporting recently providing injection initiation assistance.**Results:** Among the 886 participants, 41 (4.6%) reported recently providing injection initiation assistance. In multivariable analysis, adjusting for study cohort, age, sex, and recent injecting frequency, there was an increased odds of recently initiating of others among PWID reporting more injection-related risk behaviors (adjusted odds ratio per risk behavior: 1.3, 95% Confidence Interval: 1.0-1.6). **Conclusions:** PWID who reported recently engaging in one or more HIV-associated injecting risk behaviors were more likely to initiate others into injecting. This has implications for efforts to reduce the expansion of syndemics of IDU and HIV transmission among PWID. **Financial Support:** CR was supported by a UC-MEXUS/CONACyT scholarship grant number 209407/313533, the UC MEXUS Dissertation Grant numbers DI 15-42 and R25 DA026401. DW is supported by a grant to the PRIMER study from NIDA DP2-DA040256-01 and by the Canadian Institutes of Health Research via a New Investigator Award. Support for this project also comes from NIDA grants R01DA019829; and R01DA03107401A1.

Abstract - ID: 528 **Author(s):** Omayma Alshaarawy **(Presenter)**, Michigan State University
James Anthony, Michigan State University **Title:** Mortality from cardiovascular disease and diabetes among cannabis users **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Epidemiology **Aims:** There are case reports of 'pot heart attack' and stroke after cannabis use, but little epidemiological evidence exists. Here, we estimate mortality from cardiovascular disease or diabetes among cannabis users. **Methods:** Among 11982 18–59 year olds examined for the United States Third National Health and Nutrition Examination Survey (NHANES III), 1988-1994, a total of 447 deaths occurred before 2012, with leading cause of death coded in the National Death Index (NDI) as either heart disease, cerebrovascular disease, or diabetes mellitus (DM), or with the multiple cause of death field showing DM or hypertension. NDI enabled discrete time survival analysis estimation of cannabis-associated mortality risk ratios (RR). **Results:** After controlling for age, mortality from cardiovascular disease or diabetes was larger for participants who had been active cannabis users at the NHANES examination when compared to never users (RR ~ 2; $p < 0.05$). Attenuation was seen with covariate control (sex, race, education, alcohol drinking, tobacco cigarette smoking, and cocaine use); RR ~ 1; $p > 0.05$. Controlling for cardiometabolic predictors did not affect the estimates. Similar null results were obtained for individuals with greater lifetime frequency of cannabis use. **Conclusions:** We found no link from earlier cannabis use to later risk of death from these causes. Study designs can be improved to yield more definitive evidence. **Financial Support:** NIH NCCIH K99AT009156 (OA), NIDA T32DA021129, K05DA015799 (JCA), MSU

Abstract - ID: 529 **Author(s):** Mehmet Sofuoglu, Yale University
Alireza Noroozi, Tehran University of Medical Sciences
Reza Daneshmand , University of Social Welfare and Rehabilitation Sciences
Ahmadreza Samiei , Arak University of Medical Sciences
Tara Rezapour, Institute for Cognitive Science Studies
Javad Hatami, Institute for Cognitive Science Studies
Ali Farhoudian , University of Social Welfare and Rehabilitation Sciences
Hamed Ekhtiari **(Presenter)**, Institute for Cognitive Science Studies **Title:** Cognitive rehabilitation for individuals with opioid use disorder: A randomized controlled trial **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** The purpose of this study was to examine the efficacy of cognitive rehabilitation as an intervention for patients with opioid use disorder recruited in to a methadone maintenance treatment (MMT) program. **Methods:** 120 male patients were randomly assigned to one of these two groups: (1) MMT plus cognitive rehabilitation treatment (CRT), which was designed to improve cognitive performance in attention, executive functions and memory in two months; and (2) an equally time-intensive control condition consisting of MMT plus a placebo intervention (painting). Participants were assessed at pre, mid-term and post intervention as well as in 1, 3 and 6-month follow-up**Results:** Repeated measure ANOVA shows CRT group performed significantly better in the tests of learning ($F=9.77$, $p=0.003$), switching ($F=6.38$, $p=0.015$), speed processing ($F=5.96$, $p=0.018$), memory ($F=21.46$, p?0.01) and memory span ($F=5.64$, $p=0.022$) over control group. In contrast to CRT group who remained stable, control group indicated deterioration in learning, memory and memory span related tasks over follow-up. Although, they had a durable improvement in switching and processing speed. From 12 weekly urine tests, CRT group had significant lower relapse to opiates over control group ($T= -2.05$, $p=0.04$). While, no significant difference found in terms of relapse to stimulants ($T=-1.06$, $p=0.29$). Analysis of treatment retention over 3 and 6 months follow-up reveals no difference between groups (drop-out rate for 3 and 6 months follow-up in CRT=%58, %82 and in control= %52, %78 respectively). Further analysis over 3 months follow-up period, reveals no difference between groups in terms of treatment retention (drop-out rate for CRT and control=%58 and %51 respectively). **Conclusions:** Our findings provide evidence that adding CRT as an adjunct intervention to MMT program for opioid users can lead to improvement in cognitive performance (with medium to large effect size) as well as in opiate abstinence (with small to medium effect size). **Financial Support:** Cognitive Science and Technology Council of Iran (CSTC)

Abstract - ID: 530 **Author(s):** Raminta Daniulaityte **(Presenter)**, Wright State University
Francois Lamy, Wright State University
Matthew Juhascik, Montgomery Co. Coroner's Office
Ioana Sizemore, Wright State University
Mussa Zatreh, Wright State University
Kraig Strayer, Wright State University
Robert Carlson, Wright State University **Title:** "That fentanyl dope is way worse": Characterizing fentanyl outbreaks in the Dayton, Ohio, area **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Epidemiology **Aims:** Over the past few years, there has been a significant surge in non-pharmaceutical fentanyl (NPF)-related unintentional overdose deaths in the US. This study was conducted in Dayton, Ohio, an area of one of the largest NPF outbreaks in the country. The overall goal is to characterize the NPF outbreak by analyzing: 1) trends in unintentional drug overdose deaths in Montgomery County; and 2) active user knowledge and experiences related to the availability and use of NPF. **Methods:** The Poison Death Review data on unintentional overdose deaths provided by the Montgomery Co. Coroners Office were analyzed to identify heroin and NPF-related trends in 2015-2016. Qualitative interviews were conducted with 20 active heroin users who also reported use of NPF. NVivo was used to assist with qualitative analysis. **Results:** There was a large increase in the number of unintentional drug overdose deaths in 2016, compared to 2015. Mentions of fentanyl in overdose toxicology reports increased from 41% in 2015 to 71% in the first half of 2016, while heroin decreased from 45% to 23%. All interviewees were white, 6 were female, and age ranged from 22-64. Most interviewees felt that they could identify "fentanyl dope" by its appearance and effects. Although all users viewed NPF as significantly more dangerous because "it is more likely to kill you," two types of use and preference patterns emerged. One group preferred fentanyl to heroin because of its potency and tended to use it more frequently. Others preferred heroin and sought it more often, but could not avoid "fentanyl dope" because at times it was easier to access. Although initially some believed that the switch to fentanyl was "cost-effective," the majority felt that eventually it exacerbated their addiction and increased their risk of overdose. **Conclusions:** The study provides new information about a NPF outbreak that could help inform future research as well as intervention and policy responses. **Financial Support:** NIDA 1R21DA042757 (Daniulaityte, PI)

Abstract - ID: 531 **Author(s):** Eileen Martin **(Presenter)**, Rush University Medical Center
Jasmin Vassileva, Virginia Commonwealth University-Psychiatry
Leah Rubin, University of Illinois
Pauline Maki, University of Illinois
Michael Keutmann, University of Illinois
Raul Gonzalez, Florida International University **Title:** Sex and HIV serostatus effects on verbal memory for individuals with cocaine dependence in early vs. sustained remission **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Sex Differences **Aims:** Crack use by HIV+ women, but not HIV+ men, uniquely predicts accelerated disease progression and higher risk of neurocognitive impairment. However, whether sex differences persist with continued abstinence from cocaine has not been investigated among HIV+ individuals. We conducted a preliminary comparison of verbal memory performance among 334 men and women with a history of cocaine dependence in early or sustained remission. **Methods:** Subjects consisted of 111 HIV+ and 123 HIV- adults. 24% met DSM-IV criteria for cocaine dependence in early remission, 76% in sustained remission. Subjects completed measures of addiction severity, comorbid psychiatric disorders, and a standardized 12 item verbal memory test. Memory performance was indexed by the number of words recalled 20 minutes after viewing the list. **Results:** Groups were comparable in racial composition, estimated verbal IQ, prevalence of alcohol and cannabis history, and comorbid psychiatric disorders. Data from HIV+ and HIV- participants were analyzed using a Sex x Remission ANOVA. Among the HIV+ group, there was a significant Sex x Remission interaction, $p = .02$. Among individuals in early remission, men recalled significantly more words than women; however, memory performance did not differ among men and women in sustained remission. By contrast, among the HIV- group, there was a nonsignificant trend ($p = .09$) toward a female advantage for individuals in early and sustained remission. **Conclusions:** In an earlier study we suggested that HIV's neurotoxic effects are more deleterious among female compared with male cocaine-dependent users. Despite the cross-sectional design, these preliminary findings raise the question if these effects are demonstrable only within the first year of abstinence. Longitudinal verbal memory testing will provide stronger evidence for or against this proposal. **Financial Support:** Supported by National Institute of Drug Abuse R01 DA12828.

Abstract - ID: 532 **Author(s):** Mary Sweeney **(Presenter)**, Johns Hopkins University School of Medicine
Steven Meredith, Johns Hopkins University
Laura Juliano, Johns Hopkins University
Daniel Evatt, Johns Hopkins University
Roland Griffiths, Johns Hopkins School of Medicine **Title:** A randomized controlled trial of a simplified manual-only treatment for caffeine use disorder **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** Caffeine / Licit Abused Drugs **Topic:** Treatment **Aims:** Caffeine Use Disorder, recently added to DSM-5 as a condition for further study, is a collection of symptoms that demonstrate an inability to stop or reduce caffeine use in spite of clinically significant problems associated with continued use. This randomized controlled clinical trial examined the effectiveness and acceptability of a brief, manualized intervention for problematic caffeine use.**Methods:** Participants aged 18 to 70 (n = 36 enrolled; n = 29 completed) met criteria for substance use disorder as applied to caffeine and were randomly assigned to either an immediate treatment group or a group whose treatment was delayed by 7 weeks. At the treatment session, a manual containing information about caffeine and instructions for reducing caffeine use gradually over 6 weeks was given to the participant in a brief meeting lasting less than 4 minutes. Follow-up was conducted at 7 weeks and 27 weeks post-treatment.**Results:** Data from Timeline Followback (immediate and delayed groups combined) indicate a significant reduction in average daily milligrams of caffeine use from pre-treatment (M = 565.0, SD = 340.7) to 7 weeks (M = 91.5; SD = 96.2, $F(1,27) = 62.9$, $p < .001$) and 27 weeks post-treatment (M = 141.3, SD = 162.1, $F(1,27) = 54.3$, $p < .001$). Comparisons within and between immediate and delayed treatment groups suggest the intervention, and not spontaneous reductions in caffeine consumption following screening, resulted in the reduction of caffeine intake. Treatment acceptability was favorable.**Conclusions:** This study demonstrated the effectiveness of a very brief intervention for Caffeine Use Disorder with reductions in caffeine use sustained over 27 weeks. Given the acceptability and simplicity of the intervention, the treatment manual may be a clinically valuable tool for practitioners across a range of clinical settings, including healthcare providers who instruct patients to reduce caffeine intake as part of treatment of medical disorders (e.g., insomnia, anxiety)**Financial Support:** NIDA grants R01DA003890, T32DA007209

Abstract - ID: 533 **Author(s):** Rebecca Hofford **(Presenter)**, University of Kentucky
Dolores Vazquez-Sanroman, University of Kentucky
Michael Bardo, University of Kentucky **Title:** All you need is love: Rearing environment predicts opioid self-administration and oxytocin expression **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Opiates/Opioids **Topic:** Neurobiology **Aims:** The quality of peer relationships established during childhood and adolescence likely contributes to drug abuse vulnerability in adulthood. “Unhealthy” friendships with drug-using peers are predictive of later drug abuse while “healthy” peer relationships are protective. Studies in rodent models have identified several candidate neurobiological mechanisms influencing both drug reward and social behavior. The peptide hormone oxytocin and the endogenous opioid system both contribute to social behavior and reward. The current set of experiments sought to examine the relationship between healthy social interaction, oxytocin expression, and opioid self-administration using rats raised in either an isolation condition (IC) or a social enrichment condition (EC). Several studies have demonstrated that IC rats self-administer more amphetamine and cocaine than EC rats. Because IC rats are deprived of social interaction during adolescence, we predicted that IC rats would express less brain oxytocin and that this reduction in oxytocin would be related to higher rates of opioid intake in this group.**Methods:** To this end, experiment 1 measured play behavior in IC and EC rats followed by immunohistochemical quantification of oxytocin expression and experiment 2 measured self-administration of morphine in a separate group of IC and EC rats.**Results:** Experiment 1 demonstrated that IC rats expressed less oxytocin cell processes than EC rats, but did not differ from EC in their number of oxytocin cell bodies. IC rats also displayed abnormal social behavior with decreased social grooming and anal sniffing but increased pins, pounces, and boxing. Experiment 2 found that, similar to previous literature with psychostimulants, IC rats self-administered more morphine than EC rats.**Conclusions:** While studies manipulating the oxytocin system in IC and EC rats still need to be conducted, the current experiments suggest that healthy social interaction might attenuate drug-taking by increasing oxytocin expression.**Financial Support:** NIH DA005312 and NIH DA012964

Abstract - ID: 534 **Author(s):** Mark Lesage **(Presenter)**, Minneapolis Medical Research Foundation
Paul Pentel, Hennepin County Medical Center
Mylissa Staley, Minneapolis Medical Research Foundation
Amy Saykao, Minneapolis Medical Research Foundation
Bin Zhou, Scripps Research Institute
Kim Janda, Scripps Research Institute
Matthew Kalnik, Antidote Therapeutics, Inc. **Title:** Separate and combined effects of the nicotine-specific monoclonal antibody, nic9d9, and a nicotinic receptor antagonist on nicotine discrimination in rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Nicotine/Tobacco **Topic:** Behavior **Aims:** Vaccines against nicotine have shown limited efficacy for increasing smoking cessation in clinical trials, primarily due to the low and variable antibody levels induced. While passive administration of nicotine-specific monoclonal antibodies (Nic-mAbs) can address this issue, it requires high antibody doses. We hypothesized that combining a Nic-mAb with medications that attenuate nicotine's effects through other mechanisms would increase the NicmAb's potency. The purpose of this study was to examine this issue by studying the separate and combined effects of the Nic-mAb NIC9D9 and a low dose of the nicotinic receptor antagonist mecamylamine (MEC) on nicotine's discriminative stimulus effects**Methods:** Three groups of rats (N=6 each) were trained to discriminate 0.4 mg/kg nicotine from saline using a two-lever operant discrimination procedure. Effects of cumulative doses of NIC9D9 (25, 50, 100, and 200 mg/kg i.v.) and a low MEC dose (0.1 mg/kg s.c., which alone produces only partial blockade of nicotine discrimination) were then assessed across four daily test sessions. Group 1 received control antibody + saline. Group 2 received NIC9D9 + saline. Group 3 received NIC9D9 + MEC. MEC alone was then tested in Group 3 to assess whether NIC9D9 enhances MEC effects**Results:** NIC9D9 alone significantly reduced % nicotine-lever responding (%NLR) at only the highest dose ($p < 0.0001$). However, when combined with MEC, all NIC9D9 doses significantly decreased %NLR (45 to 80%, main effect $p < 0.05$). NIC9D9 + MEC also reduced %NLR to a greater degree than MEC alone (80% vs 50%, respectively, main effect $p < 0.05$), indicating NIC9D9 reciprocally enhances the effects of MEC. **Conclusions:** These data demonstrate that NIC9D9 can suppress the subjective effects of nicotine and has additive effects with MEC. This finding suggests that a low MEC dose can significantly increase the potency of Nic-mAbs, and perhaps allow a lower Nic-mAb dose to be effective for smoking cessation. In turn, Nic-mAbs may allow a lower MEC dose that doesn't have significant side effects to be effective for smoking cessation. **Financial Support:** Supported by NIDA grant R01DA038877 (Kalnik, PI).

Abstract - ID: 535 **Author(s):** Kathryn Smith **(Presenter)**, Columbia University Medical Center, New York State Psychiatric Institute
Philip Smith, CUNY School of Medicine
Lindsay Oberleitner, Yale University
Emily Grekin, Wayne State University
Sherry McKee, Yale School of Medicine **Title:** Heavy drinking mediates the association between child maltreatment and violence victimization in adolescence, but not adulthood **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Epidemiology **Aims:** Studies have shown that rates of child maltreatment (CM) are exceedingly high among women seeking substance use treatment (Berry & Sellman, 2001; Windle et al., 1995) and that these individuals continue to be at risk for interpersonal violence as adults (Messman-Moore et al., 2009; Widom et al., 2008). Problem alcohol use has been proposed as mediating factor that explains the persistent risk for victimization among those with CM, however, few studies have examined the role of alcohol use in the CM/violence victimization pathway. Further, few studies have examined sex differences in these relationships. The present study sought to address these limitations by examining the relationship between CM, heavy drinking, and violence victimization in a nationally representative, longitudinal study, using multi-level modeling. The study aims were: 1) examine the impact of CM on heavy drinking trajectories from adolescence to young adulthood; 2) examine the impact of CM on violence victimization trajectories; 3) examine differences in the trajectories due to sex; and 4) examine the extent to which heavy drinking mediated the relationship between CM and violence victimization **Methods:** Data were analyzed from the National Longitudinal Study of Adolescent to Adult Health (Harris & Udry, 2014), waves I-IV. **Results:** Results indicated that CM was associated with a greater expected count for heavy drinking for both sexes (167% men vs. 32% women), with the risk for heavy drinking declining across time, more so for men than women. CM was associated with a 63% greater count of violence victimization types for both sexes, and the risk was consistent across time. Heavy drinking was found to mediate the CM/violence victimization pathway at Wave I, but not at later waves. **Conclusions:** The current study suggests that CM represents a liability for interpersonal violence for both sexes and indicates that alcohol plays a mechanistic role in early, but not later violence victimization. **Financial Support:** NIDA T32-DA007294-24 (PI: Frances R. Levin)

Abstract - ID: 536 **Author(s):** Octavio Campollo **(Presenter)**, Universidad de Guadalajara
Arturo Panduro, Universidad de Guadalajara
Omar Ramos Lopez, Universidad de Guadalajara
Eloy A. Zepeda Carrillo, Universidad de Colima
Karina Gonzalez Aldaco, Universidad de Guadalajara
Rafael Torres Valadez, Universidad de Guadalajara
Sonia Roman, Universidad de Guadalajara **Title:** Association of the DRD2/ANKK1 A1 allele with alcohol consumption in Mexican Native Amerindians and in a non-native population **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Genetics **Aims:** To determine the distribution of the *DRD2/ANKK1* TaqIA polymorphism in Mexican populations and to analyze its association with heavy drinking. **Methods:** In a cross-sectional and analytical study, 680 unrelated subjects including two Native Amerindian groups (87 Nahuas and 139 Huicholes), and two non-native Mestizo groups (158 subjects from the city of Tepic, Nayarit and 296 subjects from the city of Guadalajara, Jalisco) were enrolled. *DRD2/ANKK1* genotyping was performed by PCR-RFLP and allelic discrimination assays. Genetic analyses were conducted by Arlequin and Structure software. Heavy drinking was defined as ?300 g alcohol/week. The association of the *DRD2/ANKK1* TaqIA polymorphism with heavy drinking was estimated. **Results:** Heavy drinking was prevalent in 64.7% of the study population. The *DRD2/ANKK1* A1 allele prevailed in 67% and 65% of Nahuas and Huicholes, respectively and 51% and 47.3% in Mestizos from Tepic and Guadalajara, respectively. Heavy drinking was associated with the A1A1 genotype in the Mestizos of Guadalajara (A1A1 *vs.* A1A2 OR=4.79, 95%CI 1.81-12.68, p=0.0006; A1A1 *vs*. A1A2 + A2A2, OR=4.09, 95%CI 1.56-10.68, p=0.0021) and in the Mestizos from Tepic (A1A1 *vs.* A1A2, OR=5.92, 95%CI 2.12-16.49, p=0.0002); A2A2, OR=14.56, 95%CI 3.57-59.24, p=0.00004); A1A2+A2A2, OR=6.68, 95%CI 2.42-18.42, p=0.00005). In Native Amerindians, a lack of association was found. **Conclusions:** It is known that *DRD2/ANKK1* receptor is involved in the pleasure response to rewarding activities such as food-seeking behavior (carbohydrate and fat intake) and sexual activity. High frequencies of the *DRD2/ANKK1* A1 allele were present in Mexican populations. Native Amerindians exhibited the highest frequencies of the A1 allele documented worldwide to date. The A1A1 genotype was associated with heavy drinking in Mestizos. Whether DRD2/ANKK1 A1 carriers will develop alcohol-related diseases should be further investigated. **Financial Support:** Promep-Universidad de Guadalajara-CA-478, MEXICO

Abstract - ID: 537 **Author(s):** Bradford Martins **(Presenter)**, University of Arkansas for Medical Sciences
Ricardo Caceda, University of Arkansas for Medical Sciences
Josh Cisler, University of Wisconsin-Madison
G. Andrew James, University of Arkansas for Medical Sciences
Clinton Kilts, University of Arkansas for Medical Sciences **Title:** The self and susceptibility: The role of the medial prefrontal cortex in addiction comorbidity **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Imaging **Aims:** Individuals with drug use disorders (DUD) co-occurring with other psychiatric disorders have poorer treatment outcomes than individuals with non-co-occurring disorders. Based upon prior research relating medial prefrontal cortex (MPFC) and dorsolateral prefrontal cortex (DLPFC) function and structure with resilience against and susceptibility to DUD and other forms of psychopathology, we hypothesized that these regions would also be associated with the degree of susceptibility for childhood trauma-exposed men and women to develop comorbid DUD**Methods:** A sample of adults with childhood maltreatment (n=81) was divided into the following groups based on psychiatric diagnoses and drug use history: no current or past psychiatric disorders (resilient, used as a trauma control sample), DUD only, depression/PTSD only, and comorbid DUD with depression/PTSD. Using a 200-node functional brain atlas, robust regression identified differences in ACC and/or DLPFC resting-state functional connectivity (FC) between subgroups. These group-level FC differences were then related to individual differences in psychiatric symptomatology, trauma history, and self-schema using Spearman's correlation.**Results:** The comorbid subgroup was uniquely characterized by increased FC in the MPF and a significant negative relationship was found between ventromedial prefrontal cortex-subgenual cingulate FC and both past frequency of drug use and feelings of guilt for this subgroup.**Conclusions:** Our findings suggest that comorbidity in individuals who experienced childhood trauma is not a simple aggregation of DUD and other psychopathology, but involves unique neural processing in MPFC networks related to self-representation. **Financial Support:** T32 Addiction Training Grant (T32DA022981)

Abstract - ID: 538 **Author(s):** Rahul Raghav **(Presenter)**, All India Institute of Medical Sciences
Raka Jain, All India Institute of Medical Sciences
T S ROY, All India Institute of Medical Sciences
Anju Dhawan, All India Institute of Medical Sciences
Punit Kumar, All India Institute of Medical Sciences **Title:** Regulation of dopaminergic and serotoninergic neurons in response to co-administration of nalbuphine in morphine-dependent rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Opiates/Opioids **Topic:** Neurobiology **Aims:** Dopaminergic and Serotonergic neurons are involved in the development of Drug Dependence. Tyrosine hydroxylase (TH) and Tryptophan hydroxylase (TPH), the rate-limiting enzyme in dopamine and serotonin synthesis respectively, plays an important role in the survival of dopaminergic and serotoninergic neurons. This study investigates the alteration in brain TH and TPH and the effect of nalbuphine on morphine induced alterations in morphine dependent rats. **Methods:** Male adult Wistar albino rats (170-175gms, N=160) were made physically dependent by administrating increasing dose of morphine and withdrawals were precipitated with naloxone. Nalbuphine was co-administered acutely and chronically in variable doses (0.1, 0.3, 1.0, 3.0 mg/kg, i.p.) with morphine. Thereafter, immunohistochemistry, western blotting for protein and qRT-PCR for m-RNA were used to observe the changes in TH and TPH.**Results:** Protein and mRNA expressions of TH and TPH were significantly increased in rats with increased morphine exposure whereas these levels were significantly decreased during withdrawal. Treatment with chronic co-administration of nalbuphine produced a marked increase in TH and TPH activity whereas no effect was observed with acute dose of nalbuphine.**Conclusions:** These findings suggest that changes in monoaminergic levels play a role in opiate withdrawal. The results of current study provide a better understanding that nalbuphine may be good adjuvant to morphine in reducing the adverse effects of morphine during analgesia and could have great potential for the development of new therapies to prevent opiate addiction. (Supported by Indian Council of Medical Research, Govt. of India and Rusan Pharma Ltd).**Financial Support:** Presently, I am working as a Senior Research Fellow in a research project and getting consolidated salary from the funding agency “Indian Council of Medical Research” which is not enough to afford air tickets to attend the valuable “2017 CPDD Annual Scientific Meeting” in Montreal, Canada. As I believe that this meeting will benefit me and my Institute both personally and professionally because what I will learn will enable me to become more productive worker & more valuable asset to Institute. If travel grant will be awarded, I shall be highly obliged. Thanking You Yours sincerely Rahul Raghav (Ph.D. Student) National Drug Dependence Treatment Center Department of Psychiatry All India Institutes of Medical Sciences, New Delhi

Abstract - ID: 539 **Author(s):** Ajna Hamidovic **(Presenter)**, University of Illinois **Title:** Reduction of smoking urges with intranasal insulin: A randomized, crossover, placebo-controlled clinical trial **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Treatment **Aims:** Many cigarette smokers express a desire to quit smoking, however ~85% of cessation attempts fail. In our attempt to delineate genetic modulators of smoking persistence, we have earlier shown that a locus within a ~250 kb haplotype block spanning the 5' UTR region of Insulin Degrading Enzyme (IDE) is associated with serum cotinine levels; the study's measure of smoking quantity. Based on our findings, and coupled with recent pre-clinical studies showing the importance of multiple neuropeptides in reinstatement of drug use, we formulated intranasal insulin to evaluate its efficacy during acute abstinence from smoking. **Methods:** Our original study was a cross-over trial including nineteen otherwise healthy smokers who abstained from smoking for thirty six hours. The morning following their second night of abstinence, in random order, study participants received intranasal insulin (60 IU) or placebo (8.7% sodium chloride). The goal of our second study was to replicate the craving findings from the original trial and expand this research by including additional stress-related measures. Thirty seven study participants abstained from smoking overnight. The next day, they were administered either intranasal insulin (60 IU) or placebo, following which they participated in the Trier Social Stress Test Task. This was a parallel design study focusing on the standard stress subjective, hormonal and cardiovascular measures. We also evaluated any changes in circulating glucose, insulin and c-peptide (a marker of endogenous insulin).**Results:** In the original study, intranasal insulin significantly reduced morning nicotine craving (b=3.65, p ? 0.05). Similarly, in the second study, intranasal insulin reduced nicotine cravings over time (b=0.065, p?0.05) and the effect lasted through the psychosicial stress period. Intranasal insulin also increased circulating cortisol levels (F=12.78, p?0.001). No changes in insulin or c-peptide were detected. A significant treatment x time interaction (p?0.05) was detected for glucose, however, subjects remained well within the euglycemic range.**Conclusions:** Previous studies have shown that heightened nicotine cravings and blunted response to stress are independent and significant predictors of relapse to smoking. In our study, intranasal insulin normalized the subjective and hormonal response to stress. As such, intranasal insulin should further be studied in a larger clinical trial of smoking cessation. In support of this, we provide evidence that the treatment is safe and effective, and, based on absence of peripheral insulin changes, conclude that the pharmacodynamic effect is centrally-driven.**Financial Support:** National Institute on Drug Abuse

Abstract - ID: 540 **Author(s):** Charlotte Kervran **(Presenter)**, Université de Bordeaux
Marc Auriacombe, Université de Bordeaux
Marie Jauffret-Roustide, INSERM
Laurence Lalanne-Tongio, CHU Strasbourgh
Perrine Roux, INSERM
Laelia Briand-Madrid, INSERM
Antoine Vilotitch, INSERM
Patrizia Carrieri, INSERM
Cecile Denis, University of Pennsylvania **Title:** Characteristics of attenders of safer injecting facilities among people who inject drugs in France: Baseline results from the COSINUS cohort study **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Epidemiology **Aims:** To evaluate the impact of Safer Injecting Facilities (SIFs) in France on HIV-HCV risk practices in people who inject drugs (PWID). The impact of others harm reduction services in France and their combined effect with SIFs on HIV-HCV risk practices and secondary outcomes among PWID will also be studied. **Methods:** A prospective multisite cohort study in 4 different cities (Bordeaux, Marseille, Paris and Strasbourg). After informed consent trained interviewers will enroll eligible participants (drug injection at least once during the previous week, aged over 18 years old) and will administrate face-to-face questionnaires at baseline, 3-month, 6-month and 12-month follow-ups to collect socio-demographic, behavioral, psychometric and cognitive data. Data on access to care and perception of existing and future harm reduction services will be explored. **Results:** Data from the first 123 participants showed that 21.9% were female, median age was 36 [30-44] years. Only 29.3% had stable housing and 18.7% were employed. The main opiates regularly injected were morphine sulfate for 33.3% and buprenorphine for 10.1% of participants. Regular cocaine injection was reported by 17.9%. More than one third (36.6%) of participants reported usually injecting in public places and more than two third (66.4%) reported recent HCV risk practices. 39% reported having already overdosed lifetime. The median number of illegal activities during the previous month was 15[1-31]. 30% already attended a SIF and 69.1% will continue or will start using a SIF if availabl€**Conclusions:** These results confirm the high prevalence of HIV-HCV risk practices in this group and the willingness to attend a SIF. Longitudinal results will help to better understand the characteristics of PWID who use and do not use SIFs and evaluate changes in HCV risk practices and other outcomes.**Financial Support:** MILDECA

Abstract - ID: 541 **Author(s):** Gregory Powell **(Presenter)**, Arizona State University
Madeleine St. Peter, Arizona State University
Trisha Chaudhury, Arizona State University
Daniela Alcazar, Arizona State University
Thomas Benson, Arizona State University
Ryan Bastle, Arizona State University
Nora Perrone-Bizzozero, University of New Mexico
Janet Neisewander, Arizona State University **Title:** The effects of environmental enrichment during abstinence from cocaine on RNA expression within the nucleus accumbens **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** GeneArray/Proteomics **Aims:** Animals express increased cocaine seeking after longer durations away from drug and decreased cocaine seeking when housed in environmental enrichment (EE) rather than in isolation during an abstinence period. We manipulated these two variables to obtain varying degrees of cocaine seeking. We hypothesized that cocaine seeking would positively correlate with expression of genes commonly linked to motivation for cocaine and negatively correlate with neuroprotective genes. **Methods:** Sprague-Dawley rats were trained to self-administer cocaine (0.75 mg/kg/infusion i.v., paired with a light + tone cue) across 21 sessions. Control rats received saline infusions yoked to a cocaine partner. Rats were then placed into abstinence for either 1 or 21 days, in either standard isolation housing or an enriched environment that held 3-6 rats, a running wheel, tubes, toys, and communal food and water. Upon completion of abstinence, animals were given a 1-h test session during which cocaine-paired cues were presented response-contingently but no cocaine was available. Rats were immediately sacrificed after the session. Brain tissue was extracted, flash frozen, and tissue punches of the NA core and shell were collected and processed for RNA analysis using RNA-seq and RT-qPC**Results:** In isolated animals, abstinence from cocaine exposure for 21 days caused increased lever pressing compared to abstinence for 1 day (i.e., incubation effect). Environmental enrichment blocked this effect, significantly reducing active lever pressing after 21 days of abstinence compared to animals in standard housing conditions. Analysis of alterations in RNA expression with enrichment and differential abstinence lengths found significant changes in multiple RNAs using both RNAseq and verification with RT-qPCR. Specifically, Ingenuity Pathway Analysis (IPA) revealed significant effects on cellular development, cellular function, and maintenance. RNAseq results indicate significant effects due to housing on such genes as BDNF, complement component 3 (C3), heat shock 70 kDa protein 1B (HSPA1B), and several mitochondrial gene**Conclusions:** EE provides robust protection against increased cocaine-seeking behavior due to abstinence. Additionally, RNAseq of nucleus accumbens tissue revealed multiple genes differentially affected by abstinence from cocaine self-administration or housing environment, indicative of potential pathways for treatment to reduce cocaine-seeking behavior. **Financial Support:** R01 DA034097

Abstract - ID: 542 **Author(s):** Stephen Butler **(Presenter)**, Inflexxion, Inc
Stacey McCaffrey, Inflexxion, Inc
Simon Budman, Inflexxion, Inc
Ryan Black, Inflexxion, Inc **Title:** A brief form of the SOAPP-R **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Prevention **Aims:** Construct and validate a brief form of the Screener and Opioid Assessment for Patients with Pain-Revised (SOAPP-R), intended to predict opioid abuse in chronic pain patients, to reduce the burden of administering the SOAPP-R in clinical settings while maintaining an adequate level of predictive accuracy. **Methods:** The study included a sample of N=555 chronic, non-cancer pain patients being considered for long term opioid therapy. The steps to carry out the analyses included: (1) empirically identifying the optimal subset of SOAPP-R items that predict aberrant drug use behavior using the LASSO method as the *selection* criterion in conjunction with the leave-one-out-cross-validation (LOOCV) method as the *stop* criterion; (2) employing logistic regression to predict the probabilities of misuse from the subset of SOAPP-R items using all data and using the LOOCV method; (3) generating ROC curves for the (a) model predicted probabilities from the subset of items using all of the data, (b) model predicted probabilities from the subset of items using LOOCV, and (c) the sum of all 24 SOAPP-R items to compare the AUC; (4) determining the cut-off point that optimized sensitivity and specificity for the model-predicted probabilities from the subset of items using all of the data. **Results:** Of the 555 participants, 36.6% (n=203) were classified as engaging in aberrant drug use behavior. Eight items were identified as maximally predicting aberrant drug use behavior. ROC curve analyses yielded an AUC of .79 using the predicted probabilities from all data, an AUC of .78 using the predicted probabilities from the LOOCV data, and an AUC of .76 using 24-item total score from all the data. A specified cut-off point from the 8-item version yielded a sensitivity of .74 and specificity of .66. **Conclusions:** The model weighted 8-item version of the SOAPP-R provides higher predictive overall accuracy than the unweighted sum of the original 24-item version. **Financial Support:** NIH grant no. R44 DA015617 and Inflexxion, Inc., Waltham, MA

Abstract - ID: 543 **Author(s):** Karen Dugosh **(Presenter)**, Treatment Research Institute **Title:** Improving identification of social harm among substance abusers in HIV trials **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Other **Aims:** HIV trial participants often experience a greater risk of oppression, discrimination, and victimization, and these risks are often heightened among substance users. While foreseen risks are outlined in the consent form and monitored throughout a study, many social harms are unforeseen and, consequently, are not systematically monitored. Few instruments exist to monitor social harms, and those that do (e.g., HIV Vaccine Trials Network Social Impact Assessment; SIA) incorporate an interview format and lack item specificity. With input from an expert panel, we developed an audio computer assisted self-administered interview social harm questionnaire (ACASI-SHQ) that included questions targeted to a wide range of potential harms. We hypothesized that the ACASI-SHQ would be acceptable to participants and increase researchers' ability to identify and monitor social harms among substance users in HIV trials.**Methods:** A total of 50 individuals who consented to participate in one of two HIV- and substance use-related trials completed the ACASI-SHQ and SIA interview at months 1, 2, and 3 post-host study consent. The order of the instruments was counterbalanced to control for order effects. At the final assessment, participants completed a brief acceptability measure for the ACASI-SHQ. **Results:** The ACASI-SHQ detected a greater number of social harms than the SIA. Overall, the ACASI-SHQ identified at least one social harm among 20% (n = 10) of participants compared with the SIA that identified no social harms among participants. Of the 43 clients that completed the assessment, 88.3% (n = 38) found the ACASI-SHQ to be acceptable. **Conclusions:** Findings from this pilot study support the utility of the ACASI-SHQ to identify social harms for substance users in HIV trials. Future research should examine the utility and psychometric properties of the ACASI-SHQ in a larger, fully-powered trial. **Financial Support:** NIDA grant #R21-DA-036407

Abstract - ID: 545 **Author(s):** Tonisha Kearney-Ramos **(Presenter)**, Medical University of South Carolina
Logan Dowdle, Medical University of South Carolina
Mark George, Medical University of South Carolina
Colleen Hanlon, Medical University of South Carolina **Title:** TMS targeting ventromedial prefrontal cortex modulates craving and salience circuitry in cocaine users **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Imaging **Aims:** Drug cue-induced craving is a significant barrier to obtaining abstinence from cocaine, and is associated with elevated activity in frontal-striatal circuits, including reward circuitry [i.e. ventromedial prefrontal cortex (VMPFC) and striatum] and salience circuitry [i.e. anterior cingulate (ACC) and insula]. Preliminary data from our lab demonstrate that inhibitory TMS targeted at VMPFC can attenuate activity in craving circuitry. To extend upon our preliminary studies, we compiled data across 3 interleaved TMS/fMRI studies in cocaine users to further test the hypothesis that TMS targeted at VMPFC could selectively modulate activity in functionally-connected striatal and salience craving circuitry. **Methods:** Fifty (50) cocaine users underwent interleaved TMS/fMRI targeted at the VMPFC. General linear modeling (GLM) analysis of fMRI data was used to characterize whole-brain neural response to TMS. Functional connectivity analysis was then used to characterize connectivity between treatment targets following VMPFC stimulation. **Results:** GLM revealed that VMPFC TMS selectively evoked activity in striatum (caudate, putamen, nucleus accumbens) and salience (ACC and bilateral insula) circuitry. Functional connectivity analysis revealed significant connectivity between striatal and salience regions. **Conclusions:** This is the first study in a large cohort of cocaine-dependent individuals to provide a clear demonstration that TMS targeting VMPFC modulates both striatal and salience craving circuits, thus, corroborating prior evidence from our lab indicating VMPFC as a viable TMS treatment target. These findings facilitate the next critical steps in developing VMPFC TMS as an innovative, non-invasive brain stimulation intervention in cocaine dependence. **Financial Support:** R01DA036617 (Hanlon); K01DA027756 (Hanlon); P50 DA015369 (Kalivas); T32DA007288 (McGinty)

Abstract - ID: 546 **Author(s):** Scott Shilling **(Presenter)**, University of Cincinnati
Hanna Wetzel, University of Cincinnati
Andrew Norman, University of Cincinnati College of Medicine **Title:** A virtual self-administration laboratory **Abstract Category:** Theoretical/Commentary **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Behavior **Aims:** Drug self-administration behavior is a standard model of addiction. Laboratory demonstrations are a valuable method for teaching research standards. Unfortunately, self-administration experiments require catheterized live animals, are technically difficult, expensive, and require controlled substances. This makes it impractical to demonstrate these experiments in a classroom setting. Therefore, a virtual lab designed to demonstrate a self-administration experiment was created. **Methods:** This tool was built using Unity Personal 5.4 and the scripts were written in C#. A scene was created that included a virtual rat and two levers within a chamber. Self-administration behavior is dependent on cocaine concentration with-in the rat during maintained self-administration. The rat was programmed to press the lever when cocaine concentrations declined non-linearly to a set point. Between lever presses, the rat is programmed to exhibit stereotypical stimulant induced behaviors such as head bobbing, sniffing, and rearing. The program can simulate the outcome of cocaine self-administration experiments run on an FR-1 schedule across a range of unit doses. However, the inter-injection intervals from these sessions range from 1.5 to 12 min. Because of classroom time constraints there are 3 different instances of the simulations that have different settings that run at shorter intervals. This tool also provides a video of a live rat self-administering, and simulated graphs, built in Mathematica, that shows the effects when 4 pharmacokinetic and 2 pharmacodynamic variables are manipulated with 4 set values for each, so there are 4,096 different graph combinations that can be viewed through this tool. This program also has a function that will decrease the time interval of the equation that will therefore increase the speed of the self-administration behavior of the virtual rat, which is not possible in vivo.**Results:** Not Applicable **Conclusions:** In conclusion, a useful tool for demonstrating self-administration experiments to a general audience has been created. **Financial Support:** Financial Support: NIDA grant #DP1DA031386

Abstract - ID: 547 **Author(s):** Benjamin Enns **(Presenter)**, BC Centre for Excellence in HIV/AIDS
Emanuel Krebs, BC Centre for Excellence in HIV/AIDS
Kora DeBeck, BC Centre for Excellence in HIV/AIDS
Lindsey Richardson, BC Centre for Excellence in HIV/AIDS
Kanna Hayashi, BC Centre for Excellence in HIV/AIDS
Bohdan Nosyk, BC Centre for Excellence in HIV/AIDS **Title:** Costs of crime associated with stimulant use disorders **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Behavior **Aims:** While societal costs attributable to the criminal justice system are a major component of the economic burden of substance use disorders, there is little research on the costs of crime associated with stimulant use disorders specifically. We aimed to estimate costs of crime associated with stimulant use. Our primary hypothesis was that crime costs would be significantly higher during periods of stimulant use, relative to no stimulant use. **Methods:** Our sample included 1,599 individuals (5299 observations) from three prospective cohorts in Vancouver, Canada, measured biannually between 2011 and 2015 who reported stimulant use at baseline assessment or prior to 2011. Monthly crime costs included the costs of policing, court, corrections, and criminal victimization (2016 CAD). We estimated costs associated with mutually exclusive categories of crack, cocaine, methamphetamine, and polystimulant use in the previous six months, separated by daily or non-daily use, relative to no stimulant use. We used a two-part model, capturing the probability of criminal activity and costs of crime with generalized linear logistic and gamma regression models, respectively, controlling for age, gender, education, homelessness, mental health issues, employment, prior incarceration, as well as alcohol and opioid use. **Results:** Our sample was 66% male, with a median age of 39 years at baseline. Estimates of associated monthly crime costs ranged from $5449 95% Confidence Interval: [$2180,$8719] for non-daily polystimulant use, to $8893 [$4196,$13,589] for daily polystimulant use, relative to stimulant abstinence. Cost differences between daily and non-daily use, injection and non-injection, and stimulant type were not statistically significant. **Conclusions:** We identified substantial costs to the criminal justice system attributable to stimulant use disorders, and the urgency for the development and implementation of efficacious treatment regimens. **Financial Support:** US NIH (VIDUS: U01DA038886); CIHR (GIR-145128)

Abstract - ID: 548 **Author(s):** Jeffrey Stein **(Presenter)**, Virginia Tech Carilion Research Institute
Jamie Turner, Virginia Tech Carilion Research Institute
Warren Bickel, Virginia Tech Carilion Research Institute **Title:** Effects of positive and negative episodic future thinking on delay discounting and behavioral-economic demand for cigarettes **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Behavior
Aims: In a prior study, episodic future thinking (EFT; prospective simulation of possible autobiographical events) featuring emotionally positive content reduced both delay discounting and cigarette self-administration. In the present study, we sought to extend these findings by examining effects of EFT featuring both positive and negative content on behavioral-economic demand for cigarettes. The effects of these manipulations were compared to groups who engaged in control episodic thinking (CET) of recent past events. **Methods:** Cigarette smokers on Amazon Mechanical Turk were assigned to one of four groups: Positive EFT (n = 37), Negative EFT (n = 42); Positive CET (n = 39); or Negative CET (n = 40). Participants completed a self-guided task to generate vivid EFT or CET events and subsequently completed delay discounting and cigarette purchase tasks. In the delay discounting task, participants chose between smaller, immediate and larger, delayed monetary amounts. In the cigarette purchase task, participants reported the quantity of cigarettes that they would like to purchase across a range of prices. In both tasks, EFT or CET text cues were presented on the screen and participants were asked to think vividly about their events.**Results:** We observed a main effect of episodic thinking on delay discounting ($p < .05$), but no interaction between episodic thinking and emotional valence. That is, EFT reduced delay discounting, compared to CET, regardless of whether emotionally positive or negative content was used. In contrast, for cigarette demand, we observed an interaction between episodic thinking and emotional valence ($p < .05$). In post-hoc comparisons, EFT increased elasticity of demand (i.e., sensitivity to price) compared to CET in positive ($p < .05$), but not negative, groups. **Conclusions:** Although both positive and negative EFT reduced delay discounting, the therapeutic effects of EFT on cigarette valuation depended on EFT's emotional valence. Potential mechanisms underlying this finding will be discussed, as well as implications for adapting EFT for use in smoking cessation.**Financial Support:** R01 DA034755

Abstract - ID: 549 **Author(s):** Stacey McCaffrey **(Presenter)**, Inflexxion, Inc
Stephen Butler, Inflexxion, Inc
Ryan Black, Inflexxion, Inc **Title:** Development of short, fixed forms of the IRT-based CAT versions of the seven ASI-MV® domains **Abstract Category:** Program Descriptions **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Treatment **Aims:** Create short, fixed forms of the recently validated Item Response Theory (IRT)-based Addiction Severity Computerized Adaptive Tests (Addiction Severity CAT). **Methods:** Construction of the short, fixed forms for each of the domains was based on identifying items with the strongest psychometric properties as well as content expert feedback. The items were selected from domain-specific item banks used to develop CATs intended to measure each of the seven domains of the Addiction Severity CAT (i.e., Alcohol, Drug, Criminogenic, Medical, Psychological, Role Functioning, and Social Functioning). The items from the items banks were calibrated using Rasch Rating Scale Models from a sample of n=845 adult substance abuse treatment patients (54.8% male, 53.8% Caucasian, Mean age = 31.8 years) and a community sample of n=4,419 (53.8% male, 79.8% Caucasian, Mean age =45.1 years). From these data, items which had maximum interval information were selected for the short forms. Additional items were selected for the short forms based on the items most often used by the domain-specific CATs administered on a sample of N=183 adult substance abuse treatment patients. **Results:** Both empirical and theoretical rationale are necessary for optimal measure development. After determining the subset of items with the strongest psychometric properties for each of the domains, a panel of content experts will be asked to review the selected items to determine the items that are necessary to retain to ensure adequate construct representation. Less than 15 items will be retained per domain. **Conclusions:** Short forms are a viable alternative to CATs when access to advanced technology is not readily available. Notably, the steps used to create the Addiction Severity CAT short forms are similar to those used by the Patient-Reported Outcomes Measurement Information System (PROMIS). **Financial Support:** Inflexxion, Inc, Waltham, MA

Abstract - ID: 550 **Author(s):** Eric Maltbie **(Presenter)**, Emory University
Leonard Howell, Emory University **Title:** Investigating the effects of ketamine treatment on reinstatement of cocaine self-administration in rhesus monkeys **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Treatment **Aims:** Functional imaging studies have indicated that the effects of sub-anesthetic ketamine directly oppose the effects of cocaine on functional networks. The current study was designed to test the behavioral relevance of these imaging findings by testing the efficacy of ketamine treatment for modulating drug-seeking behavior. **Methods:** Five rhesus macaques (4 female) were trained to self-administer cocaine (0.1 mg/kg; i.v.) on a second-order schedule of reinforcement during daily one-hour sessions. Responding was then extinguished and cocaine-primed reinstatement tests were performed 48-hours before, and 48-hours after, treatment with either ketamine or vehicle. Ketamine treatment consisted of a bolus injection (i.v.) followed by a one-hour constant infusion (i.v.). Two doses were tested: 0.345 mg/kg bolus + 0.256 mg/kg/hr and 0.69 mg/kg + 0.512 mg/kg/hr. Subjects re-acquired maintenance of cocaine self-administration between each treatment and the effect of treatment on re-acquisition was monitored.**Results:** Treatment with each dose of ketamine significantly reduced reinstatement responding relative to vehicle treatment ($p < 0.05$ by 2-tailed, paired t-test). No significant difference was observed between the two ketamine doses. There was no effect of treatment on rate of re-acquisition or maintenance response rate. **Conclusions:** Ketamine infusion produces lasting effects that reduce drug-seeking behavior up to 48-hours after treatment. The lack of an effect on re-acquisition of cocaine self-administration may indicate that the prolonged effects of ketamine infusion do not modulate the reinforcing properties of cocaine. Subsequent experiments will evaluate the effects of repeated ketamine treatments and the duration of those effects on cocaine-induced reinstatement.
Financial Support: This research was supported by P51OD11132 (Yerkes National Primate Research Center), and DA031246 (LLH).

Abstract - ID: 551 **Author(s):** Chukwuemeka Okafor **(Presenter)**, UCLA
Michael Plankey, Georgetown University Medical Center, Division of Infectious Diseases
Xinguang Chen, College of Medicine, University of Florida
Pamela J Surkan, Johns Hopkins Bloomberg School of Public Health, Social and Behavioral Interventions Program
Steve Shoptaw, UCLA
Eileen Martin, Rush University Medical Center
Ronald Cohen, University of Florida
Ned Sacktor, Johns Hopkins University, Department of Neurology
Robert L Cook, College of Medicine, University of Florida **Title:** Association between cumulative marijuana use and executive function and processing speed in HIV-positive and HIV-negative men **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** AIDS/Immune **Aims:** The aim of this study was to evaluate associations between cumulative years of exposure to marijuana and changes in measures of processing speed and executive function among HIV+ and HIV– Men who have Sex with Men (MSM). We hypothesized that greater cumulative years of exposure to marijuana use would be associated with worsening processing speed and executive function, with more profound impairments among HIV+ individuals**Methods:** We used data from the Multicenter AIDS Cohort Study (MACS), an ongoing longitudinal cohort study of HIV+ and HIV– MSM followed up for 29 years (from April 1 1984 to September 30 2013). We calculated cumulative years of exposure to marijuana in use-years (1 use-year equivalent to 365 days of use). Linear mixed-effects models were used to test for associations between cumulative exposure to marijuana and changes in cognitive function performance adjusting for sociodemographic factors, cardiovascular risk factors, tobacco smoking, alcohol use, illicit drug use, depressive symptoms, and baseline cognitive function performance. The models for the HIV+ men were additionally adjusted for CD4 nadir and antiretroviral therapy use. Analyses were performed on data from April 1, 1996, to September 30, 2013. Two domains of cognitive function were measured at every MACS visit using the Trail making Test Part A (TMTA) and Symbol Digit Modalities Test (SDMT; processing speed) and Trail making Test Part B (TMTB; processing speed and executive function). All outcomes were expressed as *Z* scores, standardized to the baseline visit score. **Results:** Among the 1982 participants [817 HIV+ and 1165 HIV], marijuana use was more common at baseline among HIV+ men (58%) compared to HIV– men (34%). In fully adjusted models, we found no statistically significant associations between each additional 5 marijuana use-years and performance on the TMTA [0.164 standardized units (95% confidence interval (CI), -0.140 to 0.470; *P* =.290)], TMTB [0.074 (95% CI, -0.203 to 0.351; *P* =.600)] or the SDMT [-0.109 (95% CI, -0.390 to 0.172; *P* =.448)]. The pattern of results was similar among the HIV– men, though association was statistically significant for better performance on the SDMT [0.245 (95% CI, 0.013 to 0.477; *P* =.038)]. **Conclusions:** In this sample of HIV+ and HIV– men, cumulative exposure to marijuana was not significantly associated with worse cognitive functioning over time.**Financial Support:** F31-DA039810:Trainee Okafor

Abstract - ID: 552 **Author(s):** John Smethells **(Presenter)**, University of Minnesota
Natashia Swalve, University of Minnesota
Rebecca Younk, University of Minnesota
Marilyn Carroll, University of Minnesota **Title:** Reducing impulsivity for food and cocaine with progesterone and atomoxetine in male and female rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Treatment **Aims:** Impulsive behavior such as impulsive choice (delay discounting) and impulsive action (response inhibition) has been linked to drug abuse. In drug addicts, impulsivity for a drug increases during abstinence and may facilitate relapse events. We modeled impulsive choice and action in rats and examined treatments that reduce impulsive drug-seeking (PRO) and choice (ATO). We hypothesized that the treatments would reduce impulsivity and PRO's effect would be stronger in females than males. **Methods:** Male and female rats were trained on impulsive choice (Delay Discounting; M: n = 68; F: n = 68) and impulsive action (Go/No-Go; M: n = 40; F: n = 35) procedures either for sucrose pellets or cocaine infusions. In the impulsive choice procedure, rats chose between small-immediate vs. large-delayed (0, 3, 6, 12, 24 s) amounts of cocaine (0.3 vs 0.9 mg/kg) or sucrose pellets (1 vs. 3 pellets). Once preference for the larger choice was established, delays increased daily to produce a baseline and a treatment (Vehicle -VEH, PRO, ATO, PRO+ATO) gradient. In the impulsive action procedure (GNG), rats responded during differentially signaled *Go* (VI-30 s) and *No-Go* (DRO 30 s) periods, either for cocaine (0.4 mg/kg) or sucrose pellets. *No-Go* responses reset a DRO timer and were an index of impulsive action. Following baseline stability in resets, rats were treated with either VEH or PRO**Results:** Impulsive choice for cocaine infusions (but not sucrose pellets) was reduced by PRO in females and by ATO in males. In the impulsive action procedure, PRO reduced impulsive action (i.e., DRO resets) in both sexes. **Conclusions:** PRO reduced impulsive choice and action for cocaine in females; thus, it may be an effective treatment for cocaine abuse in women. In males, ATO reduced impulsive choice, and PRO reduced impulsive action, suggesting a combination of these treatments might be more effective for male cocaine abusers. The present results indicate that reducing impulsive choice and impulsive action for cocaine is a viable treatment for drug abuse. **Financial Support:** NIH/ORWH/NIDA P50 DA033942 (MEC) and NIDA T32 DA007097 (Jack Smethells trainee; Thomas Molitor, PI)

Abstract - ID: 553 **Author(s):** David Festinger **(Presenter)**, University of Pennsylvania
Karen Dugosh, Treatment Research Institute
David Gastfriend, Treatment Research Institute
Brook Singletary, Treatment Research Institute **Title:** Delivering medication-assisted treatment in drug courts: A statewide evaluation **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** Despite its demonstrated effectiveness, drug courts have not universally adopted medication assisted treatment (MAT) into their programs. In 2015, the Ohio Department of Mental Health and Addiction Services (ODMHAS) received state funding to provide MAT enhanced addiction treatment to drug court clients with alcohol and/or opioid use disorders. This report presents descriptive data on the flow of participants, their baseline profiles, and the use of MAT within this initiative. **Methods:** A total of 26 drug court networks from 13 counties participated in the evaluation with data collection beginning on January 1, 2016. The evaluation included all clients entering the program with an alcohol and/or opioid use disorder diagnosis. Program staff entered client data into the TRI Court Evaluation Program, a state-of the-art performance monitoring and reporting system that captures the essential data elements endorsed by the National Drug Court Institute. **Results:** To date, 483 individuals participated in the evaluation. Approximately 54% (n = 263) had an alcohol use disorder, 8% (n = 40) had an opioid use disorder, and 37% (n = 180) had both. At program entry, over 63% of clients accepted MAT (n = 305) with rates of 51% (n = 249) for injectable naltrexone, 1% (n = 6) for oral naltrexone, 9% (n = 42) for buprenorphine, and 2% (n = 8) for methadone. Following entry, 274 (57%) received at least one dose of MAT including injectable naltrexone (48%, n = 232), oral naltrexone (11%, n = 52), buprenorphine (9%, n = 43), and methadone (1%, n = 5). Overall, MAT and non-MAT clients had similar demographic and functional status profiles although MAT clients were significantly less likely to have an opioid use disorder and to report hallucinations in the 30 days prior to entry. **Conclusions:** Results suggest that a substantial proportion of clients accepted MAT, with injectable naltrexone being the most common. Findings support the acceptability and feasibility of providing MAT in drug courts.**Financial Support:** ODMHAS Contract #MHA16017

Abstract - ID: 554 **Author(s):** Andrew Coop **(Presenter)**, University of Maryland School of Pharmacy
Mohammad Ansari, University of Maryland School of Pharmacy
Jason Healy, West Virginia University
Rae Matsumoto, Touro University California **Title:** UMB 426: A pyranomorphinan with a profile of mu agonism/delta antagonism **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Opiates/Opioids **Topic:** Chemistry **Aims:** Numerous studies have demonstrated that the mixed profile of mu opioid agonism and delta opioid antagonism leads to antinociceptive agents lacking tolerance and dependence to mu, and our studies have focused on the development of a single non-peptide drug with such a polypharmacological profile. **Methods:** As part of our continuing studies to optimize the synthesis of our previously reported mixed mu opioid agonist/delta opioid antagonist 5-(hydroxymethyl)oxymorphone (UMB425) for scale-up, the 4,5-epoxy bridge underwent rearrangement on treatment with BBr_3 to yield a novel opioid with the little studied pyranomorphinan skeleton, with bromine substitution on the 7-position. **Results:** The new compound (UMB426) was fully characterized to show the unusual pyranomorphinan structure. Pharmacological evaluation showed UMB426 to possess a profile of weak mu agonism/delta antagonism with an EC50 at mu of 340 (+/- 94) nM, and a pA2 at delta of 6.3 (slope -1.08). **Conclusions:** Although about 10-fold less potent than morphine in in vitro assays, UMB426 opens 7-substituted pyranomorphinans for the potential development of new opioids lacking tolerance and dependence. **Financial Support:** NIDA DA-13583

Abstract - ID: 555 **Author(s):** Cristina Bares **(Presenter)**, University of Michigan **Title:** Neighborhood drug exposure modifies heritability of cigarette initiation in adolescents **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Genetics **Aims: Aims:** Neighborhood characteristics important in the initiation of substance use are the degree of social disorganization, as well as the visibility, and availability of drugs in the neighborhoods that children and adolescents grow up. Although previous studies have found that genetic and familial factors influence the initiation and regular of use of substances in adolescence, few studies have examined how the relative influence of genetic and familial factors differ by environmental exposure**Methods: Method:** Data for this study come from adolescent and young adult (12- to 20-year-olds, mean age 16.0 SD=1.5, n=771 pairs) twins from the National Longitudinal Study of Adolescent Health. This study used behavioral genetic methods to decompose the variance in cigarette, alcohol, and marijuana initiation into genetic, familial, or unique effects. Based on parental responses to whether the family lived in a neighborhood where drugs were a common problem two groups were created. Substance-specific, age-moderated multi-group structural equation models were fitted to estimate the magnitude of genetic and environmental effects on cigarette, alcohol, and marijuana initiation**Results: Results:** About a third (36%) of the sample grew up in neighborhoods where drugs were a problem. There were no significant differences by neighborhood exposure on percent female, mean age, rates of cigarette use or alcohol use initiation, or paternal use of cigarettes, but adolescents exposed to drugs in the neighborhood had higher rates of maternal use of cigarettes, and had higher rates of marijuana initiation. According to the best fitting models, genetic effects were stronger for initiating cigarettes in neighborhoods where drugs are a problem but no significant differences in heritability were found for alcohol or marijuana initiation by neighborhood**Conclusions: Conclusion:** This study is among the first to formally test and find that the influence of genes depends on the level of risk in the environment for some substances commonly used in adolescence. **Financial Support:** NIH/NIDA K01DA036681

Abstract - ID: 556 **Author(s):** M. Claire Greene **(Presenter)**, Johns Hopkins Bloomberg School of Public Health
Jeremy Kane, Johns Hopkins Bloomberg School of Public Health
Wietse Tol, Johns Hopkins Bloomberg School of Public Health **Title:** Unpacking the association between alcohol use and intimate partner violence in sub-Saharan Africa **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Epidemiology **Aims:** Alcohol use is a well-documented risk factor for intimate partner violence (IPV) in sub-Saharan Africa; however, most research fails to disentangle the individual and contextual effects of alcohol. In this study, we hypothesize that the total association between alcohol use and IPV may be explained by both individual and contextual drinking behaviors**Methods:** Data for this study come from nationally representative surveys of 14 sub-Saharan African countries. The study population included women (15-49 yrs) that have ever been in an intimate relationship. These women reported on their current or most recent partner's perpetration of IPV and alcohol use. Mixed effects models were constructed to examine the total association between partner's alcohol use and IPV. The total association was then partitioned into within- and between-country effects**Results:** The prevalence of partner's alcohol use (2-65%) and IPV (11-58%) ranged across countries. Overall, alcohol use was associated with a 3.2-fold increase in the odds of IPV (95% CI: 2.9, 3.5). Examination of random effects revealed inter-country variability in the magnitude of this association; however, alcohol use was consistently associated with elevated odds of IPV. Deconstructing the total association revealed confounding of the individual, within-country effect of partner's alcohol use by drinking norms (i.e., prevalence of alcohol use), such that the individual association was attenuated (OR=2.2, 95% CI: 2.1, 2.3). Drinking norms at the country-level was independently associated with an increase in the odds of IPV such that a 10% increase in the prevalence of alcohol use among male partners was associated with a 40% increase in the risk of IPV for female**Conclusions:** Alcohol use is associated with IPV via multiple independent pathways. Partner's alcohol use remains a robust correlate of IPV. Results from this study suggest that drinking norms may independently relate to IPV and also confound the relationship between partner's alcohol use and IPV. **Financial Support:** This research was supported by a grant from the National Institute on Drug Abuse (T-32DA007292 PI: R.M. Johnson).

Abstract - ID: 557 **Author(s):** Tabitha Moses **(Presenter)**, Wayne State University
Eric Woodcock, Wayne State University
Jamey Lister, Wayne State University
Leslie Lundahl, Wayne State University
Mark Greenwald, Wayne State University **Title:** Developing domains of negative consequences of regular heroin use **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Behavior **Aims:** More than a half million Americans have a diagnosable heroin use disorder. Chronic drug use leads to serious clinical impairment. Heroin abuse is associated with various negative life consequences (e.g. health, legal, and social problems). Increased negative consequences of heroin use can result in poor treatment outcomes as well as negative health effects and reduced social functioning.This study examines whether there are specific domains of heroin consequences and, if so, whether these domains have unique substance use characteristic profiles.**Methods:** Data regarding substance use characteristics and specific consequences of substance use were collected from non-treatment seeking, heroin using, 18 to 55 year-old participants. Principal components analysis (PCA) was used to analyze the factor structure of 21 negative heroin consequences items for the sample.**Results:** The analysis demonstrated that heroin consequences could be divided into 5 unique domains: *acute health*, *occupational*, *school*, *functional*, and *neurological*. We also found domain-specific relationships between certain substance use characteristics (e.g. injection drug use) and heroin consequence domains. Injection heroin use was associated with increased general health consequences but was not associated with an increase of any other domain. Different substance use characteristics were associated with increased consequences in specific domains; a history of regular sedative use was significantly associated with increased *acute health* consequences but not other domains. **Conclusions:** These findings support the theory that certain domains of consequence may be unique to specific populations (e.g., injectors). This supports the creation of more tailored treatment strategies aimed at improving treatment engagement and harm reduction for heroin use based on person-specific risks and negative consequences. **Financial Support:** Supported by NIH/NIDA R01 DA015462 (MKG), Helene Lycaki/Joe Young, Sr. Funds (State of Michigan), and the Detroit Wayne Mental Health Authority.

Abstract - ID: 558 **Author(s):** Erin Anderson Goodell **(Presenter)**, Johns Hopkins Bloomberg School of Public Health
D. Lynn Homish, State University of New York at Buffalo
Gregory Homish, State University of New York at Buffalo **Title:** Social influence on recent illicit drug use among army reserve couples **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Sex Differences **Aims:** Although social ties have been shown to influence illicit drug use outcomes in civilian populations, it is not known whether they influence drug use among military populations. This work extends military substance use research by examining the association between drug-using social ties and recent drug use among Army Reserve couples. We hypothesize that for military soldiers, having at least 1 drug-using social tie will have no association with recent use because of the military's stringent drug testing and sanctions for use. However, for civilian partners, having 1 or more drug-using ties will be positively associated with recent use. **Methods:** Data are baseline findings from Operation: SAFETY (Soldiers And Families Excelling Through the Years), an ongoing longitudinal study of US Army Reserve/National Guard Soldiers and partners (N=411 dyads). Logistic regression models were used to examine the effects of having 1 or more social ties who used illicit drugs in the past year on past 3-month use by the respondent. Relationships were examined by gender and military status. **Results:** Overall, 5.1% of all males (3.2% military & 20.8% civilian, $p < 0.001$) and 5.6% of all females (5.7% military & 5.9% civilian) reported past 3-month illicit drug use. For military males, we observed significantly increased odds of drug use associated with 1+ drug-using social ties (OR=6.2, p=0.003), but there was no association for civilian males. Civilian females with 1+ drug-using social ties were at increased odds for past 3-month use (OR=6.6, $p < 0.001$), and a marginally significant association was observed for military females (OR=10.2, p=0.05). **Conclusions:** Military males and civilian females were more likely to engage in recent illicit drug use if they reported having at least one important person in their lives that used drugs in the past year. Specifically, the findings for males are counter to what might be expected, given the severe consequences of drug use in the military, and warrant further examination to help explain this relationship. **Financial Support:** Supported by R01-DA034072 and T32-DA007292.

Abstract - ID: 559 **Author(s):** Cristina Bares, University of Michigan
Karen Chartier **(Presenter)**, Virginia Commonwealth University
Katherine Karriker-Jaffe, Alcohol Research Group
Fazil Aliev, Virginia Commonwealth University
Brian Mustanski, Northwestern University Feinberg School of Medicine
Danielle Dick, Virginia Commonwealth University **Title:** Adverse neighborhoods and genetic risk **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Genetics **Aims: Aims:** Explore how neighborhood alcohol context and polygenic scores work together to influence adolescent alcohol use, including the mediating role of externalizing problems in this relationship. **Methods: Methods**: Data came from 490 African American adolescents (mean age=15.9; 50.6% female) and their caregivers in the Gene Environment Neighborhood Interaction (GENI) study. Caregivers evaluated whether there was too much alcohol use in their neighborhoods. Polygenic risk scores (PRS) for alcohol dependence were calculated from SNPs common between the Gelernter et al. (2014) GWAS in African Americans and GENI GWAS (inclusion threshold p_2=.2). Structural equation models examined direct and indirect associations between neighborhood alcohol context, genetic influences, externalizing behavior, and adolescent alcohol use, controlling for sociodemographic characteristics. **Results: Results:** We found a significant interaction between the PRS and neighborhood alcohol context on externalizing problems reported by the adolescent. The interaction effect was not directly associated with alcohol use, but worked indirectly through externalizing problems. For adolescents in neighborhoods with high levels of alcohol use, higher genetic risk was more strongly associated with increased externalizing, which was, in turn, associated with more adolescent alcohol use.**Conclusions: Conclusions:** Neighborhoods characterized by excessive alcohol use may offer increased opportunity for youth to use alcohol, as well as diminished social control of deviant behaviors. This risky context can strengthen genetic influences on adolescent alcohol use. Consistent with prior research showing that genetic influences change as a function of the environment, relaxed social control and greater access to alcohol in the neighborhood are associated with increased genetic influences on drinking behaviors in youth. Further, externalizing problems at this developmental stage are a key pathway through which genetic effects influence alcohol use. **Financial Support:** NIH/NIDA K01DA036681 (CB) NIH/NIDA R01DA025039 (BM) NIH/NIAAA K01AA021145 (KC)

Abstract - ID: 560 **Author(s):** Chitlada Areesantichai **(Presenter)**, Chulalongkorn University **Title:** Heroin overdoses reach epidemic proportion in Thailand **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Dependence **Aims:** Thailand has had a heroin problem since 1957 after opium was banned. Typically, injection has been the route of administration. Forty years later, the majority of drug dependents shifted from heroin to methamphetamine (MA). Recently, poly-drug use (heroin, MA, and midazolam) has become most prevalent, and the route is still injection. There are few studies on heroin overdoses among persons who inject drugs (PWIDs) in Thailand.**Methods:** A cross sectional study was conducted among 393 PWIDs recruited from 6 provinces throughout Thailand. Face-to-face mixed methods interviews were conducted after all questions had been evaluated for content validity and reliability. PWIDs were stratified into 3 groups: PWIDs currently in harm reduction programs, PWIDs who had been in a harm reduction program, and PWIDs who never used such a program. **Results:** The study found an increased trend of drug overdose from 2012-2015. Overall, 66 respondents (17%) had experienced drug overdose, with 19%, 15% and 14% overdosing if currently in a program, ever used and never used the program, respectively. Nearly half had more than one overdose (49%) and nearly all (92%) overdosed from heroin. We asked about the experience of their friend overdoses and it was found that about 32% (126/393) had a friend who overdosed. Among those, 85% (107/126) injected drug alone and 71% died; among people who injected drug with friends, 48% died. The number of deaths will be less if they have curative knowledge and can access to emergency services. Additionally, we found a relationship between PWIDs receiving treatment and drug overdosing occurring in the same period. **Conclusions:** This study found a significant impact of heroin dependent epidemic. It is necessary to provide the intensive knowledge and care of overdoses for PWIDs either in drug treatment or harm reduction program. **Financial Support:** College of Public Health Sciences, Chulalongkorn University

Abstract - ID: 561 **Author(s):** Sarah Moriceau **(Presenter)**, Université de Bordeaux
Fuschia Serre, Université de Bordeaux
Melina Fatseas, Centre Hospitalier Charles Perrens
Jean-Arthur Micoulaud-Franchi, Université de Bordeaux
Etienne de Sevin, Université de Bordeaux
Emilien Bonhomme, Université de Bordeaux
Pierre Philip, Université de Bordeaux
Marc Auriacombe, Université de Bordeaux **Title:** Development and validation of an Embodied Conversational Agent to detect problematic use of tobacco and alcohol: Study description **Abstract Category:** Program Descriptions **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** alcohol and tobacco **Topic:** Technology Issues **Aims:** The development of virtual reality tools applied to the medical field is expanding. The goal is to create accessible tools for both patients and physicians in order to improve access to treatment. The Embodied Conversational Agents (ECA) come from affective computing, and provide a strong human-system interaction. ECAs have different gestures, facial and verbal expressions. To date, ECAs were not applied to the addiction field. We developed an ECA program to screen problematic use of tobacco or alcohol, called “Jeanne”. “Jeanne” will have the ability to screen big samples of individuals (general population and primary care patients) and forward subjects with high probability of alcohol or tobacco use disorder to specialized addiction treatment. **Methods:** During the interview, “Jeanne” asks questions about alcohol use using the CAGE questionnaire and tobacco use with the Cigarette Dependence Scale (CDS-5). Tobacco and alcohol craving is also explored. Then “Jeanne” proceeds with assessing DSM5 use disorders using the Mini International Neuropsychiatric Interview (MINI). To test the reliability of the answers with “Jeanne” participants will pass the MINI with a trained interviewer and self-questionnaires (CDS-5 and CAGE). For the acceptability assessment, participants will answer the Acceptability E-scale (AES), a generic and validated questionnaire that can accurately evaluate satisfaction with E-health systems.**Results:** To date, 50 participants have been enrolled. **Conclusions:** By having a reliable interview procedure to sreen for alcohol and tobaco use disorders, we expect that acees to addiction treatment will increase. **Financial Support:** Equipex, Univ Bordeaux

Abstract - ID: 562 **Author(s):** Dennis Sholler **(Presenter)**, University of Texas Medical Branch
Noelle Anastasio, University of Texas Medical Branch
Robert Fox, University of Texas Medical Branch
Erica Holliday, University of Texas Medical Branch
Amanda Price, University of Texas Medical Branch
Kathryn Cunningham, University of Texas Medical Branch **Title:** A new model of cortical 5-HT2A receptor dysfunction in rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Neurobiology **Aims:** Impulsivity is a risk factor for cocaine use disorder, and serotonin (5-HT) actions via the 5-HT_{2A}R regulate impulsive action (the inability to withhold a prepotent motor response), particularly through actions in the medial prefrontal cortex (mPFC). The design of a model to facilitate analyses of the functional implications of the 5-HT_{2A}R in the mPFC is necessary to further our knowledge of the neurochemistry and circuitry involved in impulsive action. Previous studies have demonstrated that microinfusion of the preferential 5-HT_{2A}R agonist 2,5-dimethoxy-4-iodoamphetamine (DOI) into the mPFC is sufficient to increase impulsive action as well as elicit the head-twitch response (HTR), a rapid rotational movement of the head in rats. We hypothesized that the engineered knockdown of the 5-HT_{2A}R in the mPFC would suppress DOI-evoked HTRs as a measure of dysfunctional cortical 5-HT_{2A}R. **Methods:** A short hairpin RNA (shRNA) that efficiently knocks down over 90% of 5-HT_{2A}R mRNA *in vitro* was designed, validated, and packaged into an adeno-associated viral (AAV) vector; the non-silencing control (NSC) hairpin had no effect on 5-HT_{2A}R mRNA expression. Rats (n=8) received bilateral stereotaxic infusions of 5-HT_{2A}R-shRNA-eGFP AAV or NSC-eGFP-AAV into the mPFC (AP: +3.0 mm; ML: +1.4 mm; DV: -5.1, -4.1, -3.1 mm; relative to Bregma). Following DOI administration (1 mg/kg, s.c.), the HTR was scored by blinded observers for 30 min. **Results:** The 5-HT_{2A}R-shRNA-eGFP AAV rats expressed significantly fewer DOI-evoked HTRs (43.0±2.92) vs. controls (27.3±7.69; p=0.042). Preliminary data indicate that 5-HT_{2A}R-shRNA-eGFP AAV rats exhibit a loss of 5-HT_{2A}R protein expression. **Conclusions:** The current study suggests that a preclinical model of localized mPFC 5-HT_{2A}R deficiency will be useful to explore variations in the functional capacity of the 5-HT_{2A}R that may underlie inherent individual differences in impulsive action. **Financial Support:** T32DA07287 (DJS/EDH), P50DA033935 (KAC/NCA), K05DA020087 (KAC), R00DA033374 (NCA)

Abstract - ID: 563 **Author(s):** Laurel Weaver **(Presenter)**, Icahn School of Medicine at Mount Sinai
Aimee Campbell, Columbia University and NYSPI
Susan Tross, Columbia University
Don Des Jarlais, Icahn School of Medicine at Mount Sinai
Margaret Wolff, Icahn School of Medicine at Mount Sinai **Title:** Talking about drugs and sexual risk in HIV primary care: A qualitative exploration of provider practices and patient perceptions **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** AIDS/Immune **Aims:** Substance use and sexual behavior can be challenging topics of discussion for patients and providers, but are critical to achieving successful health outcomes among people living with HIV (PLWH) with substance use disorders (SUD). This study aims to explore the ways in which HIV primary care providers (PCP) and PLWH approach assessment and management of SUD and sexual risk. **Methods:** Qualitative interviews were conducted with New York City-based PCP (*n*=25) and PLWH (n=27). Topics included assessment approaches, healthcare setting characteristics, and attitudes about sensitive information disclosure. All interviews were transcribed, consensus coded, and thematically analyzed using Atlas.ti software. **Results:** SUD and sexual risk screening approaches were highly variable among the provider sample, ranging from standardized measures to informal, infrequent conversations. PCP cited time constraints as the main barrier to asking sensitive topic questions, with mixed reactions to their own comfort and perceived patient comfort. Over half of patients expressed willingness to disclose substance use and sexual risk to their PCP to enhance health outcomes. Patient data suggests that direct, nonjudgmental questioning by PCP elicits more accurate disclosure; however, patients were less likely to disclose substance use and sexual risk behavior in the presence of stigma, provider apathy, lack of questioning, or feeling rushed, or the visit being too routinized. Some patients reported intentionally withholding information about substance use or sexual behavior, preferring to discuss such topics with mental health professionals. **Conclusions:** Comprehensive, nonjudgmental, and candid conversations facilitate accurate patient disclosure of sensitive topics, which could promote engagement in SUD services and conversations about sexual risk. Clear guidelines for systematic SUD and sexual risk assessment, in conjunction with provider training, may improve the quality of healthcare experiences and health outcomes for PLWH with SUD.**Financial Support:** This research is supported by grants from the National Institutes of Health, National Institute on Drug Abuse: R01 DA035707 (Des Jarlais and Campbell) and R01 DA003574 (Des Jarlais).

Abstract - ID: 564 **Author(s):** Sarah Bagley **(Presenter)**, Boston University School of Medicine
Dana Bernson, Massachusetts Department of Public Health
Marc Larochelle, Boston University School of Medicine
Scott Hadland, Boston University School of Medicine
Thomas Land, Massachusetts Department of Public Health
Alexander Walley, Boston University School of Medicine **Title:** Characteristics of nonfatal opioid-related overdoses in Massachusetts among emerging adults **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Adolescent **Aims:** Emerging adults (ages 18-25 years) have a higher prevalence of opioid use compared with any other age group and have high mortality from opioid-related overdoses. Characterizing differences between emerging and older adults would aid tailoring interventions to engage them in treatment and decrease risk of subsequent overdose death. We sought to describe the characteristics of emerging adults compared with older adults who experience a nonfatal opioid-related overdose**Methods:** We developed a retrospective cohort of individuals who experienced a nonfatal opioid-related overdose in Massachusetts during 2013-2014. We used individually linked population level data from the Massachusetts Department of Public, including medical claims, ambulance encounters, and death files Nonfatal opioid-related overdoses were identified through hospital visits and ambulance encounters. We used summary statistics and chi-square analyses to describe characteristics (age, gender, HIV status, subsequent fatal overdose, and history of civil commitment) of emerging adults who experience a nonfatal opioid-related overdose compared to older adults (>25 years).**Results:** During the study period, 13,144 people ages 11 and above experienced a nonfatal opioid-related overdose. Of those individuals, 15% (n=1938) were emerging adults. Emerging adults were more likely to be HIV positive (3.2% v. 0.1%; p **Conclusions:** Emerging adults represented nearly 1 in 6 non-fatal opioid-related overdoses in Massachusetts between 2013 and 2014. Those who overdosed were more likely to be HIV positive and have a history of civil commitment in the study period. Efforts to engage with this age group should explore how to engage this high-risk population in addiction treatment after a nonfatal overdose to prevent future overdose mortality. **Financial Support:** None

Abstract - ID: 565 **Author(s):** Patricia Novo **(Presenter)**, New York University School of Medicine
Edward Nunes, Columbia University and NYSPI
Martina Pavlicova, Columbia University Mailman School of Public Health
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Jeanine May, The Emmes Corporation
Dagmar Salazar, The Emmes Corporation
Dikla Blumberg, The Emmes Corporation
John Rotrosen, New York University School of Medicine **Title:** Baseline characteristics of the opioid use disorder population enrolled in NIDA CTN-0051, "Extended-release naltrexone vs. buprenorphine for opioid treatment" **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** The aim is to describe the population enrolled in the "Extended-Release Naltrexone vs. Buprenorphine for Opioid Treatment (X:BOT)" comparative effectiveness trial, including baseline demographic, opioid use, and clinical characteristics, such as depression, hepatitis B and C status, and pain. Secondary aims are to examine subsets of the population, such as those with high levels of opioid use prior to the start of treatment. **Methods:** Participants were recruited from 8 detoxification or short-term residential settings located across 8 states within the NIDA Clinical Trials Network, randomized to treatment with extended-release naltrexone (XR-NTX) or buprenorphine-naloxone (BUP-NX) for 24 weeks and then followed for an additional 3 months post-treatment. Demographics, opioid and other drug use, clinical and other characteristics were collected and summarized. **Results:** 772 participants were consented and 570 randomized after which the study closed to recruitment. Those randomized were mostly male (n=401, 70%), white (n=421, 74%), non-Hispanic (n=471, 83%), unemployed (n=360, 63%), never married (n=376, 66%) with high school or less level of education (n=322, 56%) and between the ages of 25 and 45 (n=395, 69%). The primary opioid used in the 7 days prior to detox admission was heroin (n=463, 82%) followed by opioid analgesics (n=90, 16%) with 40% (n=227) stratified as "high" users - defined as 6 or more bags (or equivalent) IV heroin per day. 64% were IV users. **Conclusions:** This is among the first and largest comparative effectiveness trials of buprenorphine versus extended-release naltrexone for treatment of opioid use disorder. The sample appears to have a diverse range of demographic and clinical factors. **Financial Support:** This research was supported by the following grants from the National Institute on Drug Abuse (NIDA) National Drug Abuse Treatment Clinical Trials Network (CTN): U10DA013046, U10DA013035, UG1DA013035, HHSN271200900034C, and HHSN271201500065C.

Abstract - ID: 566 **Author(s):** Dennis Hand **(Presenter)**, Thomas Jefferson University
Lindsay Reid, Thomas Jefferson University
Diane Abatemarco, Thomas Jefferson University **Title:** Delay discounting of pregnancy- and condom-protected sex among methadone-maintained women **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Behavior **Aims:** Over 80% of pregnancies are unintended among women with opioid use disorder (OUD), and use of effective contraceptives is uncommon in this population. Delay discounting of protected sex may underlie risky sexual behavior among women with OUD, but all studies to date have focused on protection from sexually-transmitted infection (STI). The present study modified an existing condom discounting task (CDT; Johnson & Bruner, 2012) to determine how women with OUD discount pregnancy-protected sex. **Methods:** Participants were 15 women aged 18+ receiving methadone-maintenance treatment for OUD who were not intending to become pregnant in the next 6 months. Participants completed a monetary discounting questionnaire (MCQ), Barratt Impulsiveness Scale (BIS), CDT, and a pregnancy discounting task (PDT). The PDT was similar to the CDT in that participants rated their likelihood of engaging in immediate, unprotected or delayed, protected sex on a 100mm visual analog scale. Delays to protected sex ranged from 0-30 days across ten questions within two pairs of partner conditions: most and least desirable, most and least fertile. CDT and PDT data were fit with the hyperbola-like function, $V = A/(1+kD)^2$, and areas under the empirical discounting data (AUC) were compared within pairs of partner conditions using Wilcoxon-signed rank tests. CDT, PDT, BIS, and MCQ data were compared with Spearman correlations to examine relations between measures. **Results:** Preference for pregnancy- and condom-protected sex declined as a function of delay and was well-described by the hyperbola-like function ($R^2 > .80$). Women discounted pregnancy-protected sex significantly more steeply for most vs. least desirable partners ($Z = -2.8$, $p = .006$), but there was no difference between most and least fertile partners. Women discounted condom-protected sex significantly more steeply for partners most vs. least likely to have an STI ($Z = -3.0$, $p = .002$), and approached significance between most vs. least desirable partners ($Z = -1.8$, $p = .071$). The CDT, PDT, MCQ and BIS were not reliably correlated with each other. **Conclusions:** These findings replicate prior studies of delay discounting of condom-protected sex, and extend the findings to pregnancy-protected sex. Data collection is ongoing, but suggests that delays to pregnancy protection may partially underlie low contraceptive use among women with OUD. **Financial Support:** None.

Abstract - ID: 567 **Author(s):** Jessica Weafer **(Presenter)**, University of Chicago
Harriet de Wit, University of Chicago **Title:** Sex differences in brain activation during response inhibition in heavy drinkers **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Sex Differences **Aims:** Substance abuse has been traditionally considered a male-oriented problem and as a consequence research on risk factors specific to women has been minimal. However, the gender gap in drug abuse is closing rapidly, and findings from both animal and human studies suggest that females are actually more vulnerable to substance use than males. As such, it is important to understand the biological basis of sex differences in risk factors for substance use to develop sex-specific prevention and treatment efforts. One such risk factor is poor inhibitory control. Previous reports have shown that among heavy drinkers, women display poorer inhibitory control than men on behavioral measures of response inhibition. Here we examined the hypothesis that heavy drinking women also display less brain activation related to inhibitory control than heavy drinking me**Methods:** We investigated sex differences in fMRI blood oxygenation level-dependent (BOLD) activation during a response inhibition (stop signal) task. **Results:** Preliminary analyses show that among light drinkers (n=16), women show greater activation than men throughout right frontal regions implicated in response inhibition, including right inferior and middle frontal gyri, whereas no sex differences were observed among heavy drinkers (n=16). **Conclusions:** These data suggest that heavy drinking is associated with decreased brain activation during inhibition in women, and not men, and are consistent with previous observations of poorer inhibitory control in heavy drinking women compared to heavy drinking men. Future longitudinal studies will be needed to determine whether poor inhibition is a cause, or consequence, or both of heavy drinking in women.**Financial Support:** Research supported by NIDA grant R01DA002812 (HdW, KLP) and NIAAA grant K01AA024519 (JW).

Abstract - ID: 568 **Author(s):** Roi Treister, Analgesic Solutions
Ryan Lanier **(Presenter)**, Analgesic Solutions
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Nathalie Erpelding, Analgesic Solutions
Harrison Elder, Analgesic Solutions
Maitreyee Mohanty, Analgesic Solutions
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Judith Jones, The Degge Group, Ltd.
Nathaniel Katz, Analgesic Solutions **Title:** Development, feasibility, and implementation of the misuse, abuse, and diversion drug event reporting system (MADDERS®) for classifying misuse and abuse-related events in clinical trials **Abstract Category:** Theoretical/Commentary **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Other **Aims:** There is a need for a reliable, validated instrument to assess and classify misuse and abuse-related events (MAREs) in randomized controlled trials (RCTs) of drugs with abuse potential. The aim of this presentation is to review the development, feasibility, and implementation of the Misuse, Abuse, and Diversion Drug Event Reporting System (MADDERS®), designed to prospectively identify, record, and classify MAREs in RCTs. **Methods:** N/A **Results:** N/A **Conclusions:** Development of MADDERS consisted of: 1) identifying triggering events (adverse events [AEs] of interest or drug accountability discrepancies [DADs]); 2) validating the list of triggering events in differentiating drugs of abuse versus non-abused drugs; 3) development and testing of forms for collecting information about triggering events; 4) feasibility and reliability assessment of the event classification process; and, 5) implementation. Triggering events were shown to have content validity, and consist of AEs such as drug abuse, misuse, diversion, overdose, and euphoria, and DADs such as missing tablets and tampering. MADDERS forms were developed to collect additional information about MAREs based on classifications and definitions set forth by the ACTTION public-private partnership. Forms are completed by trained staff as a guided interview, and were shown to be easy to use, the questions clear, and the information sufficient for classifying MAREs. Event narratives are created, and all relevant data are reviewed by an independent expert panel of drug abuse experts. A high level of agreement in event classifications was found between study staff and the expert panel. Overall, MADDERS is a feasible, valid, and systematically developed approach for prospectively identifying, classifying, and quantifying MAREs in patient populations during RCTs, and has recently been implemented in several multicenter RCTs of drugs with abuse poten**Financial Support:** This work was funded by Analgesic Solutions.

Abstract - ID: 569 **Author(s):** Andrew Rosenblum **(Presenter)**, Credit Services
Enrique Pouget, National Development and Research Institute, Inc.
Chunki Fong, National Development and Research Institute, Inc. **Title:** Racial/ethnic trends of heroin and non-medical use of prescription opioids among entrants to opioid treatment programs, 2005-2016 **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Epidemiology
Aims: Recent data suggest an increase in heroin use and in non-medical use of prescription opioids (NMUPOs) in the US, but it is unclear if these trends are consistent across racial/ethnic groups. The aim of this study is to determine whether these trends are consistent across racial/ethnic groups. **Methods:** In a nationwide prevalence study, patients newly admitted to an opioid treatment program (OTP) completed a brief self-administered survey of past month heroin use and NMUPO. Data were collected from 69,140 patients from January 2005 through Sept. 2016. We calculated heroin use and NMUPO prevalence rates, and prevalence rate ratios of Latino and Black OTP entrants compared to White entrants over time. **Results:** At the outset of the study, Black and Latino respondents reported much higher prevalence of heroin use and much lower prevalence of NMUPO than White respondents. Heroin use increased among White respondents, while it decreased among Black respondents, resulting in rates that were no longer significantly different in the most recent data. NMUPO prevalence decreased among White respondents while it increased among Black respondents, but remained significantly higher among White respondents. Heroin use prevalence decreased and NMUPO prevalence increased among Latino respondents, but less consistently than among Black respondents. These trends were stronger when analysis was restricted to OTP entrants who were either younger (< 30 yrs) or had no previous OTP history. **Conclusions:**
Among OTP entrants, racially/ethnically disparate rates of heroin use, and to a lesser extent, of NMUPO have become more similar over time. To understand potential impacts of interventions to deter NMUPO and to maximize the effectiveness of OTPs it is important to consider potential changes in opioid use across racial/ethnic groups. Since heroin use is associated with comparatively greater attrition in medication assisted treatment programs (Potter et al., J Stud Alcohol Drugs.2013), one possible implication of these data is that the decrease in heroin use among Latino and Black drug treatment patients, especially younger ones, may facilitate greater treatment success.
Financial Support: The RADARS System is supported by subscriptions from pharmaceutical manufacturers for surveillance, research and reporting services. RADARS System is the property of Denver Health and Hospital Authority, a political subdivision of the State of Colorado. Denver Health retains exclusive ownership of all data, databases and systems. Subscribers do not participate in data collection or analysis, nor do they have access to the raw data.

Abstract - ID: 570 **Author(s):** Kerri Schoedel **(Presenter)**, Altreos Research Partners Inc. **Title:** Review of public-access data from human abuse potential studies of abuse-deterrent formulations **Abstract Category:** Literature Review **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Other **Aims:** HAP studies of ADFs are conducted to help predict abuse of these products once they are marketed. These randomized, double-blind, placebo- and active-controlled crossover studies in recreational opioid users include bipolar Drug Liking VAS peak effect (DL Emax) and other subjective endpoints (e.g., Take Drug Again VAS [TDA]). Study validity is determined by the difference between active control and placebo (C-P), and relative abuse potential of the test ADF is compared with existing non-ADF control product(s) (C-T). Per FDA guidance, numerical margins should be pre-specified for these contrasts; however, clinically important magnitudes of these difference have not yet been determined. The aim of this review was to compare C-P and C-T from intranasal (IN) and oral ADF HAP studies. **Methods:** DL and TDA Emax data were retrieved for approved ADFs from drugs@fda (labels, statistical reviews), advisory committee meeting materials, posters and journal articles. A few not yet approved ADFs were also included where data were available and all product names were blinded. Data were summarized using mean differences (mDiff)/95% confidence intervals (CI), effect size (ES) and other descriptive statistics**Results:** DL Emax C-P varied between different studies (IN: mDiff.: 21.6 to 41.6; lower CI: 36.7-15.8; ES: 1.8-4.6; Oral: 20-41.7; 15.9-37.5; 2.1-4.7); C-T also varied markedly (IN: 7.4-35.7; -1.1-28.5; 0.5-3.6; Oral manipulated: 2.2-31.3; -5.5-22.4; 0.1-1.9; Oral intact: 10.0-31.3; 5.4-27.1; 2.2-30.5; 0.4-3.2). In studies where C-P was smaller, C-T also tended to be smaller; this was even more pronounced with TDA. A ratio was developed (C-T/C-Px100) to help control for interstudy variation in C-P, which may be affected by methodological factors and may in turn influence the magnitude of C-T.**Conclusions:** Delta C-P and C-T showed large interstudy variation and may be influenced by factors such as opioid, dose, site, manipulation method, etc. The majority of ADFs have little or no publically available post-market data; therefore, clinical relevance of the margins cannot yet be confirmed. However, these data may have implications for pre-specifying margins and interpreting results from ADF HAP studies.**Financial Support:** Altreos

Abstract - ID: 571 **Author(s):** Benjamin Crosier **(Presenter)**, Dartmouth College
Timothy DeLise, Dartmouth College
Andrej Ficnar, University of Oxford
Bruno Korbar, Dartmouth College
Cara Van Uden, Dartmouth College
Saeed Hassanpour, Dartmouth College **Title:** Using artificial intelligence to predict substance use risk with social media data **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Technology Issues **Aims:** Social media services are sociobehavioral data recorders that can be harnessed for addiction research and treatment. We designed the web app *ARRA* to collect online survey responses and Instagram profile data including images and associated metadata. We then used machine learning to summarize profile contents, and used these insights to classify use risk for alcohol, tobacco, prescription drugs, and illicit drugs. **Methods:** We administered the NIDA Quick Screen to n=3,226 participants using compensated crowd sourcing, collecting n=468,282 associated raw images that contained 492,363 comments, 8,644,813 likes, and 867,851 tags of other users. Our profile summary approach created two sets of predictive features: Instagram use patterns and image content. Use patterns capture graph theoretic social network structure calculated from how users are tagged in photos, posting behavior (e.g., post time), and engagement (e.g., number of likes and followers). Deep learning approaches from computer vision (convolutional neural networks) and natural language proccessing (long short-term memory) were used to extract features from images and text. Finally, all prognostic features were combined with long short-term memory and then a softmax classifier was used to predict addiction risk category**Results:** Alcohol (accuracy = 62.9%, precision = 65.7%, recall = 75%, F1 = 70%), tobacco (accuracy = 67.5%, precision = 32%, recall = 55.3%, F1 = 40.6%), prescription drug use (accuracy = 85.2%, precision = 21.3%, recall = 46.4%, F1 = 29.3%), and illicit drug use (accuracy = 73.9%, precision = 25.4%, recall = 55.7%, F1 = 34.8%) outcomes could be accurately predicted to a degree exceeding unaided physicians and previous similar attempts with Instagram data. Promising results for other outcomes (e.g., depression, diet, psychological traits) will also be discussed.

Alcohol Abuse	2	62.9%	65.7%	75.0%	70.0%
Tobacco	2	67.5%	32.0%	55.3%	40.6%
Illegal Drug Abuse	2	73.9%	25.4%	55.7%	34.8%
Prescription Drug Abuse	2	85.2%	21.3%	46.4%	29.3%

Conclusions: Our model suggests that machine learning can be successfully used to identify the current substance use risk of social media users. This portable and fully automated predictive technique can be implemented within the context of next-generation interventions and healthcare systems. Future work will aim to predict future, rather than current, risk profiles, and will rely on an increasingly broad set of data sources to create comprehensive sets of predictive features. Technology development hurdles and methodological limitations of crowd sourcing are discussed. **Financial Support:** Dartmouth College Office of the Provost NIDA P30 DA029926

Abstract - ID: 572 **Author(s):** Francina Fonseca **(Presenter)**, Institut de Neuropsiquiatria i Addiccions
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Marta Torrens, Institut de Neuropsiquiatria i Addiccions
Magí Farré, Hospital Universitari Germans Trias i Pujol, School of Medicine **Title:** Detection of ethylglucuronide and ethylsulfate in urine after acute administration of different doses of alcohol **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Other **Aims:** To determine concentrations of EthylGlucuronide (EtG) and EthylSulfate (EtS) in urine after acute administration of different doses of alcohol. **Methods:** A single blind clinical trial was conducted in 54 healthy volunteers (33 males and 21 females), with previous drunk experiences. Subjects were distributed to 4 different doses: 20 g, 40 g, 60 g and 80 g of ethanol. Study variables included blood ethanol (BAL) and ethanol metabolites (EtG and EtS) concentrations in urine. Urine samples spiked with deuterated analogs as internal standards (EtG-d5 and EtS-d5) were analysed by LC-MS/MS following a dilute and shoot approach**Results:** Both, EtG and EtS urine excretion increased with the administered dose during the first 6 hours; EtS: from 63.95 µmol in 20 gr until 337.53 µmol in 80 gr; EtG: from 63.67 µmol in 20 gr until 405.38 µmol in 80 gr, in a non-linear manner. The excretion of EtG and EtS progressively decreased for all the alcohol doses and after 48 hours, excretion was below 20 µmo**Conclusions:** EtG and EtS urine excretion after acute ethanol administration increases in a non-linear manner, with the dose. Metabolites were not detected after 48 hours of its administration. Other non-oxidative metabolites should be considered to find alternatives for monitoring alcohol consumption**Financial Support:** Plan Nacional sobre Drogas (Ministerio de Sanidad, Política Social e Igualdad, 2013I062) and Instituto de Salud Carlos III (ISCIII-FEDER-RETICS-RTA RD16/0017/0010; RD16/0017/0003). Clara Perez-Mañá and Esther Papaseit are Juan Rodes fellowship (ISCIII, JR15/00005 and JR16/00020).

Abstract - ID: 573 **Author(s):** Cecile Denis **(Presenter)**, University of Pennsylvania
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Jean-Pierre Daulouede, Bizia
Charles O'Brien, University of Pennsylvania
David Metzger, University of Pennsylvania **Title:** Cost of an integrated treatment program for opiate addiction and HIV in Ho Chi Minh city, Vietnam **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** To evaluate the effectiveness and the cost of 6 months of a clinic-based opiate integrated treatment program (methadone (MET) or buprenorphine/naloxone (Bup/Nx) and counseling sessions) implemented within an HIV clinic at Go Vap clinic, Ho Chi Minh City, Vietnam since December 2013**Methods:** We have used has been performed using data collected by the Drug Abuse Treatment Cost Analysis Program (DATCAP) for the economic evaluation, and questionnaire and clinical files for the effectiveness analyses. We have compared three modalities of treatment dosing: MET daily, Bup/Nx daily, and Bup/Nx alternate day dosing. **Results:** The sample consisted of 316 participants (228 receiving MET and 88 Bup/Nx), mainly males (96.8%), 32.2 y.o. (SD= 6.4). At 6 months, the retention rate was 88.6% (36 participants dropped out of the program), with a better retention for participants in MET (93.6%) than Bup/Nx (72.7%) (c^2=2.80, p < 0 .0001). The opiate treatment medication adherence rate was high (94.2%) and was better for MET than Bup/Nx ($?^2$= 285.0, p < 0 .0001) but not significant anymore when Bup/Nx was delivered on alternate day dosing schedule ($?^2$= 0.39, p= 0.53). There was a significant decrease of heroin use regardless of the treatment received (F(2,292)=17.4, p < 0 .0001), and participants in Bup/Nx decreased or stopped their heroin use sooner than MET participants (F(2,292)= 0.3, p < 0 .0001). The total cost of the integrated treatment with Bup/Nx is higher than the one with MET (US$3,039 vs. US$1,560), however, the total cost was mainly driven by the cost of the medication. When Bup/Nx treatment is taken every-other day the cost of treatment delivery is almost half as expensive as for MET (US$948.22 versus US$405.86).**Conclusions:** Both integrated treatment with MET and Bup/Nx were effective. The cost of the program is mainly driven by the cost of the medication. An alternate-day dosing schedule for Bup/Nx treatment reduces the cost of Bup/Nx treatment and increases its effectiveness. **Financial Support:** NIDA R01- DA033671

Abstract - ID: 574 **Author(s):** Steven M. Graves **(Presenter)**, Northwestern University Feinberg School of Medicine
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Paul Schumacker, Northwestern University Feinberg School of Medicine
D. James Surmeier, Northwestern University Feinberg School of Medicine **Title:** Methamphetamine increases mitochondrial oxidant stress in substantia nigra pars compacta dopamine neurons: Implications for Parkinson's disease **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Other **Aims:** Methamphetamine (meth) abuse is associated with ~3 fold increased risk for developing Parkinson's disease (PD) but cocaine does not (Curtin *et al.*, 2015 *Drug Alcohol Depend;* Callaghan *et al.,* 2012 *Drug Alcohol Depend*) suggesting a causal role of cytosolic dopamine (DA). The current experiments sought to investigate the role of cytosolic DA on cellular stress and whether this is a contributing factor to methamphetamine-induced toxicity of DA neurons in the substantia nigra pars compacta (SNc). **Methods:** Effects of acute or chronic meth were determined using a genetically encoded redox sensitive fluorescent probe targeted to the mitochondria, cytosol, or mitochondrial intermembrane space (IMS) in *ex vivo* brain slices and human iPSC-derived DA neurons using one- and two-photon laser scanning microscopy. The effects of chronic meth (14d, 5mg/kg) on stress and pacemaking activity was determined after 1 or 14d withdrawal and toxicity assessed by stereologically counting tyrosine hydroxylase positive cells in the SNc. **Results:** Meth selectively increased mitochondrial stress as did levodopa, confirming DA-dependence, and was prevented by monoamine oxidase (MAO) inhibition. Current views posit that MAO metabolism of DA generates free electrons leading to cytosolic H_2O_2. However, the following data argue that MAO metabolism shuttles electrons to mitochondrial IMS leading to toxicity: 1) Levodopa increased IMS stress in human iPSC-derived DA neurons. 2) MAO metabolism hyperpolarized mitochondria, indicating electron transfer to complex IV. 3) Chronic meth-induced toxicity in the SNc was prevented by rasagaline (FDA-approved MAO inhibitor). Importantly, toxicity wasn't observed until 14d withdrawal suggesting persistent adaptations to maintain elevated stress. Acute meth attenuated pacemaking activity but after chronic administration pacemaking accelerated. Pacemaking in SNc DA neurons is associated with L-type channel-dependent Ca^{2+} oscillations causing mitochondrial stress and chronic meth administration led to increased mitochondrial stress during withdrawal. **Conclusions:** Taken together the data indicate that DA metabolism by MAO increased mitochondrial stress through a transfer of electrons to the IMS, chronic meth accelerated pacemaking activity and mitochondrial stress, and toxicity can be attenuated by MAO inhibition.**Financial Support:** USPHSG NS047085 & DA039253, JPB, MJFF, and Northwestern Memorial Foundation

Abstract - ID: 575 **Author(s):** Alexander Perlmutter **(Presenter)**, Columbia University
Luis Segura, Columbia University
Julian Santaella-Tenorio, Columbia University
Christine Mauro, Columbia University
Pia Mauro, Columbia University
Silvia Martins, Columbia University Mailman School of Public Health **Title:** Associations between past-year marijuana use, arrests, and race/ethnicity among 18-49-year-olds in the United States, 2002-2014 **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Other **Aims:** Whites, Blacks and Hispanics use marijuana at similar levels, but racial/ethnic disparities exist in arrest. We sought to explore the relationship between marijuana use and arrest by race/ethnicity and examine changes in racial/ethnic disparities in arrest by marijuana use over time. **Methods:** We analyzed a repeated cross-sectional, nationally representative, weighted sample of 719,095 adults ages 18-49, using data from the 2002-2014 National Survey on Drug Use and Health. Multivariable linear models assessed the relationship between past-year arrest and past-year marijuana use over three time periods (2002-2006, 2007-2010, and 2011-2014). We tested the three-way interaction between race/ethnicity, time, and marijuana use. **Results:** Marijuana use (vs. no use) increased arrest prevalence for all racial/ethnic groups including Blacks (+13.59 pts. in 2002-2006, +12.72 in 2007-2010, +11.45 in 2011-2014), Hispanics (+10.88, +8.15, +6.92, respectively) and Whites (+6.51, +6.74, +6.45) (all p's < 0 .0001). In 2002-2006, Hispanic and Black marijuana users' similar arrest prevalences increases (+7.07 and +4.37 pts, respectively) were higher than that of Whites (p's < 0 .0001). In 2007-2010 and 2011-2014, Hispanic (+8.15, +6.92 pts, respectively) and White (+6.74, +6.45) users' similar arrest prevalence increases were lower than that of Blacks (+12.72, +11.45, p < 0 .01). Increases in arrest prevalence by marijuana use decreased from 2002-2006 to 2011-2014 for Hispanics (-3.97, p=0.002), but not significantly for Blacks (-2.14, p=0.119) and Whites (-0.06, p=0.550). **Conclusions:** Marijuana use was associated with arrest and this relationship differed by race/ethnicity over time. Marijuana use was associated with higher arrest prevalences, particularly among Blacks compared to Whites and Hispanics. Thus, racial bias in arrests persists even after accounting for marijuana use and trends over time. **Financial Support:** Cofund INSPIRE Fellowship (Perlmutter), CONACYT Scholarship (Segura), NIDA R01DA037866 (Martins), T32DA031099 (PI: Hasin)

Abstract - ID: 576 **Author(s):** Jennifer Stewart **(Presenter)**, CUNY Graduate School of Public Health and Health Policy
April May, UCSan Diego-Psychiatry
Susan Tapert, VA San Diego Healthcare System
Martin Paulus, Laureate Institute for Brain Research; UCSD Psychiatry **Title:** Methamphetamine users exhibit fronto-insular inflexibility during a cue reactivity paradigm involving an interoceptive stressor **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Imaging **Aims:** Stimulant addiction is characterized by heightened striatal responsivity to drug cues paired with attenuated prefrontal and insular cortex processing within the context of executive control and interoception. The present study investigates whether the pairing of drug cues and interoceptive stress further compromises prefrontal, insular, and striatal function in methamphetamine users. Examining the neural overlap between bodily stress and drug craving may elucidate brain mechanisms involved in vulnerability to relapse. We hypothesized that, **c**ompared to healthy comparison subjects (CTL), individuals with (meth)amphetamine use disorder (METH) would exhibit: (1) greater striatal and insular activation in response to methamphetamine images; but (2) lower insular and frontal activation in response to breathing load, particularly when viewing methamphetamine cues. **Methods:** METH (n=11) and CTL (n=10) viewed methamphetamine and neutral images while anticipating and experiencing an aversive interoceptive stressor (breathing load) during functional magnetic resonance imaging (fMRI) recording. Statistical analysis consisted of a linear mixed effects model with group (METH; CTL) as the between-subjects factor; image (meth, neutral) and interoception (anticipation, breathing load) as within-subject factors; and subject as a random factor. Voxelwise correction for multiple comparisons was implemented**Results:** First, the group x image interaction showed that METH exhibited greater striatum and anterior insula activation than CTL to methamphetamine images. Second, the group x interoception interaction indicated that METH displayed higher striatum but lower inferior/medial frontal activation during breathing load than CTL. Third, the group x image x interoception interaction demonstrated that during methamphetamine and neutral image viewing while experiencing breathing load, METH exhibited lower middle frontal gyrus but higher posterior insula activation than CTL; furthermore, within-group findings showed that although CTL exhibited frontal and insular modulation as a function of image type and interoception condition, activation patterns in METH did not change between image types and conditions. **Conclusions:** In the presence of drug cues paired with a bodily stressor, methamphetamine users show neural inflexibility characterized by less resources devoted to executive control and more resources devoted to the processing of bodily sensations when compared to healthy individuals. This pattern of responding may reflect amplified craving and urges to use, with reduced ability to override or inhibit these impulses. **Financial Support:** UCSD Center on Interoceptive Dysregulation in Addiction (5P20DA027843)

Abstract - ID: 578 **Author(s):** Mehrak Javadi-Paydar **(Presenter)**, Scripps Research Institute
Jacques Nguyen, Scripps Research Institute
Sophia A. Vandewater , Scripps Research Institute
Maury Cole , Scripps Research Institute
Michael Taffe, Scripps Research Institute **Title:** Delta-9-tetrahydrocannabinol potentiates hyperlocomotion induced by nicotine in rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Polydrug **Topic:** Drug Interactions **Aims:** Polysubstance exposure is common among recreational drug users and nicotine (NIC) is one of the most commonly co-used substances. Individuals who smoke blunts (in which marijuana is wrapped with tobacco leaves), alternate smoking of cigarettes and marijuana or use transdermal nicotine patches while smoking marijuana may thereby alter the physiological and subjective effects of the marijuana or of the NIC. Recent availability of e-cigarette devices that permit users to prepare their own cocktail of drugs for inhalation may lead to further co-use of NIC and ?9-tetrahydrocannabinol (THC) the active constituent of marijuana. A e-cigarette based inhalation system for laboratory rodents has recently become available and can facilitate evaluation of the effects of NIC/THC polysubstance exposure. **Methods:** Male and female Sprague-Dawley rats were exposed to vapor produced by the propylene glycol vehicle (PG), NIC (30?mg/mL in PG) or a combination of NIC with THC (50?mg/mL in PG) for a duration of 30 minutes. Body temperature and locomotor responses were evaluated post-inhalation using a radiotelemetry system. **Results:** The body temperature was decreased following the THC+NIC inhalation with significant effects starting 120 min post-exposure. Locomotor activity was increased in female rats for the first 60 min after NIC exposure and this effect was blocked by pretreatment with mecamylamine. Activity was increased 30 min after initiation of THC+NIC vapor compared with NIC alone or PG. Male rats did not show hyperlocomotion following exposure to NIC or NIC+THC vapor compared with PG vapor inhalation. **Conclusions:** Co-administration of the combination of THC with NIC via vapor inhalation produced additive locomotor stimulation in female rats. This provides initial validation of a novel e-cigarette based model for the evaluation of poly-substance exposure in preclinical models. **Financial Support:** "Funding support provided by USPHS grants AA007456, DA035482 and DA041967"

Abstract - ID: 579 **Author(s):** Ian Aronson **(Presenter)**, Digital Health Empowerment / NDRI
Alexander Bennett, National Development and Research Institute, Inc.
Lisa Marsch, Geisel School of Medicine at Dartmouth
Theodore Bania, Mount Sinai School of Medicine **Title:** Mobile Intervention Kit for PWID outreach **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Technology Issues **Aims:** People who inject drugs (PWID) are at risk for HIV and HCV infection. However, many lack opportunities to test for HIV and HCV, and may go undiagnosed for years while asymptomatic. Additionally, PWID engage in risk behaviors that many are unaware of. Thus, we developed the Mobile Intervention Kit (MIK), a customizable tablet-based video intervention to facilitate HIV/HCV testing and facilitate awareness of potential substance use risks among PWID in community settings. **Hypothesis:** The MIK will provide a feasible and acceptable means to increase HIV/HCV testing among active drug users, and to help assess HIV/HCV risk. **Methods:** Our team collaborated with syringe exchange program (SEP) staff to develop educational videos addressing HIV/HCV, paired with automated substance use screenings and acceptability measures. PWID at a Bronx, NY SEP outreach site (n=14; mean age 50 years; 64 % male; 79 % Latino; 21 % Black) used tablet computers to complete detailed screenings and view videos in which former/current substance users describe the importance of testing. **Results:** 13 of 14 participants reported daily or weekly use of cocaine, heroin or methadone; 71 % (n=10) reported currently using heroin or methadone with other drugs. 93 % (n=13) accepted HIV or HCV testing post-intervention. 14 % (1 of 7) tested HIV positive, none (0 of 6) tested HCV positive. Participants scored the intervention highly understandable (M=8.14 out of 10, SD=2.38) and useful (M=8.42 out of 10, SD=2.34)**Conclusions:** The MIK enables HIV/HCV testing and education among high-risk PWID in a street outreach setting. Future iterations can be customized for additional settings (e.g. clinical use) and other health issues (i.e. overdose prevention). **Financial Support:** NIDA 1R41DA041246 NIDA P30 DA029926

Abstract - ID: 580 **Author(s):** Jennifer Mitchell **(Presenter)**, UCSF
Dawn Weinstein, UCSF
Josh Woolley, UCSF **Title:** The contribution of COMT genotype and childhood trauma to alcohol approach and altruism in individuals with AUD **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Behavior **Aims:** Recent findings have established a relationship between childhood trauma and the contribution of COMT genotype to executive function, such that those with high COMT activity (resulting in less frontal dopamine) and a history of childhood trauma demonstrate improved executive function compared to those with no childhood trauma (Blair et al., 2015). **Aims:** Here we assess the effects of childhood trauma (measured using the CTQ) and COMT genotype (rs4680) on performance of a series of cognitive and social tasks in individuals with alcohol use disorder (AUD) in a preliminary effort to determine whether childhood trauma predicts decision making and social function in AUD.**Methods: Methods:** 30 individuals with AUD were invited to complete a series of decision making tasks and behavioral inventories and to provide a DNA sample for genetic testing. Differences in performance and self-report were then compared in subjects with and without a history of childhood trauma.**Results: Results:** We find that, in addition to differences in performance when compared to their Met carrier counterparts, the performance of Val/Val carriers varies with childhood trauma. Val/Val subjects reporting childhood trauma demonstrated greater approach in a cue reactivity task and also approached alcohol associated cues to a greater extent than those without childhood trauma, who tended to avoid alcohol related stimuli ($p = .106$). Additionally, Val/Val subjects reporting childhood trauma were less likely to share monetary rewards than those with no childhood trauma ($p = .067$). Similar to our previous experiments, Val/Val subjects also report slightly, but not significantly, higher AUDIT scores. **Conclusions: Conclusions:** In keeping with previous reports, these data provide preliminary evidence suggesting that childhood trauma may influence the effects of COMT rs4680 in individuals with alcohol use disorder, particularly with respect to decision making and social behavior.
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Abstract - ID: 581 **Author(s):** David Fink **(Presenter)**, Columbia University Mailman School of Public Health
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Israel Liberzon, University of Michigan-Psychology
Joseph Calabrese, University Hospitals Case Medical Center, Case Western Reserve School of Medicine
Sandro Galea, Boston University School of Public Health **Title:** Harm reduction or tool for initiation: Testing two models of e-cigarette and cigarette use in a high-risk longitudinal cohort **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Epidemiology **Aims:** Electronic cigarettes ("e-cigarettes") entry into the global markets over the past decade has been accompanied by two competing public health narratives that have substantially different policy implications. A harm reduction model prioritizes the potential for e-cigarettes to reduce the harms from combustible cigarettes until a smoker is able to quit, whereas a transition model considers the potential for e-cigarettes to increase the risk of combustiable cigarette initiation among nonsmokers. We investigated these two hypotheses in a high-risk cohort, evaluating the longitudinal use of cigarettes and e-cigarettes in a representative military cohort from 2014 to 2016**Methods:** Past-month cigarette use and e-cigarette use was assessed in a representative sample of 1385 Ohio Army National Guard soldiers. The risk of e-cigarette use in 2016 was compared among persons increasing their cigarette use and decreasing their use from 2014 to 2016.**Results:** In the total sample, 7% of respondents used e-cigarettes in the past-month in 2016, and past-month cigarette use decreased 9% from 2014 (23.6%) to 2016 (32.9%). Nonsmokers at initial assessment who reported past-month e-cigarette in 2016 had 3.8 times (95% CI: 1.5, 9.7) time higher risk of reporting past-month cigarette use in 2016. Although 8% of nonsmokers in 2014 who reported smoking in 2016 reported past-month e-cigarette use, about 30% of daily smokers in 2014 who reduced their smoking levels in 2016 reported past-month e-cigarette use. Furthermore, daily smokers who reduced their smoking from 2014 and 2016 were about twice as likely to report past-month e-cigarette use compared to those who remained daily smokers between the interviews.**Conclusions:** Although we found evidence to support both the harm-reduction and the transition models, the substantial proportion of smokers who reduced their smoking levels and used e-cigarettes at follow-up suggest that e-cigarettes might represent an important harm reduction tool for current smokers.**Financial Support:** This work was supported by the National Institute on Drug Abuse at the National Institutes of Health (Grant T32DA031099) and the Office of the Assistant Secretary of Defense for Health Affairs through the Joint Warfighter Medical Research Program (Grants W81XWH-15-1-0080, W81XWH-07-1-0409, and W81XWH-10-1-0579). The U.S. Army Medical Research Acquisition Activity, 820 Chandler Street, Fort Detrick MD 21702-5014 is the awarding and administering acquisition office. Opinions, interpretations, conclusions, and recommendations are those of the author and are not necessarily endorsed by the Department of Defense.

Abstract - ID: 582 **Author(s):** Lilian Ghandour **(Presenter)**, American University of Beirut
Ali Chalak, American University of Beirut
Nasser Yassin , American University of Beirut
Rima Nakkash, American University of Beirut
Sirine Anouti, American University of Beirut
Rima Afifi, American University of Beirut **Title:** Modelling youths' demand and ethanol intake responsiveness to alcohol taxes using Discrete Choice Experiment
Abstract Category: Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Policy **Aims:** In Lebanon, youth drinking is on the rise, alcohol beverages are becoming cheaper, and alcohol-related policies remain absent. This paper focuses on generating data to inform the design of alcohol tax policies to cost-effectively reduce harmful drinking among youths in Lebanon.**Methods:** A discrete choice experiment (DCE) survey was conducted with a sample of 1024 university students (aged 18-25) selected conveniently from 8 major universities. The econometric data analysis yielded demand system estimates for off-premise alcohol consumption used to stimulate the effects of two hypothetical alcohol tax scenarios on overall ethanol intake from all types of alcohol beverages: (1) Tax Scenario 1 (TS1) imposes a 20% excise tax on high-ethanol beverages (e.g. spirits, arak) and exempts lower-ethanol ones (e.g. beer, wine, alcopops) from taxes, while (2) Tax Scenario 2 (TS2) imposes a blanket 20% excise tax on all type of alcoholic beverages, be they high or low-ethanol**Results:** Preliminary results indicate that overall ethanol intake decreases considerably and comparably under TS1 and TS2 (18.3 and 16.5 percent, respectively), despite the fact that the latter imposes the same tax rate on a larger array of alcoholic beverages. This may be the result of TS1 allowing youths aged 18 to 25 a leeway to shift to purchasing lower-ethanol beverages at comparatively cheaper prices. **Conclusions:** Taxation policy significantly reduces alcohol consumption, but youth alcohol consumers' behavioural patterns should be carefully weighed in, including substitution between low/high-ethanol beverages. Results also show that addressing alcohol affordability alone is not enough to ensure desirable alcohol harm reduction outcomes, necessitating a comprehensive alcohol harm reduction policy. **Financial Support:** International Development Research Centre

Abstract - ID: 583 **Author(s):** Harrison Elder **(Presenter)**, Analgesic Solutions
Ryan Lanier, Analgesic Solutions
Imrana Kazam, Analgesic Solutions
Roi Treister, Analgesic Solutions
Maitreyee Mohanty, Analgesic Solutions
Matthew Hersch, GW Pharmaceuticals PLC
Tilden Etges, GW Pharmaceuticals PLC
Nathaniel Katz, Analgesic Solutions **Title:** Evaluation of potentially abuse-related events in phase III clinical trials of a delta-9 tetrahydrocannabinol and cannabidiol (Sativex®) oromucosal spray **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Other **Aims:** The Misuse, Abuse, and Diversion Drug Event Reporting System (MADDERS®) was developed to prospectively identify, record, and classify misuse and abuse-related events (MAREs) in clinical trials (CTs). MADDERS was used to evaluate the abuse potential of a delta-9 tetrahydrocannabinol and cannabidiol combination oromucosal spray (Sativex®) being tested as a treatment for cancer-related pain in 3 controlled Phase III CTs and 1 open-label CT. **Methods:** Adverse events (AEs) of interest or drug accountability discrepancies (DADs) triggered the collection of additional information and classification of the events by trained clinical site staff using standardized forms. Event narratives were created and all relevant patient data were reviewed by an independent external panel of 2-3 drug abuse experts (adjudicators). Events were classified as either: abuse, misuse, therapeutic error, suicide, withdrawal, none of the above, or unknown **Results:** The abuse potential assessment included a subset of patients (n=268) enrolled across all 4 studies. Collectively, 57 unique triggering events were identified by the sites and adjudicated. Examples of triggering AEs included “mild confusion,” “mental status change,” “spaced out,” and “disorientation,” and DADs included “patient forgot to bring vials,” and “lost vial.” The adjudicators classified 8 cases as misuse (i.e., intentional therapeutic use in an improper way), 1 as withdrawal, and none as abuse. Inter-rater agreement between sites and final classification by the expert adjudicators was very good **Conclusions:** MADDERS detected no abuse potential signal in multiple Phase III CTs of Sativex, consistent with a large body of data and worldwide experience. Trained site personnel effectively classified MAREs using MADDERS. MADDERS is a useful and reliable tool for assessing the abuse potential of CNS-active drugs prospectively in CTs, and is an example of a standardized approach to assessing MAREs in CTs. **Financial Support:** This work was funded by GW Pharmaceuticals plc.

Abstract - ID: 584 **Author(s):** Robert Freeman **(Presenter)**, New York University School of Medicine
Ian Aronson, Digital Health Empowerment / NDRI
Tonya Taylor, State University of New York Downstate Medical Center
Lisa Marsch, Geisel School of Medicine at Dartmouth
Theodore Bania, Mount Sinai School of Medicine **Title:** Developing youth-informed media to increase HIV testing in emergency departments **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Technology Issues **Aims:** Prior research shows that while 22% of newly diagnosed HIV cases are youths aged 13-24, 60% of youth remain undiagnosed and youth visiting Emergency Departments (EDs) are especially unlikely to test for HIV. We aimed to build upon youth recommendations to develop videos and text messages to increase HIV testing and linkage to care for young ED patients, and to help youth understand how substance use (especially poly-drug) can increase HIV risk. **Methods:** Youth ages 13 to 24 were recruited and interviewed while awaiting services in the ED. 61% (n=7) were female, 55% (n=10) were Latino or Hispanic, 50% (n=9) were Black, 39% (n=7) were White, and 11% (n=2) were Pacific Islander. Semi-structured interviews elicited youth recommendations regarding the most appropriate and effective content and format of HIV prevention, testing, and treatment messages**Results:** Preliminary findings indicate respondents view credibility, knowledgeability, experience, and relatability as the most important characteristics contributing to the effectiveness of HIV information. Youth frequently differentiated between the medical knowledge of health care providers (HCPs), and the "real life" experiences of HIV positive peers, whose narratives they understood as working to normalize and destigmatize HIV testing and treatment. When asked whether the perspectives of HCPs or HIV positive peers would lead to more effective messages, participants recommended including both. **Conclusions:** The findings highlight the importance of understanding the roles of HCPs and HIV-positive peers in HIV testing, prevention, and treatment. A greater understanding of the relationships between their associated characteristics could increase the effectiveness of media designed to encourage HIV prevention and to motivate youth visiting the ED to test for HIV.**Financial Support:** NICHD 1R41HD088325 NIDA P30 DA029926

Abstract - ID: 585 **Author(s):** Diane Morse **(Presenter)**, University of Rochester School of Medicine
Addie Bardin, University of Rochester School of Medicine
Catherine Cerulli, University of Rochester School of Medicine and University of Rochester Susan B. Anthony Center **Title:** FOCUS on women: Probation and Women's Initiative Supporting Health partnership targets legal and medical outcomes **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Treatment **Aims:** Female Offenders Can Ultimately Succeed (FOCUS) is directed by a county probation department, informed by the Women's Initiative Supporting Health (WISH) Program. WISH partnered with probation to leverage motivational and trauma-specific strategies with high-risk women with substance use disorders (SUD) to improve healthcare delivery as a means to decrease recidivism and improve health. **Methods:** This pilot study uses descriptive methodology of process outcomes, which details how to design, implement, and test such programs. Efforts were two-tiered. For the probation officers, the project offered gender-specific training in motivational, trauma-specific, and cognitive behavioral strategies for clients. For the clients, they received prompt referrals to a specialized, established medical program (WISH) for reentering women. WISH informed the gender-specific, trauma-specific, motivational strategies for probation officers, based on earlier work implemented by medical providers. WISH includes peer community health workers and in-reach to jails to link women to multi-faceted treatment including for SUD, mental health care, and primary care. Process outcomes were assessed according to three domains: legal, medical, and research to reflect how well the pilot strategies worked. **Results:** Legal outcomes indicate that probation high level support was key and that collaborative meetings fostered a disease model for SUD rather than a punitive one. Probation officers noted that they needed increased training in supportive rather than legal strategies. Other legal results (n=109) reflect that clients experienced reduced probation violations, arrests, and days in jail (e.g. violation rates went from 22% to 7%). These legal outcomes coincide with a 54% engagement rate in primary care. Reflective interviews with clients indicate facilitative and non-facilitative factors in attending medical treatment. Research processes indicate that funder support was helpful when it occurred but was hindered by numerous staff changes both in the funder organization and in probation. Furthermore, funder policy against client/subject reimbursement may have interfered with obtaining research data. This was balanced by having other data that were obtained through legal systems, not subject measures **Conclusions:** This study informs future efficacy studies of an innovative probation-medical cross-systems collaboration to meet the needs of our most vulnerable clients, improving their legal and medical outcomes, with the ultimate goal of decreasing substance use and improving quality of life. **Financial Support:** Department of Justice 2013-SM-BX-0005 Second Chance Act, Smart Supervision Reducing Prison Populations, Saving Money, and Creating Safer Communities

Abstract - ID: 586 **Author(s):** Paulo Jannuzzi Cunha **(Presenter)**, University of Sao Paulo Medical School
Hercílio Pereira de Oliveira Junior, University of Sao Paulo Medical School
Priscila Dib Gonçalves, University of Sao Paulo Medical School
Mariella Ometto, University of Sao Paulo Medical School
Bernardo Santos, University of Sao Paulo Medical School
André Malbergier, University of Sao Paulo Medical School
Ricardo Amaral, University of Sao Paulo Medical School
Sergio Nicastri, University of Sao Paulo Medical School
Arthur Andrade, University of Sao Paulo Medical School **Title:** More severe executive abnormalities in crack vs. snorted cocaine-dependent patients: A neuropsychological study **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Dependence **Aims:** Recent experimental studies have evidenced a more severe neurotoxicity of smoked crack, when compared with snorted cocaine, due to the inhalation of cocaine and its pyrolysis product, anhydroecgonine methyl ester (AEME). However, the hypothesis that crack users may present more severe neuropsychological impairments has never been tested. The aim of this study was to examine the differential neuropsychological deficits in crack dependents (CrD) compared with snorted cocaine dependent subjects (CD). **Methods:** 111 adult male subjects were evaluated in this study (43CrD, 36 CD and 32 controls). CrD and CD were evaluated after two weeks of supervised detoxification in two inpatient treatment programs. All the subjects were submitted to an extensive battery of neuropsychological tasks including the Trail Making Test (TMT), the Stroop Color-Word Test (SCWT), the Digit Span Forward (DF) and Backward (DB) tasks, the Wisconsin Card Sorting Test (WCST), the Iowa Gambling Task (IGT), the Frontal Assessment Battery (FAB), the Rey-Osterrieth Complex Figure test (ROCFT), the Controlled Oral Word Association Test (COWAT) and the Wechsler Adult Intelligence Scale (WAIS-D). differences in performance on neuropsychological tests among the three groups were assessed with Analysis of Covariance (ANCOVA) controlling for age, IQ and years of education. **Results:**
CrD and CD were not statistically different in socio-economic level and drug use variables (age at onset of cocaine use, duration in years, and abstinence period). However, the CrD group showed more significant neuropsychological impairments as measured by DB (p=.01), COWAT (p=.03), FAB [(Mental Flexibility, p **Conclusions:** Our results suggest that crack users present more severe neuropsychological impairments in mental flexibility, motor programming, inhibitory control, verbal phonological fluency, and general executive functioning when compared to cocaine users. These data indicate that crack use may be more deleterious to prefrontal brain areas and predispose patients to more severe impairments in daily living tasks and to worse clinical outcomes. **Financial Support:** FAPESP & CNPq, Brazil Government.

Abstract - ID: 587 **Author(s):** Abenaa Jones **(Presenter)**, Johns Hopkins Bloomberg School of Public Health, Department of Mental Health
Denise Vidot, University of Miami
Catherine Woodstock Striley, University of Florida
Linda Cottler, University of Florida **Title:** Women in drug court: Differences between sex traders and non-sex traders and longitudinal substance use outcomes **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Treatment **Aims:** Sex trading, the act of exchanging sex for resources such as money, food, clothing, shelter, or drugs is prevalent among women involved in the criminal justice system and is also linked with negative criminal justice outcomes. This study evaluates the association between current sex trading at baseline and longitudinal substance use outcomes among women in drug court, an alternative to incarceration program**Methods:** Data for this study comes from 319 women mainly recruited from a Municipal Drug Court System in the St. Louis, MO. A multivariable regression using generalized estimating equations (GEE) determined the association between current sex trading and any self-reported substance use (crack/cocaine, marijuana, stimulants, or heroin) at baseline, 4-month, and 8-month follow-ups, controlling for socio-demographic variables**Results:** Women who were currently trading sex at baseline had a significantly greater likelihood of continued use of substances over time compared to women who did not report sex trading at baseline (RR 1.30, 95% CI: 1.04, 1.63). However, the likelihood of using substances decreased by 19% by the 8-month follow-up. A significant decrease in the likelihood of substance use was not evident at the 4-month follow-up. Women who were black (RR 1.76, 95% CI: 1.35, 2.26), were currently or formerly married (RR 1.24, 95% CI: 1.012, 1.52), had 4+ lifetime arrests (RR 1.54, 95% CI: 1.18, 2.01), were less religious/spiritual (RR 1.35, 95% CI: 1.05, 1.73), or believed they had drug using behaviors that need changing (RR 1.32, 95% CI: 1.06, 1.65) were significantly more likely to use substances over time compared to women without these characteristics**Conclusions:** Findings suggest that current sex traders in alternative to incarceration programs may benefit from additional tailored interventions to reduce substance use. **Financial Support:** Florida Education Fund, T32DA007292, R01NR09180

Abstract - ID: 588 **Author(s):** Ria Malhotra **(Presenter)**, CUNY School of Medicine

Alina Shevorykin, Pace University

Jami Pittman, CUNY School of Medicine

Neelam Prashad, CUNY School of Medicine

Lunden Sara, CUNY School of Medicine

Christine Sheffer, Roswell Park Cancer Institute **Title:** Priming 2.0: Reducing delay discounting **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Other **Aims:** Delay discounting is the propensity to choose smaller, immediate rewards over larger delayed rewards. Higher discounting rates are seen among individuals who engage in risky health behaviors such as cigarette smoking. Interventions to reduce discounting have been shown to concurrently decrease cigarette consumption. Priming is the use of a stimulus to implicitly influence individuals' responses to a later stimulus. The aim of this pre/post randomized control study is to examine the effects of Future Focused priming stimuli on delay discounting. We hypothesized that Future Focused stimuli would decrease discounting in a diverse group of individuals, including cigarette smokers. **Methods:** Participants (n = 1,532) were recruited from Amazon Mechanical Turk (MTurk), an online worker platform. They completed a baseline assessment that included two delay discounting measures. Two weeks later participants were randomized to the Future Focused or Neutral condition and administered the delay discounting measures again. **Results:** No differences among participants between conditions were found at baseline; however, participants in the Future Focused condition (n = 783) demonstrated significantly lower delay discounting rates post-intervention than participants in the Neutral condition (n = 747), [M = -5.702 (SD = 1.878) vs. M = -5.595 (SD = 1.807); F (1, 1528) = 6.440, p = 0.011]. Smokers (n = 333) in the Future Focused condition (n = 172) also demonstrated significantly lower delay discounting measures post-intervention than smokers in the Neutral condition (n = 161), [M = -5.064 (SD = 1.918) vs. M = -4.848 (SD = 2.153); F (1, 331) = 4.220, p = 0.041]. **Conclusions:** These findings suggest that a simple priming intervention can decrease delay discounting rates in a diverse population, including among smokers. Next steps include examine the effects of Future Focused priming on risky health behaviors, including cigarette consumption. **Financial Support:** This study was supported by the National Institutes of Drug Abuse (R25 DA035161 PIs: Denise Hien, PhD and Lesia Ruglass, PhD), the National Institute for Minority Health Disparities (R01 MD007054, PI: Christine Sheffer, PhD), and the National Cancer Institute P20 CA192993 and P20 CA192991 PIs: Christine Sheffer, PhD and Jamie Ostroff, PhD) of the National Institutes of Health.

Abstract - ID: 589 **Author(s):** Andrew Plunk **(Presenter)**, Eastern Virginia Medical School

Paul Harrell, Eastern Virginia Medical School **Title:** Exploring the relationship between medical marijuana laws and educational attainment **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Policy **Aims:** Our past work based on high school age exposure shows that the timing of medical marijuana law (MML) implementation is associated with consistent decreases in educational attainment at both the high school and college levels. We also found an increase in daily use among 12th graders, which could explain some of these findings. In the present work we examined how MML exposure is related to the value that high school students place on math. These constructs, math identity and mathematics utility, impact course-taking decisions, student engagement, time use and college readiness. We also assessed whether the odds of obtaining a college STEM degree was affected by high school MML exposure. **Methods:** Fixed-effects regression was used. Math identity and utility analyses were based on the High School Longitudinal Survey of 2009. Students from the 3 states that implemented MMLs between the 9th grade baseline in the fall of 2009 and the first follow up in spring 2012 were assigned MML exposure; those from states without MMLs were used as controls. We used the 2009-2013 waves of the American Community Survey to assess how the odds of obtaining a STEM degree were affected by high school age exposure. These analyses were limited to those with a bachelor's degree who had started high school from 1990 onward. MML exposure was based on when each respondent was in high school. **Results:** There were significant reductions in math identity and utility associated with MML implementation occurring between the 9th and 12th grade. High school MML exposure was also associated with a significant reduction in the odds of obtaining a college STEM degree. **Conclusions:** Decreases in math utility and identity could capture a range of factors that might decrease ability or interest in what are often viewed as the most challenging high school courses. Decreases in the odds of obtaining a STEM degree could also be capturing similar factors. These findings are consistent with our earlier work, which, taken together, provide consistent evidence that MMLs have had long-term negative consequences beginning in adolescence. **Financial Support:** None

Abstract - ID: 590 **Author(s):** Shanna Babalonis **(Presenter)**, University of Kentucky

Michelle Lofwall, University of Kentucky College of Medicine

Paul Sloan, University of Kentucky

Paul Nuzzo, University of Kentucky

Laura Fanucchi, University of Kentucky

Sharon Walsh, University of Kentucky **Title:** Cannabinoid modulation of the analgesic effects of opioids in humans **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Drug Interactions **Aims:** There is a rich literature of preclinical studies demonstrating cannabinoid agonist-enhancement of the analgesic effects of μ-opioid agonists. The aim of this study is to examine the analgesic effects of dronabinol alone and in combination with oxycodone in humans, using an array of laboratory pain models predictive of the clinical pain response. **Methods:** Healthy participants (*n*=7) without current drug use or pain conditions completed this ongoing within-subject, double blind, placebo-controlled, randomized outpatient study. Nine 8-hr sessions were completed during which oral dronabinol (0, 2.5, 5 mg) was administered 1hr prior to oral oxycodone (0, 5, 10 mg) for a total of 9 test conditions. Sensory threshold and tolerance outcomes from a battery of experimental pain measures (cold pressor, pressure algometer, menthol-induced cold hyperalgesia, heat testing) were collected. Participant-rated, performance and physiological outcomes were also assessed. **Results:** Oxycodone (5, 10 mg) produced miosis and analgesic responses. Dronabinol alone did not produce consistent analgesic or pupillary effects. Depending on the dose combination, dronabinol either attenuated or did not alter oxycodone analgesia. For example, dronabinol blocked the analgesic effects of 10 mg of oxycodone on heat threshold, pressure tolerance, and cold pressor tolerance. Oxycodone-induced miosis and nausea/vomiting (n=4) were not altered by dronabinol. **Conclusions:** In contrast to previous animal research, this human study demonstrates that dronabinol attenuated the analgesic effects of oxycodone at select dose combinations. These data suggest that dronabinol may not be an effective opioid adjuvant and could potentially even increase opioid dose requirements necessary for pain relief. Future studies should examine chronic pain models and cannabinoid modulation of opioid analgesic tolerance.**Financial Support:** KL2TR000116; UL1RR033173

Abstract - ID: 591 **Author(s):** Ihsan Salloum **(Presenter)**, University of Miami

Olga Maria Villar-Loubet, University of Miami

Feng Miao, University of Miami Miller School of Medicine

Jack Cornelius, University of Pittsburgh Medical Center **Title:** The efficacy of valproate in cocaine-bipolar comorbidity: Results from a randomized placebo-controlled preliminary study **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Treatment **Aims:** Bipolar disorder has the highest comorbidity of alcohol and substance abuse, including cocaine use disorder, compared to other major chronic psychiatric disorders. The aim of this study was to examine the efficacy of valproate in decreasing the cocaine use in patients with comorbid DSM-IV cocaine dependence and bipolar disorder. **Methods:** We conducted a 12-week, randomized, double-blind, placebo controlled study to examine the efficacy of valproate + Treatment-as-Usual (TAU) compared to placebo + TAU (TAU= individual counseling + lithium carbonate) in decreasing the frequency of cocaine use and facilitating abstinence in patients with comorbid DSM-IV cocaine dependence and bipolar disorder and in improving cocaine-use-related behavior and manic-depressive symptoms. Medication compliance was monitored by the MEMS caps as percent of prescribed medication taken**Results:** Twenty six subjects met final inclusion/exclusion criteria and were randomized to treatment groups ((n=13 in each group). Average age was 47 years old (sd=7.6) and around 38% were females. There were no significant difference between the two groups on baseline demographic and clinical variables. There was no difference between the groups on overall study and medication adherence or lithium blood levels. There was significant increase in cocaine-negative urine during the last four weeks of the trial as a function of weeks in the trial (p=0.0048) for the overall sample. However, there was no difference between those who were randomized to valproate as compared to those who were randomized to placebo.**Conclusions:** The results of this study does not support the efficacy of valproate when added to counseling and lithium carbonate in decreasing cocaine use in patients with cocaine dependence and bipolar disorder. The results of this study indicate that participants who stay longer in the study report decreased cocaine use regardless of the treatment group. **Financial Support:** Supported by USPHS Grants R01 DA019992.

Abstract - ID: 592 **Author(s):** Ryan Lanier **(Presenter)**, Analgesic Solutions

Imrana Kazam, Analgesic Solutions

Harrison Elder, Analgesic Solutions

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Maitreyee Mohanty, Analgesic Solutions

Reni Kunkel, GW Pharmaceuticals PLC

Tilden Etges, GW Pharmaceuticals PLC

Nathaniel Katz, Analgesic Solutions **Title:** Evaluation of potentially abuse-related events in phase III clinical trials of cannabidiol (Epidiolex®) using the MADDERS® Prospective System **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Other **Aims:** Cannabidiol (CBD) is a pharmacologically active phytocannabinoid being studied as an anti-epileptic drug that is generally considered non-psychoactive. The Misuse, Abuse, and Diversion Drug Event Reporting System (MADDERS®) was used to prospectively evaluate the abuse potential of a pharmaceutical formulation of CBD in oral solution (100 mg/mL) (Epidiolex®) during a randomized, double-blind, placebo-controlled Phase III clinical trial (RCT) in children and adults with Lennox-Gastaut syndrome. **Methods:** Adverse events (AEs) of interest or drug accountability discrepancies (DADs) triggered the collection of additional information and classification of the events by trained clinical site staff using standardized forms. Event narratives were created and all relevant patient data were reviewed by an independent external panel of 2-3 drug abuse experts. Events were classified as either: abuse, misuse, suicide, therapeutic error, none of the above, or unknown. **Results:** A total of 97 patients ?12 years old were included in the abuse potential assessment. There were 7 unique triggering events identified by the sites: 6 DADs and 1 AE. The AE triggering event was “intermittent uncontrollable laughter,” and examples of the DADs included “accidental loss,” “dropped a bottle,” and “not all vials returned.” No events were classified as abuse, and all events were classified as either none of the above (5/7) or unknown (2/7) by the expert adjudication panel. There was no evidence of abuse-related behaviors including addiction, diversion, overdose, or tampering with the study drug. **Conclusions:** Despite the detection of potentially abuse-related events, MADDERS identified no cases of abuse in this trial of CBD, and no evidence of abuse-related behaviors. These findings agree with the literature that generally regards CBD as non-psychoactive, and unlikely to have clinically significant risk of diversion or abuse potential in patient populations. **Financial Support:** This work was funded by GW Pharmaceuticals, plc.

Abstract - ID: 593 **Author(s):** Nadia Fairbarin **(Presenter)**, University of British Columbia

Evan Wood, University of British Columbia

Huiru Dong, University of British Columbia

Sabina Dobrer, British Columbia Centre for Excellence in HIV/AIDS

Thomas Kerr, University of British Columbia

Kora DeBeck, British Columbia Centre for Excellence in HIV/AIDS **Title:** The relationship between hazardous alcohol use and violence among street-involved youth **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Adolescent **Aims:** Alcohol is a major contributor to premature disability and death among youth, often due to physical trauma, violence, and suicide. Street-involved youth have extremely high rates of exposure to violence and victimization. The purpose of this study was to longitudinally examine the association between hazardous alcohol use and experiences of violence among a cohort of street-involved youth. **Methods:** Data were derived from the At-Risk Youth Study (ARYS), a prospective cohort of street-involved youth in Vancouver, Canada. The outcome of interest was hazardous alcohol use defined by the US National Institute on Alcohol Abuse and Alcoholism as > 14 drinks per week or > 5 drinks on one occasion for men, and > 7 drinks per week or > 4 drinks on one occasion for women. We used Generalized Estimating Equations (GEE) analyses to examine the association between experiences of violence and hazardous alcohol use. **Results:** Between 2005 and 2014, 1149 drug-using youth were recruited and 423 (36.8%) reported hazardous alcohol use in the previous six months at study baseline. In multivariable GEE analyses, intimate partner violence (Adjusted Odds Ratio [AOR] = 1.53, 95% Confidence Interval [95% CI] = 1.12 – 2.10) and non-partner physical assault (AOR = 1.39, 95% CI = 1.21 – 1.59) were independently associated with hazardous alcohol use after adjusting for multiple potential confounders. In sub-analyses, a dose-response relationship was observed between levels of alcohol use and both intimate partner and non-partner violence. **Conclusions:** A considerable proportion of youth in this setting reported hazardous alcohol use, which was independently associated with experiencing recent intimate and non-partner violence. Combined interventions for violence and hazardous alcohol use should be integrated into service provision programs for street-involved youth. **Financial Support:** The study was supported by the US National Institutes of Health (R01DA028532) and the Canadian Institutes of Health Research (MOP–286532). This research was undertaken, in part, thanks to funding from the Canada Research Chairs program through a Tier 1 Canada Research Chair in Inner City Medicine which supports Dr. Evan Wood. Dr. Kora DeBeck is supported by a MSFHR/St. Paul's Hospital-Providence Health Care Career Scholar Award and Canadian Institutes of Health Research New Investigator Award.

Abstract - ID: 594 **Author(s):** Joao Mauricio Castaldelli-Maia **(Presenter)**, University of Sao Paulo Medical School

Silvia Martins, Columbia University

Erica Siu, University of Sao Paulo Medical School

Camila Silveira, University of Sao Paulo Medical School

Arthur Andrade, University of Sao Paulo Medical School

Laura Andrade, University of Sao Paulo Medical School **Title:** Gender differences in tobacco use disorder phenotypes among smokers in the largest metropolitan area of South America **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Dependence **Aims:** Given the gender differences that permeate Tobacco Use Disorders (TUD), we aimed to identify phenotypes of TUD in female and male in a representative sample of smokers in a developing country. **Methods:** Data came from lifetime weekly smokers ages 18 and older taking part in the São Paulo Megacity Mental Health Survey collected between 2005-2007 (n = 1,386). Latent class analysis (LCA) was performed on nine TUD criteria stratified by gender. Logistic regression models explored the association between latent classes and socio-demographic and psychiatric variables. All analysis were performed using Mplus taking into account sampling weights and complex survey design features.**Results:** The best fitting LCA model had three classes within a severity continuum in both genders: a "non-symptomatic class"(Women[W]:30.2% , Men [M]: 44.4%), a "moderate symptomatic class"(W:45.5% , M:30.7%), and a "high-moderate symptomatic class"(W: 24.3%, M: 24.7%). Respondents in the "moderate symptomatic class" were more likely to have higher household income among female, and high-average education among male than those in the "non-symptomatic class". Both women and men in the "high-moderate symptomatic class" were more likely to have past-year anxiety, but only men were more likely to have past-year insomnia than those in the "non-symptomatic class".**Conclusions:** Both men and women smokers are divided into three TUD phenotypes, with approximately a quarter being highly dependent, which is associated with psychiatric comorbidity. However, women are more vulnerable to experiencing lifetime TUD symptomatology: 70%, in contrast to 56% of men. The intermediate symptomatic phenotype in women was associated with high income, which may show an important differential in the smoking behaviors paradigm in this developing country. **Financial Support:** The State of São Paulo Research Foundation, Brazil (FAPESP Grant 03/00204-3)

Abstract - ID: 595 **Author(s):** Leslie Lundahl **(Presenter)**, Wayne State University

Corissa Carlson, Wayne State University

Dragana Ostojic, University of Windsor

David Ledgerwood, Wayne State University

Mark Greenwald, Wayne State University

Deepti Challagolla, University of Mississippi Medical Center **Title:** Opioid-dependent pregnant women with higher engagement in methadone maintenance treatment and specialty programming have better maternal, neonatal and family outcomes **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Perinatal **Aims: Aims:** MMT for opioid dependent pregnant women has been shown to improve maternal and neonatal outcomes. This study examines predictors of improved MMT outcomes for mothers and their newborns. **Methods: Methods**: Data were extracted from medical records of opioid dependent pregnant women in an urban MMT clinic. We examined maternal demographic, drug use and treatment variables, birth outcomes (neonate head circumference, birth weight, gestational age at birth, 5-min Apgar scores), Child Protective Services (CPS) involvement, and newborn discharge status.**Results: Results:** Data from 67 mother/newborn dyads are included in this analysis. Attending a higher proportion of specialty pregnancy program sessions (?=.28), being drug-free at MMT intake (?=.47), and older age at first opioid use (?=.31) significantly predicted a higher proportion of maternal opioid-negative urine drug screens (UDS) pre-delivery. Number of weeks in MMT significantly correlated with gestational age at birth (r^2=.33), head circumference (r^2=.35), and birth weight (r^2=.28). Higher proportion of maternal opioid-negative UDS pre-delivery was related to higher likelihood of infants being discharged home (r_{pb}=.48) and lower incidence of CPS involvement (r_{pb}=.34). Maternal cocaine-positive UDS at MMT intake was associated with infants not being discharged home post-delivery ($r_?$=.37). History of injection drug use was associated with CPS involvement post-delivery ($r_?$=.33). **Conclusions: Conclusions:** These results underscore the need to engage opioid dependent women in treatment early in their pregnancy and ideally in specialty programming to improve pre- and post-delivery outcomes for themselves (reduced drug use), their newborns (better physical health), and family unit (discharge to home without CPS involvement).

Financial Support: Joe Young Sr./Helene Lycaki Funds (State of Michigan), and Detroit Wayne Mental Health Authority.

Abstract - ID: 596 **Author(s):** Andrew Huhn **(Presenter)**, Johns Hopkins University School of Medicine

David Andrew Tompkins, Johns Hopkins University School of Medicine

Kelly Dunn, Johns Hopkins University School of Medicine **Title:** Attitudes toward pharmacotherapies among current prescription opioid users **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** Approximately 3 million people in the U.S. suffer from opioid use disorder (OUD), yet most individuals with OUD do not engage in ongoing treatment as with other chronic diseases. Treatment options for OUD include maintenance pharmacotherapies, short and long-term residential programs, and 12-step groups. Little is known about the level of knowledge and preference for these different treatment options amongst persons who misuse opioids. **Methods:** Individuals who reported current misuse of prescription opioids were surveyed regarding their perception of treatment options for OUD; familiarity with treatment options and perceived effectiveness were measured on a visual analogue scale ranging from 0-100. **Results:** Respondents (n=142) were 66% male, had a mean age of 32 (SD=7) and reported mean use of opioids on 12 (SD=10) of the last 30 days. Respondents endorsed one-on-one counseling (55%), 12-step based groups (38%), and seeing a physician (35%) as the top three *most preferred* treatment options; these were also the *most familiar* treatments. The following pharmacotherapies were also rated for familiarity: methadone (M=41, SD=32), buprenorphine (M=36, SD=32), and naltrexone/Vivitrol® (M=22, SD=28). Those who endorsed some familiarity with OUD pharmacotherapies were then asked to rate perceived effectiveness, with naltrexone/Vivitrol® rated as the most effective (M=53, SD=21), followed by buprenorphine (M=46, SD=25) and methadone (M=43, SD=22). Interestingly, naltrexone was endorsed as more effective by those with chronic pain compared to those without ($t(56)=-2.9$, $p=.005$). There were no group differences regarding buprenorphine or methadone. **Conclusions:** While pharmacotherapies were absent from the most preferred and familiar options, the desire to see a physician suggests that individuals who are misusing opioids are interested in medical treatment for OUD. These results elucidate the perceptions that current opioid misusers have regarding OUD treatment, and highlight the importance of understanding differences among subgroups such as those with chronic pain.

Financial Support: R01 DA035246

Abstract - ID: 597 **Author(s):** Daniel Manvich **(Presenter)**, Emory University

Saumya Karne, Emory University

Taylor Stowe, Emory University

David Weinshenker, Emory University **Title:** Psychosocial stress-induced cocaine seeking in rats is associated with distinct coping strategies exhibited during prior social defeat stress **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Behavior **Aims:** Stress-induced relapse is frequently modeled in experimental animals using reinstatement procedures which employ physical or pharmacological stressors that lack face and translational validity. We sought to develop and characterize a novel preclinical model of stress-induced cocaine relapse in rats using social defeat stress (SDS), an ethologically-valid psychosocial stressor in rodents.**Methods:** Adult male Long-Evans rats self-administered cocaine (0.5 mg/kg/infusion) in daily 2 hr sessions for 20 days on a FR1 schedule of reinforcement. On days 11, 14, 17, and 20, subjects were subjected to SDS (n = 12) or a no-stress control condition (n = 10) immediately after the session. A discrete compound stimulus (odorous and tactile) within the operant chamber signaled the impending event. Responding was extinguished beginning on day 21 and animals were then tested for reinstatement via re-exposure to the compound stimulus that predicted impending stress or no-stress condition**Results:** Animals exposed to psychosocial stress-predictive cues exhibited robust reinstatement of cocaine seeking that was paralleled by an increase in corticosterone, while the no-stress control group did not exhibit either of these effects. The magnitude of reinstatement in individual stressed animals was correlated with time engaged in “active” rather than “passive” coping strategies during SDS. Additionally, preliminary findings from ongoing c-Fos immunohistochemical analyses indicate the possible recruitment of a hypothalamic-midbrain stress-responsive circuit during the cocaine-seeking response that has not been studied to a great extent in the context of substance abuse disorders. **Conclusions:** Using a novel model of psychosocial stress-induced cocaine relapse in rats, we report here that 1) distinct coping behaviors predict individual propensity to exhibit drug-seeking behavior in response to perceived impending psychosocial stress, and 2) psychosocial stress-induced drug seeking may involve the activation of neural substrates previously unassociated with the development or maintenance of substance abuse disorders. These findings may help identify novel biomarkers for relapse vulnerability and/or targets for pharmacological or behavioral therapeutic development. **Financial Support:** NIH Grants DA015040, DA034867, DA039991, and DA027535.

Abstract - ID: 598 **Author(s):** Chris Thompson **(Presenter)**, Michigan State University

Hui Cheng, Michigan State University

James Anthony, Michigan State University **Title:** Mutoscope estimates for adolescent drug treatment in the United States, 2002-2014 **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Treatment **Aims:** This research estimates age-specific occurrence of treatment services received by United States (US) adolescents for problems with alcohol and other drugs, excluding tobacco. Arranged using the epidemiological mutoscope approach, the estimates disclose age, period, and cohort variations. **Methods:** The study population consists of non-institutionalized US community residents age 12-17 years. Estimates are from 13 successive National Surveys on Drug Use and Health (NSDUH), 2002-14, with nationally representative samples, assessed via computer-assisted self-interviews (aggregate n= 230,452). Analysis-weighted estimates depict age-, period-, and cohort variations in treatment received, summarized via meta-analyses of the 13 replication sample estimates and constrained age-period-cohort regressions. **Results:** Meta-analysis discloses a large (i.e., 15-fold) age-associated increase in estimated proportions of young people treated, rising from 159/100,000 (12-year-olds) to 2763/100,000 (17-year-olds), with congruent mutoscope estimates for each cohort re-sampled year by year. Trend lines show fewer 16-17 year-olds receiving drug services in 2014 (~ 1865/100,000) as compared to 2002 (~2968/100,000), but for younger adolescents that trend line is flat. **Conclusions:** Published estimates for 12-17 year olds as a group fail to disclose heterogeneity seen in the age-wise and cohort-wise estimates, and also miss the important trend line drop for 16-17 year olds, with a flat trend line seen for 12-13-year-olds. As epidemiological signals, the divergent trend lines invite viable causal hypotheses that deserve study – e.g., possibly falling rates of alcohol and drug problems at mid-adolescence and changing judicial mandates for juvenile cannabis offenders. **Financial Support:** NIDA T32 DA021129 [CLT and HGC] and K05DA015799 [JCA].

Abstract - ID: 599 **Author(s):** Jeanine May **(Presenter)**, The Emmes Corporation

Dagmar Salazar, The Emmes Corporation

Patricia Novo, New York University School of Medicine

Dikla Blumberg, The Emmes Corporation

Abigail Matthews, The Emmes Corporation

John Rotrosen, New York University School of Medicine **Title:** Baseline characteristics by randomization status in the extended-release naltrexone vs. buprenorphine for opioid treatment clinical trial **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** To compare randomized vs. not randomized participants in a NIDA sponsored comparative effectiveness study of agonist versus antagonist treatment for opioid use disorder. **Methods:** Participants were recruited from detoxification or short-term residential treatment settings. The comparison of demographics and motivations to participate in the study are assessed between randomized and not randomized participants. **Results:** 772 participants were consented; 570 were randomized and 202 were not. Most of those not randomized (181/202; 90%) did not complete screening. Among the top reasons for not completing screening were that the participant left the treatment program (82/181; 45%) before completing screening, and not meeting eligibility criteria (62/181; 34%). One of the most frequent eligibility criteria not met was the participant was no longer seeking treatment for opioid dependence or not willing to accept agonist-based or antagonist-based therapy (22/202; 11%). In the randomized group, most participants were male (70%), white (74%), non-Hispanic (83%), with high school or less education (56%), unemployed (63%), and never married (66%). Similar distributions were noted for the not randomized group.Motivation was assessed for all randomized participants, and for 127 of the 202 not randomized. The not randomized group was slightly more likely to prefer buprenorphine (43%) than those randomized (33%). Access to medication appeared to be a motivating factor more for the randomized group (50%) than for the not randomized group (39%).**Conclusions:** Overall the two groups were similar in demographic characteristics, and those characteristics were varied. The reasons for participants not advancing to randomization were primarily related to leaving the treatment program or not meeting eligibility criteria. This may have implications for mitigating the difficult experience of detoxification and managing the transition to outpatient treatment for patients seeking treatment.**Financial Support:** Funded by the National Institute on Drug Abuse, National Institutes of Health, Department of Health and Human Services, Contract No. HHSN271201200017C and HHSN271201500065C.

Abstract - ID: 600 **Author(s):** Allison Andrews **(Presenter)**, Temple University

Servio Ramirez, Lewis Katz School of Medicine at Temple University **Title:** Evaluating the cellular effects of drugs of abuse using a next generation microfluidic model that recapitulates the human neurovascular unit **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** Neurobiology **Aims:** The blood brain barrier (BBB) regulates homeostasis and supports metabolic activity in the central nervous system. Research in rodent models and single cultures of endothelial cells have shown that psychostimulants alter BBB function and increase neuroinflammation. However, evaluation of drugs of abuse on a physiological BBB that closely resembles the human condition is lacking. Therefore, we hypothesize that the use of advanced microfluidic technology, to reconstitute a humanized neurovascular unit (NVU), provides a platform for testing cellular changes associated with drugs of abuse. We evaluated barrier permeability, vascular remodeling and immune-endothelial interaction following introduction of psychostimulants into the fluidic device. **Methods:** Primary human brain endothelial cells (ECs), astrocytes, pericytes and microglia were isolated from human fetal tissue. A syngenic human NVU was assembled in a two compartment microfluidic device which allows for ECs in one compartment to be exposed to fluidic flow and a connecting static CNS compartment containing astrocytes, pericytes and microglia.**Results:** We show the generation of stable syngenic quad cultures and the formation of a NVU in a microfluidic chip. Calcein AM labeling of astrocytes showed the formation of connections between the endothelial and CNS compartments similarly to the in vivo NVU architecture. Additionally, perfusion of fluorescently labeled dextrans in the endothelial compartment showed the formation of a fully functioning blood-brain barrier, which restricted diffusion into the CNS compartment. Perfusion of the psychostimulants cocaine on the NVU showed increased BBB permeability and endothelial activation**Conclusions:** Overall we demonstrate that a microfluidic model that reconstitutes the human NVU can be applicable for analysis of drug mediated-BBB dysfunction and neuroinflammation.**Financial Support:** NIH-NINDS 1R01NS086570 (SHR), Shriners Hospitals for Children: 85110-PHI-14 (SHR), NIH-NIDA T32DA007237 (AMA) and F32DA041282 (AMA)

Abstract - ID: 601 **Author(s):** Mara Flannery **(Presenter)**, NYU Langone Medical Center

Ryan McDonald, New York University School of Medicine

Melissa Velasquez, New York University School of Medicine

Joshua Lee, New York University School of Medicine **Title:** Patient perceptions of extended-release naltrexone, methadone, and re-entry following release from a large NYC jail **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** Use of extended-release naltrexone (XR-NTX) among opioid-dependent persons leaving jails is a novel intervention of increasing interest. We sought to capture patient perceptions of returning from jail to the community on XR-NTX vs. methadone maintenance vs. no medication, as well as re-entry conditions contributing to adverse outcomes. **Methods:** The larger open-label randomized controlled trial examines the effectiveness of XR-NTX as opioid relapse prevention at jail release (N=85) vs. no medication (N=85) and a third, non-randomized, methadone treatment program arm (N=85). For this ancillary study, we conducted qualitative, open-ended interviews in a convenient sub-sample of trial participants regarding re-entry, medication treatment, and opioid-use relapse. Interviews were developed using a social cognitive theory framework. To identify emerging themes, completed interviews were transcribed and analyzed using a grounded-theory approach. **Results:** N=18 individuals completed interviews from June-August 2016. This predominantly male (N=14) sample had a median time since release of 7 weeks (range 1-52), and was sampled almost evenly from each treatment arm: XRNTX (N=6), no medication (N=5), and MTP (N=7). Primary themes that emerged included: 1) reliance on self-control; 2) initial skepticism of new medication; 3) acceptability of XR-NTX; 4) mixed perceptions of methadone treatment; and 5) adverse re-entry conditions contributing to opioid relapse and affecting treatment decisions. **Conclusions:** XR-NTX treatment is understudied and appeared in this study feasible and acceptable, and may give former inmates an advantage when returning to their communities while facing environmental and personal barriers to remaining opioid-free. **Financial Support:** NIDA 5U01DA033336; in-kind study drug from Alkermes.

Abstract - ID: 602 **Author(s):** Chloe Jordan **(Presenter)**, McLean Hospital, Harvard Medical School

Susan Andersen, McLean Hospital, Harvard Medical School **Title:** Sex differences in early predictive biomarkers for cocaine seeking in adolescence and adulthood **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Sex Differences **Aims:** Poor working memory is linked to risk-taking behaviors in teenagers. Since the initiation of drug use before age 14 dramatically increases risk for substance use disorder (SUD), early identification of traits that predict adolescent drug use may significantly impact addiction rates. We hypothesized that poor working memory is associated with low salivary brain-derived neurotrophic factor (BDNF) and elevated cocaine SUD-related behaviors in adolescence and adulthood.**Methods:** On post-natal day (P)20, working memory was assessed using the novel object recognition task in male and female rats (n=15-20/sex). Beginning in early adolescence (P28), rats self-administered i.v. cocaine for 30 days (0.75 or 0.25 mg/kg/infusion) under a fixed-ratio (FR)1 schedule that was gradually increased to FR5. In adulthood, after 30 days of abstinence, responding following a cocaine prime (10 mg/kg, i.p.) was used as a measure of relapse. Saliva was collected at P20 and P90.**Results:** Object discrimination, the primary measure of working memory, positively correlated with P20 salivary BDNF in males (r=0.54, p < 0 .05), but negatively correlated in females (r=-0.66, p < 0 .05). Cocaine responding for 0.75 mg/kg also differed across sex, with males earning more cocaine at FR5 and responding more at relapse than females (p's < 0 .05). Higher response rates in males for 0.75 mg/kg were significantly associated with P20 object discrimination and salivary BDNF (r's>-0.66, p's < 0 .05). Object discrimination only correlated with relapse responding after 0.25 mg/kg in females (r=-0.72, p < 0 .05). Finally, salivary BDNF is a stable trait in males as P20 and P94 levels were positively correlated (r=0.46, p < 0 .05). **Conclusions:** Our results establish that salivary BDNF is significantly associated with good working memory. Poor working memory and low salivary BDNF in early adolescent males may represent viable biomarkers for later cocaine SUD. Further research is needed to identify biomarkers for SUD risk in females. **Financial Support:** DA-10543 and DA-026485

Abstract - ID: 603 **Author(s):** Taylor Stowe **(Presenter)**, Wake Forest School of Medicine

Paul Czoty, Wake Forest School of Medicine

Mack Miller, Wake Forest School of Medicine

Joseph Noto, Wake Forest School of Medicine

Sue Nader, Wake Forest School of Medicine

Michael Nader, Wake Forest School of Medicine

Linda Porrino, Wake Forest School of Medicine **Title:** Brain functional response to the presentation of cocaine-associated cues on rate of cerebral metabolism measured with FDG PET **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Imaging **Aims:** Cocaine-associated environmental stimuli can elicit intense cravings which are considered among the most insidious clinical symptom of addiction (Dackis and O'Brien, 2005). Our laboratory has established a model of cue reactivity in rhesus monkeys (Porrino, et al 2016). We showed that presentation of cues associated with cocaine increased functional activity in the medial prefrontal cortex, anterior cingulate, precuneus region of the parietal cortex, and striatum (Porrino et al 2016). In the present study, one goal was to examine the generalizability of these findings in another species of nonhuman primates.**Methods:** Cynomolgus monkeys (n = 4) with a history of cocaine exposure were trained under a second-order schedule which involves extended periods of behavior in each session prior to receiving a single cocaine infusion. Animals were also exposed to a neutral environment in which they never received cocaine. Animals were scanned in both conditions at least one week apart. On the day of the scan, animals were placed in the cocaine or neutral environments and [^{18}F]fluorodeoxyglucose (FDG) was injected through an intravenous catheter and a session was initiated. During the session, animals received no cocaine, but were able to respond as normal to a cue light. After 45 minutes, animals were sedated, transported to the PET scanner, and scanned. Scan data were analyzed via SPM 8. **Results:** Compared to the neutral environment, exposure to the cocaine-associated environment produced greater functional activation in the anterior cingulate cortex, dorsal striatum and prefrontal cortex. **Conclusions:** Results are similar to that seen previously in rhesus monkeys. Thus, this model has high translational value and can provide a platform for testing the effectiveness for medications to treat cocaine abuse. Ongoing studies are assessing potential medications for cocaine use disorder in these monkeys.

Financial Support: DA06634

Abstract - ID: 604 **Author(s):** Wil Aklin **(Presenter)**, NIH

Kevin Walton , NIH **Title:** The NIDA behavioral therapy development program **Abstract Category:** Program Descriptions **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** Multiple drug classes **Topic:** Treatment **Aims:** The Behavioral Therapy Development Program (BTDP) seeks to: 1) Produce efficacious treatments for substance use disorders (SUDs); 2) Produce treatments that are implementable and self-sustaining; and 3) Determine optimal behavioral strategies to promote medication and treatment adherence. **Methods:** The Behavioral Therapy Development Program (BTDP) is a component of the Clinical Research Grants Branch within the Division of Therapeutics and Medical Consequences at NIDA. The overarching goal of BTDP is to produce efficacious and implementable treatments for substance use disorders (including nicotine). BTDP supports Stage I (treatment generation, refinement), Stage II (efficacy), and Stage III (efficacy in the real-world) research. Research areas supported by BTDP include development of treatments targeting specific novel or insufficiently-studied behavioral and neurobehavioral processes (e.g., impulsivity, risk-taking propensity, decision-making), the examination of theory-derived treatment targets and mechanisms of behavior change, adherence, and studies that integrate behavioral/pharmacological, technology- and neuromodulatory-based treatment. **Results:** The program offers several flagship initiatives to support the BTDP. The Behavioral and Integrative Treatment Development Program Announcement facilitates research on the development and testing of treatments for substance use disorders (R01, R34, R03). The purpose of this FOA is to encourage behavioral intervention development research to test efficacy, conduct clinical trials, examine mechanisms of behavior change, determine dose-response, optimize combinations, and/or ascertain best sequencing of behavioral, combined, sequential, or integrated behavioral and pharmacological treatments. Several collaborative partnerships with the National Institute on Alcohol Abuse and Addiction (NIAAA) and the National Cancer Institute (NCI) through the Collaborative Research on Addiction at NIH (CRAN) initiative on focus on Target Assessment, Engagement and Data Replicability to Improve Substance Use Disorders Treatment Outcomes (R21/R33, R33). This FOA provides support for up to two years (Phase I; R21) for protocol development, target identification and studies to confirm target engagement (i.e., link targets with tangible outcomes); followed by up to 3 years of support (Phase II; R33) for replication studies of addiction treatment across 2 or more settings. Other key initiatives include Research Aimed at Novel Behavioral Targets to Improve Adolescent Substance Abuse Treatment and Prevention Interventions (R01, R34); and the NIH Common Fund initiative Science of Behavior Change: Use-Inspired Basic Research to Optimize Behavior Change Interventions and Outcomes. The Division of Therapeutics and Medical Consequences at NIDA is primarily interested in projects that address a theoretical rationale for relevant treatment targets to understand the treatment of substance use, and the hypothesized ways in which these target mechanisms are modulated throughout the course of treatment. **Conclusions:** The BTDP encourages the submission of grant applications that emphasize a mechanisms-focused, experimental therapeutics approach to develop and optimize treatments for SUDs. Specifically, BTDP supports treatment research on neural mechanisms of action, novel behavioral targets, and integration of technology- and neuromodulation. **Financial Support:** NIDA/DTMC

Abstract - ID: 605 **Author(s):** Payam Sheikhattari, Morgan State University

Jummai Apata, Morgan State University

Jane Buccheri, CEASE Community Action Board

Mary Gunning, Catholic Charities Head Start of Baltimore City

Fernando Wagner, Morgan State University

Kevon-Mark Jackman **(Presenter)**, Morgan State University **Title:** The effectiveness of a peer-led tobacco cessation intervention among poor and underserved using community-based participatory research **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Treatment **Aims:** In the U.S., smoking cessation interventions have led to an overall decline in tobacco use but not among underserved populations. The Communities Engaged and Advocating for a Smoke-free Environment (CEASE) initiative is a multi-phase smoking cessation intervention to address tobacco dependence in low-income urban communities in Baltimore, Maryland. The aim of this study is to compare results from the three arms of the program aimed at translating and disseminating a successful intervention developed through three preceding phases.**Methods:** Participants were recruited at community events. They self-selected into three groups: A four-session group counseling, a single-session group counseling, or to quit using self-help materials (control group). The sessions were facilitated by Peer Motivators, who were former smokers, using standardized smoking cessation curricula. Participants were followed up for three months after completing the smoking cessation program, and their smoking status was verified by carbon monoxide testing (< 7 ppm). **Results:** A total of 342 individuals were recruited. From these, 124 joined the four-session arm, 120 the single session and 98 were considered as controls. At the time of this report, 267 had received their 3-month post intervention follow up. The quit rate was 11.2% overall. However, there were important differences by study arm ($p < 0.0001$): quit rates were 6.4% for single-session participants (n=63), 18.4% for four-session participants (n=98), and 7.6% for controls (n=106).**Conclusions:** A community-based peer-led support group is an effective way to reach out to people living in underserved communities for tnicotine dependence treatment. However, a single session may not be sufficient and more smoking cessation counseling and support sessions in community settings are needed. **Financial Support:** National Institute on Minority Health and Health Disparities (NIMHD) R24002803

Abstract - ID: 606 **Author(s):** Rose Webster **(Presenter)**, University of Cincinnati

Fatima Saeed, University of Cincinnati College of Medicine

Hanna Wetzel, University of Cincinnati

Cinder Cohen, University of Cincinnati College of Medicine

William James Ball, Jr., University of Cincinnati

Andrew Norman, University of Cincinnati College of Medicine **Title:** Characterization of recombinant humanized anti-cocaine monoclonal antibody from 3 clones: Selecting the master cell bank **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Treatment **Aims:** We have generated a recombinant humanized anti-cocaine monoclonal antibody (mAb), h2E2, for passive immunotherapy, which is now at an advanced stage of pre-clinical development. We report here *in vitro* binding, *in vivo* pharmacokinetic and efficacy studies. Our aim was to characterize h2E2 produced by the 3 highest mAb producing clones and to identify the candidate for the master cell bank. **Methods:** For pharmacokinetic studies, after injection of each h2E2 variant (120 mg/kg, iv), blood was collected from the tail tip of mice (n=6 per cell line) from 7 min to 42 days. Antibody concentrations were quantified using an Enzyme-Linked Immunosorbent Assay (ELISA) and WinNonlin was used for half-life calculation assuming a 2-compartment model. To test *in vivo* efficacy, mice (n=3 per time point) were injected with h2E2 (120 mg/kg, iv), followed one hour later with injection of an equimolar dose of cocaine HCl. Plasma and brain were collected from 45 sec to 1 hr. Cocaine was quantified using LC/MS. The affinity of the antibodies for [^{3}H]cocaine was measured using a radioligand binding assay via immunoprecipitation of the antibody-cocaine complex and filtration. **Results:** The mAb from all clones had elimination half-lives ($t_{1/2\beta}$) of 15.0±5.1, 4.6±1.1 and 7.1±3.5 days. In efficacy studies, control peak brain cocaine concentrations were 1023±62.6 ng/ml. However, in the presence of the mAb, brain cocaine concentrations were only 84±17, 197±15, and 203±17 ng/ml. The affinities (Kd values for [^{3}H]cocaine) of the 3 sets of mAb were not significantly different at 3.1±0.5, 4.3±1.1, and 3.3 ±1.3 nM.**Conclusions:** All h2E2 variants showed favorable binding properties, pharmacokinetics, and *in vivo* efficacy by sequestering cocaine in the plasma, thus preventing its entry into the brain. The clone with the highest production levels of the mAb was selected for the master cell bank. This mAb variant also had the longest elimination half-life. The h2E2 mAb from this master cell bank will advance through the required IND-enabling toxicology studies. **Financial Support:** NIDA grant U01DA39550

Abstract - ID: 607 **Author(s):** Logan Dowdle **(Presenter)**, Medical University of South Carolina
Sarah Hamilton, Medical University of South Carolina
Jeffrey Borckardt, Medical University of South Carolina
Sudie Back, Medical University of South Carolina
Colleen Hanlon, Medical University of South Carolina **Title:** Evaluating LTP-like rTMS as a tool to reduce pain and craving in individuals with non-medical prescription opiate use **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Imaging **Aims:** Non-medical prescription opioid use (NMPOU) is a growing health crisis. Prior work from our lab validated the use of repetitive transcranial magnetic stimulation (rTMS) to elevate pain thresholds in this population but the mechanism of action remains unknown and very little is understood about prescription opiate craving. We hypothesized that pain and craving responses in this population could be reduced by excitatory rTMS (10 Hz) to the left dorsolateral prefrontal cortex (LDLPFC). Beyond administering rTMS, this study aimed to determine the feasibility of acquiring BOLD fMRI 1) pain and 2) cue craving data in a population with NMPOU. **Methods:** Treatment enrolled, buprenorphine maintained individuals with a NMPOU history (n=3) were invited to the Medical University of South Carolina. A standard thermal heat task (20 second blocks of painful and warm stimuli on left wrist) and a first-of-its kind prescription opiate cue task (24 second blocks of prescription opiate images and neutral objects) were administered before and after 10 sessions of double-blinded, 10 Hz rTMS (4,000 pulses/session). **Results:** At baseline during thermal stimulation, we observed significant (FWE $p < 0$ .05) activation in conventional areas of the pain matrix (somatosensory, insula, thalamus) as well as medial and lateral prefrontal regions. During prescription opiate cues, we found significant activation in the anterior cingulate, frontal poles and insulae. All individuals found both rTMS and thermal stimuli tolerable. **Conclusions:** These early results show that it is feasible to obtain thermal pain and opiate cue responses in relevant brain areas, as well as deliver 20 minute sessions of rTMS. Together these findings lay the groundwork for determining the effectiveness of rTMS to the LDLPFC in reducing pain and craving in NMPOU. **Financial Support:** DA007288JM (McGinty)

Abstract - ID: 608 **Author(s):** Robert Brown, University of California Berkeley

Caitlin Turner, San Francisco Department of Public Health

Jaclyn Hern, San Francisco Department of Public Health

Glenn-Milo Santos **(Presenter)**, UCSF **Title:** Partner-level substance use associated with increased sexual risk behaviors among men who have sex with men in San Francisco, CA **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Stimulants **Topic:** AIDS/Immune **Aims:** Few studies have explored the relationship between substance use and HIV risk behaviors within partnerships of men who have sex with men (MSM). We sought to examine partner-level data between MSM participants and their sexual partners (n=75) in San Francisco. **Methods:** This is a secondary data analysis of baseline data among substance-using MSM in a pharmacologic trial to reduce methamphetamine and alcohol use. Participants reported data for up to 4 of their most recent sexual partners within the last 6 months, including: drug use, partnership type, HIV status, and sexual behaviors. We used multivariable generalized estimating equations (GEE) logistic regression to assess the relationship between partner-level substance use during their last sexual encounter with each partner, and engaging in condomless anal intercourse (CAI) and serodiscordant CAI, while accounting for clustering by participant**Results:** In multivariable analyses, there was higher adjusted odds ratio (AOR) for participants to engage in CAI with their partners when: the participant (AOR=22.2, [95%CI=2.5-199.5]) or their partners used any drugs (21.8, [3.3-144.3]); their partner (5.7, [1.7-19.3]) or both participant and partner had concordant use of methamphetamine (10.5, [2.2-50.6]); or when both used poppers (11.4, [1.5-87]). There was higher odds SDCAI if the participant binge drank (4, [1.01-15.8]), used more than one substance (15.8, [1.9-133]), or used other drugs (4.8, [1.3-18.4]); if their partner used poppers (7.6, [1.5-37.6]), or used more than one substance (7.9, [1.9-34.1]); and when both participant and partner had concordant use of poppers (4.4, [1.2-16.8]). **Conclusions:** This study observed significant relationship between substance use and HIV risk behaviors within partnerships. Specifically, when either the participant, the partner, or both used any drugs there was an increased odds of sexual risk behaviors. Findings suggest that partner-level substance use behaviors should be taken in account when developing sexual risk reduction interventions. **Financial Support:** R36 DA035109

Abstract - ID: 609 **Author(s):** Catherine Davis-Takacs **(Presenter)**, Johns Hopkins University

Kelly Dunn, Johns Hopkins University School of Medicine

Yuqing Cao, Sandy Spring Friends High School

Elise Weerts, Johns Hopkins University School of Medicine **Title:** Buspirone attenuates naloxone-precipitated withdrawal behaviors in morphine-dependent rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** Failure to effectively manage opioid withdrawal symptoms is a primary contributor to attrition from opioid detox, with higher magnitude symptoms resulting in poor treatment retention and relapse to drug use. The aims of the current study was to determine if buspirone, which activates serotonin (5-HT)1A receptors and dopamine D3 and D4 receptors, would reduce withdrawal symptoms in a rodent model of opiate dependence. **Methods:** Sprague-Dawley rats (n=19) were singly housed and maintained under conditions of ad lib food and water. Morphine base (10 - 50 mg/kg, s.c) was administered using an escalating dose regimen where each dose was administered twice daily (0600, 1800) and then increased by 10 mg/kg/day over 5 days, (i.e., 10, 20, 30, 40, and 50 mg/kg). The control group received equivolume saline injections at the same intervals. On Day 6, the 50 mg/kg dose of morphine or saline was administered at 0600, followed 30 minutes later by buspirone (2.5 or 5 mg/kg, ip); a dose of naloxone (2 mg/kg, ip) that precipitates withdrawal, was administered 30 minutes after the buspirone. Behaviors were videotaped for 30 min beginning immediately after the naloxone injection. Body weight, number of fecal boli, and rectal temperature were also evaluated prior to each injection and at the end of the observation period. Video recordings were scored for eight behaviors indicative of opioid withdrawal by a trained observer blind to experimental conditions. **Results:** Buspirone produced significant ($p < 0$ .05) dose-related reductions in the frequency of some naloxone-precipitated withdrawal behaviors (teeth chattering, rears, and mastication) and number of fecal boli, but did not affect withdrawal induced hypothermia or weight loss. Buspirone administered to the saline control group or the morphine treated group resulted in comparable hypothermia.**Conclusions:** These data provide evidence that acute buspirone administration can alleviate some behavioral symptoms of opioid withdrawal. **Financial Support:** Johns Hopkins University, Department of Psychiatry and Behavioral Sciences Internal Funds

Abstract - ID: 610 **Author(s):** Michaéla Schippers, Rotterdam School of Management, Erasmus University

Dominique Morisano **(Presenter)**, University of Toronto **Title:** Personal goal setting: Factors in substance use and academic achievement **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Prevention **Aims:**

Goal theory states that goals can markedly improve performance at any given task, and conscious goals affect action. We previously revealed personal goal setting's positive impacts on mood and academics, and learned that the relationship is not always direct (i.e., academic goalsàacademic outcomes). We suspected that the benefits spread to other outcomes such as substance use. Among undergrads, levels of abuse of alcohol (1 in 3 students) and other drugs are concerning. Face-to-face interventions decrease use clinically but have limited applicability on campus. Most undergrads avoid treatment and acknowledgment of problematic use. Alternative "indirect" interventions are worth exploring in contexts where substance misuse is normative. They could be widely distributed and used to reduce risky behaviors without obviously targeting them, focusing instead on cognitive processes like self-regulation. Our first research aim was to identify the influence of substance use and its interactions on academic performance.

Methods: For one year, we collected data from a full cohort of 652 1st-year students who completed a personal goal-setting program. We gathered demographics, substance use (ASSIST/AUDIT) and personality/mood measures at baseline and post-intervention, academic data, and qualitative goal-content. **Results:**

Preliminary results at baseline indicated 67% of students binge drinking > monthly, 66.2% using excessive alcohol, 38%+ with recent cigarette use, and ~25% with recent cannabis use. In students' goals about their "ideal futures", 46.5% mentioned reducing or avoiding drugs, 57.9% alcohol, and 49% cigarettes. Hierarchical regression revealed main effects: the amount students drank at the start of school negatively predicted the # of credits they earned that year (ß = -0.133; p = .016) and final GPAs (ß = -0.189; p = .001), even after controlling for age, gender, ethnicity, and personality. Also, personality played a role in predicting drinking levels 3 months into school (T1) after controlling for age, gender, and ethnicity. Conscientiousness negatively predicted T1 drinking (ß = -0.20; p < .001), extraversion positively predicted T1 drinking (ß = 0.27; p < .001), and they interacted (ß = 0.07, p = .013) such that high extraversion suppressed the positive effects of high conscientiousness--drinking was higher in highly conscientious students who were also highly extroverted.

Conclusions: Personal goal-setting should be explored as a means to address substance use among students. It allows them to explore concerns without force. Future studies must test whether its impact on substances is comparable to its effects on academics and mood. **Financial Support:** ERIM Visiting Researcher Fund (Erasmus University)

Abstract - ID: 611 **Author(s):** Michael Taffe **(Presenter)**, Scripps Research Institute

Sophia A. Vandewater , Scripps Research Institute

Kevin Creehan, Scripps Research Institute

Jacques Nguyen, Scripps Research Institute

Mehrak Javadi-Paydar, Scripps Research Institute **Title:** Pharmacological interrogation of hypothermia induced by vapor inhalation of THC in rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Marijuana/Cannabinoids **Topic:** Mechanisms of Action **Aims:** Vapor delivery of THC to rats using e-cigarette technology has been shown to produce the cannabinoid-typical effects observed using other routes of administration, including hypothermia and anti-nociception. Initial experiments suggested an unexpected inability of CB1 antagonist pre-treatment to block this effect, prompting additional investigation of the neuropharmacology of inhaled THC.**Methods:** Male and female Sprague Dawley and Wistar rats were implanted with radiotelemetry devices and exposed to vaporized THC in propylene glycol (PG) vehicle. Experiments were conducted using pre-treatment with parenteral injection of SR141716, AM251, AM630, WAY100635 or JTC-801 to probe contributions of CB1, CB2, 5-HT1A, 5-HT7 and nociception/orphanin FQ (N/OFQ) mechanisms to THC-induced hypothermia.**Results:** Inhalation exposure to THC significantly reduced body temperature in male and female rats. Vapor-induced reductions in body temperature recovered more quickly when animals had been injected with SR141716 (4 mg/kg, i.p.) and AM251 (4 mg/kg, i.p.) but the initial hypothermia was unaffected. In contrast, SR141716 completely blocked hypothermia induced by THC (10 mg/kg) when injected i.p.. No contributions of 5-HT1A, 5-HT7 or N/OFQ were observed. Tail flick response to hot water bath immersion was slowed by THC vapor inhalation and this effect was blocked entirely by CB1 antagonist treatment. **Conclusions:** Hypothermia following intrapulmonary delivery of THC using-e-cigarette type devices is prolonged by CB1 signaling mechanisms. However, the initial reduction in temperature apparently does not depend on CB1, nor other key receptors involved in thermoregulation. Antagonism of the anti-nociceptive effect of inhaled THC by CB1 antagonists confirms the selectivity of this nonCB1 effect of inhaled THC on body temperature. **Financial Support:** This work was supported by USPHS grants DA024105 and DA035482

Abstract - ID: 612 **Author(s):** S. Bunce **(Presenter)**, Penn State College of Medicine

Andrew Huhn, Johns Hopkins University School of Medicine

Dean Stankoski, Penn State University College of Medicine

E Deneke, Caron Treatment Center

E. Bixler, Penn State College of Medicine

Roger Meyer, Penn State College of Medicine, Psychiatry **Title:** Translational neuroimaging to predict treatment outcome among patients in residential treatment for prescription opiate use disorder **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Treatment **Aims:** Impulsivity and risky decision-making are known to contribute to relapse risk in substance use disorders. However, this knowledge has not been translated into clinically useful measures. The current study utilized a risky decision-making task (Balloon Analogue Risk Task; BART), coupled with functional near-infrared spectroscopy (fNIRs) to evaluate the capacity to predict treatment outcome using an objective, clinic-friendly neuroimaging technology. Prefrontal cortical (PFC) brain responses assessed during the BART were expected to differentiate recently withdrawn residential patients with Prescription Opioid Use Disorder (POD) who relapsed within 90 days from those who remained abstinent. **Methods:** POD (n=65) who met DSMIV-TR criteria for prescription opiate dependence completed an fNIRs-adapted version of the BART while being monitored with fNIRs 18-25 days into residential treatment. Outcome was measured for 90 days post-discharge. PODs were tracked via 1) weekly phone-calls (with collaterals) 2) two hair samples (30 & 90 days), and 3) urinalysis. Analyses were conducted on a group of 39 POD on whom we were able to obtain outcome results with high levels of confidence. T-tests and binary logistic regressions were used to compare fNIRs response across groups. **Results:** A combination of ventromedial and dorsolateral PFC activity during the BART differentiated patients who abstained for 90 days from those who relapsed. Neural responses during decision making, and differential responses to wins and losses identified patients at high risk for relapse with 85.3% correct classification (p=.006). These PFC areas have been associated with value calculation and reward sensitivity. **Conclusions:** These data suggest that PFC responses during a risky decision-making task differed between PODs who relapsed within 90 days of leaving treatment and those who abstained. Importantly, these data suggest that CNS responses in the PFC may serve as a biomarker to predict treatment outcome; this has the potential to be a powerful tool for clinicians (e.g. as an objective measure of vulnerability to relapse to guide treatment planning). These data demonstrate the feasibility of using fNIRs, an affordable and clinic-friendly neuroimaging tool, in translational care. **Financial Support:** NIDA R01DA035240-01

Abstract - ID: 613 **Author(s):** Constance Horgan **(Presenter)**, Brandeis University, Heller School for Social Policy and Management
Sharon Reif, Brandeis University, Heller School for Social Policy and Management
Maureen Stewart, Brandeis University
Deborah Garnick, Brandeis University
Amity Quinn, Brandeis University
Timothy Creedon, Brandeis University
Brooke Evans, Brandeis University **Title:** Private health plans' role in delivery and payment reform to support integrated care **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** All drug and alcohol **Topic:** Treatment **Aims:** Integration is a model of health care delivery strategically designed to address challenges inherent in preventive medicine and chronic disease management. Integrating medical and behavioral health care, including drug and alcohol treatment, depends on coordination between providers, payers, and policymakers. This study examines health plan activities related to integrated care. **Methods:** Data are from the fourth round of a nationally representative survey of private health plans. Health plan executives were asked about their plans' three commercial products (e.g., HMO, PPO, POS) with the highest enrollment in the 2014 benefit year. 274 plans responded (80% response rate), reporting on 705 products. Results are reported at the product level and weighted to account for complex survey design. **Results:** About a quarter of products reimbursed for case managers while 98% provided case managers to address behavioral health in primary care. Only 7% of products reimbursed for consultation between primary care providers and behavioral health providers. In contrast, 29% of products directly provided consultation to support behavioral health in primary care. Just over half of health plan products formally encourage primary care practices to become medical homes. Of those, 82% of products encourage inclusion of behavioral health. Nearly 60% of products use global payments, and 43% of those include behavioral health. Similarly, 57% of products use bundled payments for behavioral health. **Conclusions:** Health plans are facilitating and supporting integrated care through delivery and payment policies. In order for integration to work well, changes are required to align payment and delivery systems, and health plans are situated prominently at the nexus of these systems. **Financial Support:** NIDA R01 DA029316 and NIAAA R01 AA010869, P30 DA035772

Abstract - ID: 614 **Author(s):** Samantha J. Bauer **(Presenter)**, Michigan State University

Chris Thompson, Michigan State University

Olga Vselvolozhskaya, College of Public Health

James Anthony, Michigan State University **Title:** Wet behind the ears? A Bayesian approach to estimating heroin incidence age by age **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Epidemiology **Aims:** Current National Surveys on Drug Use and Health (NSDUH) heroin use estimates for the United States are binned for 12-17 and 18-25 year olds. We aim to estimate heroin incidence for 12-21 year olds, age by age, with methods innovation to address apparent age- and study year-specific zero numerators. **Methods:** In 1999-2014, NSDUH population samples included 649 NIHUs among 435K 12-21 year olds who had never before used heroin. We estimated analysis-weighted proportions, and employed a mutoscope approach to stratify the NIHU subsample by age and study year before estimating meta-analytic summaries. When a zero numerator was found, a novel Bayesian approach was applied. **Results:** Estimated age-specific incidence ranged from ~33/100K at age 12 (95% confidence interval, CI = 15, 70) to ~260/100K at age 19 (95% CI = 200, 330). Examined mutoscopically, NIHU experiences for the 1978-2002 birth cohorts are congruent, with peak NIHU seen at 18-19 years of age. The Bayesian approach recalibrates the estimate for 12 year old NIHU to ~25/100K (95% CI = 18, 36); estimates for other ages are not appreciably different. **Conclusions:** As early as age 12 years there is modest tangible evidence of newly incident heroin users in the US population, with clear peak incidence at 18-19 years. Our results highlight a need for public health outreach and primary prevention with pre-teens and throughout adolescence. **Financial Support:** MSU & NIDA 5T32DA021129-09 (SJB & CLT), K05DA015799 (JCA)

Abstract - ID: 615 **Author(s):** Babak Tofighi **(Presenter)**, New York University School of Medicine

Joshua Lee, New York University School of Medicine

Mara Flannery, NYU Langone Medical Center

Edward Nunes, Columbia University and NYSPI

Scott Sherman, New York University Medical Center

Amalia Pinguello, Universidade Federal do Rio Grande do Sul **Title:** Development of a mHealth tool to enhance linkage and retention to office-based opioid treatment and HIV-HCV care among inpatient detoxification program patients **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Technology Issues **Aims:** Aim 1. Assess technology use patterns and preferences for enhancing linkage to buprenorphine treatment and HIV-HCV care in primary care following discharge among inpatient detoxification patients with opioid use disorder and HIV and/or HCV. Aim 2. Develop a tailored mHealth prototype that supports patient-provider communication, adherence to buprenorphine and antiretroviral therapy, and patient self-management, based on focus groups and qualitative interviews with inpatient detoxification patients to enhance linkage to primary care-based buprenorphine treatment and HIV-HCV care following discharge. **Methods:** The goal of this mixed-method, phased research is to develop a TM intervention prototype based on the Medical Management outline (i.e., patient-provider communication, medication adherence, self-management, goal of opioid abstinence, and counseling participation) to improve linkage and retention in OBOT and HIV-HCV care following discharge among inpatient detoxification program patients testing positive for HIV and/or HCV. Preliminary intervention features include: 1) instructions on buprenorphine administration during induction (x2/day) and for antiretroviral therapy (x1/day) (medication adherence); 2) patient initiated texting of the intervention software to request a Physician phone call during regular clinic hours (patient-provider communication); 3) appointment reminders(x2/week); 4) supportive and educational content to improve medication adherence to buprenorphine and antiretroviral therapy, self-management, and access to 12-step meetings, counseling services, and specialty care (x1/day) (self-management). Informants will be presented with mock-ups of the intervention components (version 1.0) and elicit feedback on content, screen layout, ease of access to information, operational sequences (messaging algorithms), frequency of messages, integration of text-based multimedia and web content, and structural barriers (Aim 1) based on the Technology Acceptance Model (n=20). The intervention prototype will be further refined (version 2.0) using the Multiphase Optimization Strategy to intervention design during induction to buprenorphine and HIV-HCV care (n=5) in 3 continuous cycles of usability testing, each over a 1 month period (Aim 2). **Results:** Inpatient detoxification patients reported high rates of mobile phone ownership (86%), use of text messaging (82%), smartphone applications (65%), and that theoretically-informed TM interventions addressing buprenorphine treatment and HIV-HCV care are highly acceptable among inpatient detoxification. TM was the preferred platform for: 1) receiving information about HIV-HCV treatment (46.7%) compared to smartphone applications (14.2%); and 2) sending HIV treatment information to peers with OUD (53.6%) versus smart phone applications (8.7%). Respondents were amenable to receiving text messages that contained sensitive content, such as recovery (90%), suboxone (80%), HIV (67%), hepatitis (72%), and cravings (80%). Preferred modes of appointment reminders included telephone calls (40%) and TM (35%). Respondents were favorable to HIV testing and treatment information via telephone calls (21%) or TM (16%), but were less inclined to smartphone applications (3%). Similar rates were observed for receiving HCV testing and treatment information: telephone calls (20%), TM 16%), and smart phone applications (2%). Participants reported high rates of acceptability for the preliminary prototype mock-ups and yielded crucial feedback to fine-tune intervention components. **Conclusions:** Telephone and text message contact were the preferred technology platforms to enhance self-management of SUD, HIV, and HCV. Further participant feedback yielded high acceptability for inpatient detoxification patients to enhance linkage to primary care-based buprenorphine treatment and HIV-HCV care following discharge. **Financial Support:** None

Abstract - ID: 616 **Author(s):** Shadiya Moss **(Presenter)**, Columbia University

Silvia Martins, Columbia University

Katherine Keyes, Columbia University Mailman School of Public Health **Title:** Time trend analysis of gender differences in the prevalence of deviant behavior, risk preference and marijuana use among adolescents from 2002 to 2014 **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Sex Differences **Aims: Aim:** Among adolescents, both deviant behavior and preference for risky behaviors are associated with marijuana use. The present analysis examines the gender differences in the prevalence of population-level trends of deviant behavior, risk preference and marijuana use among adolescents.**Methods: Methods**: Data were drawn from 12-17 year olds (N = 230,452) from the 2002 to 2014 National Survey on Drug Use and Health (NSDUH), which is a nationally representative cross-sectional series of studies. Outcomes were: 1) past-year deviant behavior (selling drugs, stealing something > $50 and attacking someone), 2) risky behaviors (getting a kick out of doing dangerous things and testing oneself by doing something risky), and 3) marijuana use. Proportion estimates assessed the prevalence of the three outcomes over time by gender. Generalized linear regression was used to assess trend significance over time. **Results: Results**: The absolute change in deviant behavior among 12-17 year olds has been reduced by nearly half across time among males, declining from 15.7% in 2002 to 8.9% in 2014 (relative change [RC] = 44.9%, *p* p p p p p **Conclusions: Conclusions**: Marijuana use, deviant behavior and risk preference all decreased over time among adolescents, yet there is evidence that decreases are not consistent across genders. Understanding changes in the social environment and interactions among youth may provide insight into these shifting population patterns.**Financial Support:** Funding: NIH grant R25GM062454 (Abraido-Lanza), 1R01DA03766 (Martins).

Abstract - ID: 617 **Author(s):** Sean Murphy **(Presenter)**, Weill Cornell Medicine

Donald Shepard, Brandeis University

Tyler Morrill, Brandeis University

Mayada Saadoun, Brandeis University

Bulat Idrisov, Boston University School of Medicine **Title:** Implementation of methadone therapy for opioid use disorder in Russia – a modeled cost-effectiveness analysis **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Policy **Aims:** Opioid agonist therapy using methadone has been shown to be effective for the treatment of opioid use disorder (OUD) among people who inject drugs (PWID), and is recommended as essential by the WHO to curtail the growing HIV epidemics among key populations. Yet, despite growing rates of OUD and HIV it has not been implemented in Russia. The aim of this paper is to estimate the cost-effectiveness attributable to the hypothetical introduction of methadone therapy for adults with a diagnosed OUD. **Methods:** We modeled the cost and disability adjusted life years (DALYs) averted over a 10-year horizon, associated with the provision of methadone therapy for a hypothetical, unreplenished cohort of Russian adults with an OUD, in comparison to the standard therapies at narcology hospitals. Four coverage scenarios were modeled, with methadone treatment rates (among adults with an OUD) ranging from 3.1% to 55%. All costs were converted to 2015 US Dollars. Costs and DALYs occurring beyond one year were discounted at the recommended yearly rate of 3% to account for time preference. **Results:** Providing methadone therapy to as few as 3.1% of adults with OUD results in a present value of almost 50,000 DALYs averted over 10 years at a cost of just over $17 million USD. Expanding the services to 55% of the OUD population results in present value estimates of almost 900,000 DALYs averted at a cost of roughly $308 million USD. The present-value cost-per-DALY-averted for was $343. **Conclusions:** Based on the cost-effectiveness thresholds recommended by the WHO this analysis indicates that implementing methadone therapy for OUD in Russia would be “highly cost-effective”. **Financial Support:** National Institute of Drug Abuse INVEST International Program; Center for Health Economics of Treatment Interventions for Substance Use Disorder, HCV, and HIV (P30DA040500).

Abstract - ID: 618 **Author(s):** Amanda Price **(Presenter)**, University of Texas Medical Branch

Sonja Stutz, University of Texas Medical Branch

Noelle Anastasio, University of Texas Medical Branch

Kathryn Cunningham, University of Texas Medical Branch **Title:** DREADD-induced activation of the insular cortex suppresses high fat food intake in a binge eating disorder paradigm **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Other (specify) **Other Drug Category:** Non-Drug Reward (High Fat Food) **Topic:** Neurobiology **Aims:** Excessive intake of food in a discrete period of time, when not physically hungry, is a major characteristic of binge eating disorder (BED). The insular cortex (IC), known to be a node in the neural circuitry that regulates intake of abused drugs and reactivity to drug-associated cues, may play a critical role in modulating other disorders with an addictive dimensionality, such as BED. The objective of this study was to determine if the IC regulates hedonic and/or homeostatic food intake in a novel BED paradigm. Using DREADD (Designer Receptors Exclusively Activated by Designer Drugs) technology to selectively and reversibly activate IC neurons, we tested the hypothesis that increased activation of IC neurons alters hedonic, but not homeostatic, feeding behavior.**Methods:** Male Sprague-Dawley rats (n=24) received bilateral infusions of adeno-associated virus containing the CAMKIIa-hM3D(Gq)-mCherry DREADD construct into the IC, which allowed for selective activation of the IC after administration of clozapine N-oxide (CNO). Rats were given exclusive access to high fat (HF) diet chow (45% fat by kcal) for one week and then retained on normal diet chow (17% fat by kcal) for the remainder of the study. Intake of HF or normal diet was assessed in 2-hr sessions in both free-feeding and 24-hr food-restricted states to test hedonic and homeostatic intake, respectively, after vehicle or CNO (2 mg/mL, IP) treatment. **Results:** Activation of the IC suppressed HF, but not normal, diet intake in a free-feeding state ($p < 0$ .05, two-way repeated measures ANOVA). Activation of the IC did not alter normal or HF diet intake in a food-restricted state. **Conclusions:** These results support the hypothesis that the IC is involved in hedonic, but not homeostatic, intake of food. Overall, these results suggest that the IC may be a critical node in BED. **Financial Support:** T32DA07287, F30DA042617, P50DA033935, K05DA020087

Abstract - ID: 619 **Author(s):** Maureen Stewart **(Presenter)**, Brandeis University

Constance Horgan, Brandeis University, Heller School for Social Policy and Management

Sharon Reif, Brandeis University, Heller School for Social Policy and Management

Deborah Garnick, Brandeis University

Brooke Evans, Brandeis University

Timothy Creedon, Brandeis University **Title:** Behavioral health provider network structures and adequacy standards in private health plans **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** All drug and alcohol **Topic:** Treatment **Aims:** Health plans have long used provider networks as one way to manage access to and quality of care and recently have developed new approaches, such as narrow and tiered networks. At the same time, the ACA and other reforms require standards to ensure the adequacy of provider networks. This study aimed to explore trends in network management and adequacy standards for drug and alcohol treatment. **Methods:** Data are from a nationally representative survey of private U.S. health plans regarding provision of drug, alcohol and mental health services in 2014, following implementation of parity and health reform legislation. The response rate was 80%. The survey included 274 health plans and 705 commercial products.**Results:** Over half of products utilized narrow networks comprised of selected high-value providers for medical care, while 4% employed narrow networks for both medical and behavioral care. Networks with two or more tiers based on quality, cost or other criteria were used in about 25% of products for primary care or specialty medical care, but by only 3% of products for behavioral health care. The adequacy of specialty behavioral provider networks was reported to rely on explicit standards. All health plan products tracked complaints about their specialty provider networks. **Conclusions:** Narrow and tiered provider network use was much more prevalent for medical care than for behavioral health care. Standards to assess the adequacy of networks are essential, but a more nuanced approach may be important to explore if access to behavioral health providers is adequate.

Financial Support: NIDA R01 DA029316 and NIAAA R01 AA010869, P30 DA035772

Abstract - ID: 620 **Author(s):** Elizabeth Pitts **(Presenter)**, Emory University

Shannon Gourley, Emory University **Title:** Regulation of goal-directed action selection by cocaine, MDMA, and orbitofrontal BDNF-trkB **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Adolescent **Aims:** Cocaine dependence is characterized by compulsive drug use and maladaptive decision-making. Adolescents are particularly vulnerable to the effects of cocaine. Subchronic cocaine exposure during adolescence, but not adulthood, results in a bias towards stimulus-driven habits in mice, and this bias persists into adulthood. Changes in Brain-derived Neurotrophic Factor (BDNF) in the orbitofrontal prefrontal cortex (oPFC) could underlie, in part, this habit bias. We will examine the role of oPFC BDNF in decision making and whether strategies that stimulate cortical BDNF systems could be protective. **Methods:** Here we examine oPFC BDNF levels following MDMA (n=5-9/group) administration using ELISA and Western Blots. We also utilize viral-mediated gene transfer to interfere with the activity of BDNF's high-affinity receptor trkB selectively in the oPFC (n=5-8/group) or administer cocaine during early adolescence (P31-35). We then examine effects on decision-making strategies in an instrumental contingency degradation task. Additionally, we administer MDMA (n=12/group) or 7,8-dihydroxyflavone (7,8-DHF; n=8/group), a trkB agonist, immediately following instrumental contingency degradation. Behavioral data are analyzed using ANOVAs and BDNF expression is analyzed using student t-tests. **Results:** Manipulations of oPFC trkB activity induced habit-like behavior in an instrumental contingency degradation task. MDMA increases BDNF levels in the oPFC, but not the amygdala or dorsal striatum, and also "breaks" habits resulting from adolescent cocaine exposure. Interfering with trkB activity in the oPFC blocks MDMA-mediated rescue of goal-directed decision making. Finally, 7,8- DHF also reverses cocaine-induced habits. **Conclusions:** The presented data suggests that oPFC BDNF activity is necessary for flexible goal-directed decision making and that BDNF-trkB systems are a potential point of intervention in combatting maladaptive decision making following repeated cocaine exposure. **Financial Support:** DA036737 and DA042358

Abstract - ID: 621 **Author(s):** Sharon Reif **(Presenter)**, Brandeis University, Heller School for Social Policy and Management

Maureen Stewart, Brandeis University

Margot Davis, Brandeis University

Torres Maria, Brandeis University

AnMarie Nguyen, Brandeis University

Dominic Hodgkin, Brandeis University, Heller School for Social Policy and Management

Constance Horgan, Brandeis University, Heller School for Social Policy and Management **Title:** Paying clinicians for program-level performance – early results from an RCT **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** All drug and alcohol **Topic:** Treatment **Aims:** Pay-for-performance (P4P) may be more effective in substance use treatment settings when the incentive is passed through to the clinician, with the potential to more directly influence clinician behavior that can improve quality of care. Provider incentives are common in the broader healthcare arena (e.g., physician payments), but are rare in substance use disorder treatment. Maine has an incentive structure in place at the program level, which we recently evaluated. On top of that P4P structure, we created a randomized controlled trial to test incentives paid directly to clinicians for program-level performance. **Methods:** Twelve outpatient programs were randomized into clinician group incentive (CGI) and non-CGI groups; about 45 individual clinicians and front-line staff in the CGI programs consented to participate, representing most clinicians at the agencies. We rewarded clinicians for the same access (waiting time) and retention (4+ sessions and 90 days in treatment) measures that Maine used at the program level, with rewards calculated based on the amount of improvement and reaching a target. All clinicians in a program received the same reward (if any), adjusted for FTE level. **Results:** We found that all programs made improvements or reached a target for at least one measure, although patterns varied by program, measure and quarter. Payments ranged from $30 to $450 per clinician in a given quarter. Difference-in-difference analyses will examine change over time in rewarded measures, compared to the non-CGI group. **Conclusions:** We find that the flexible design of incentives mattered, as some programs did not reach targets, and some did not improve. Performance measures did not consistently improve across or within programs, and sometimes became worse. These preliminary results suggest that clinicians will endeavor to improve their performance when incentives directly paid to them are in place. **Financial Support:** Supported by NIDA R01 DA033402

Abstract - ID: 622 **Author(s):** Sherri-Chanelle Brighthaupt **(Presenter)**, Johns Hopkins University

Renee Johnson, Johns Hopkins Bloomberg School of Public Health, Department of Mental Health

Julie Johnson, Johns Hopkins Bloomberg School of Public Health **Title:** Alcohol control policies and youth past 30-day marijuana and heavy marijuana use in 45 states, 1991- 2011 **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Epidemiology **Aims:** To assess associations between state alcohol control policies (ACP) enacted to reduce underage drinking and youth past 30-day marijuana and heavy marijuana use. We hypothesized that ACPs prohibiting underage possession, consumption, and purchase of alcohol, as well as higher alcohol taxes would be associated with greater odds of youth marijuana use.**Methods:** This study used state-level Youth Risk Behavior Survey data of 9th-12th grade students in 45 states from 1991-2011 (N=715,014) and state-level ACP data from the Alcohol Policy Information System from 2011. We conducted multivariable (adjusted for state, year, and individual characteristics) logistic regression analyses to examine associations between seven state enacted ACPs and youth past 30-day marijuana use and heavy marijuana use ≥20 in past 30-days) behaviors. **Results:** Consistent with hypotheses, study results found that more restrictive ACPs prohibiting underage: possession (OR=1.46, p**Conclusions:** Youth in states with more restrictive underage possession and consumption ACPs have higher odds of past 30-day marijuana use, while youth in states with higher alcoholic beverage taxes (beer, wine, and spirits) and the more restrictive underage purchase of alcohol ACP have lowered odds of past 30-day marijuana use. **Financial Support:** This research was supported by Grant 5F31DA036923-02 from the National Institute on Drug Abuse (PI: Julie Johnson) and Grant 4T32DA007292-24 from the National Institute on Drug Abuse (PI: Renee Johnson).

Abstract - ID: 623 **Author(s):** Karilynn Rockhill, Rocky Mountain Poison and Drug Center

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Kevin Patrick May, Rocky Mountain Poison and Drug Center

Zachary Margolin **(Presenter)**, Rocky Mountain Poison and Drug Center

Richard Dart, Rocky Mountain Poison and Drug Center

Jody Green, Rocky Mountain Poison and Drug Center **Title:** Prevalence of illicit drug use: Survey of non-medical use of prescription drugs program compared to NSDUH **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Epidemiology **Aims:** To compare populations and illicit drugs use estimates reported in two independent surveys: the Survey of Non-Medical Use of Prescription Drugs (NMURx), and the National Survey for Drug Use and Health (NSDUH)**Methods:** NMURx is an online survey of non-medical use (NMU) of prescription drugs and illicit drug use among US adults age 18+; post-stratification weights were applied to 3Q16 data to reflect the distribution of adults in the US. Responses were compared to 2014 NSDUH data, a national survey measuring drug use. Prevalence and 95% confidence intervals (CI) were calculated for demographics and lifetime and past year illicit drug use (marijuana, cocaine powder, crack cocaine, ecstasy, GHB/GBL, heroin, and ketamine).**Results:** NMURx represents 247,773,709 adults; NSDUH represents 240,248,111 adults. Similar distributions of age and gender were found; NMURx had a higher proportion of non-Hispanic (NH) Whites and incomes ?$50,000 and lower proportion of NH Blacks and Hispanics. NMURx compared to NSDUH estimated a similar prevalence of any past year illicit use [14.6 (14.1-15.0) vs. 14.0 (13.6-14.4), respectively] and lower prevalence of lifetime use [38.0 (95%CI: 37.4-38.5) vs. 47.8 (47.1-48.4)]. For each illicit drug, past year use was higher in NMURx by ?2 percentage points except cannabis, which was similar.**Conclusions:** NMURx and NSDUH estimate national prevalence of illicit drug use, although survey designs and questions vary. These data are congruent for age, gender, and recent illicit drug use. Both data provide valuable insight into drug use in the US.**Financial Support:** RADARS System is supported by subscriptions from pharmaceutical manufacturers. It is the property of Denver Health and Hospital Authority, a subdivision of the State of Colorado, whom retains exclusive ownership of all data. Subscribers do not participate in data collection, analysis, and do not have access to data.

Abstract - ID: 624 **Author(s):** Grace Kong **(Presenter)**, Yale School of Medicine

Jessica Barrington-Trimis, University of Southern California

Margaret Mayer, Yale School of Medicine

Adam Leventhal, University of Southern California

Rob McConnell, University of Southern California

Suchitra Krishnan-Sarin, Yale School of Medicine **Title:** Marijuana use and cigar use initiation: Prospective studies of adolescents **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Adolescent **Aims:** Adolescents often use marijuana and cigars concurrently. However, whether marijuana use is associated with future cigar use is unexplored, so we examined this association using prospective survey data of high school students. **Methods:** We pooled data from two prospective cohort studies (N=6251) of high school students (Happiness & Health Study [H&H] 2013-15 [n=3396]; California) and (Yale Survey Study 2013-14 [n=1404]; Connecticut). Logistic regression analyses examined whether marijuana use at Time 1 predicted cigar use initiation at Time 2 in a sample restricted to never cigar users at Time 1, controlling for grade, sex, race/ethnicity, study site, and cigarette use.**Results:** Among never cigar users at Time 1 (n=3341), 14.6% (n=488) reported ever using marijuana. An adjusted logistic regression model showed that marijuana use at Time 1 was associated with subsequent cigar use initiation (AOR=8.09, 95% CI: 5.69, 11.48). Specifically, among never users of cigars at Time 1, 19.3% of marijuana users initiated cigar use, relative to 2.5% of never marijuana users who initiated cigar use. Among marijuana users at Time 1, those who initiated cigar use relative to those who did not initiate cigar use were more likely to be cigarette smokers (50.0% vs. 29.7%, p£.001); no other differences were observed**Conclusions:** Marijuana use was associated with subsequent cigar use initiation, indicating that youth who initiate drug use with marijuana may be at risk for cigar use. Future studies should explore the pathways by which marijuana use leads to cigar use to inform tobacco regulations. **Financial Support:** P50CA180905, P50DA036151, P50DA009241, R01DA033296

Abstract - ID: 625 **Author(s):** Arit Harvanko **(Presenter)**, University of Kentucky

Andrea McCubbin, University of Kentucky College of Nursing

Kristin Ashford, University of Kentucky College of Nursing

Thomas Kelly, Universityof Kentucky College of Medicine **Title:** Perceived effects of electronic cigarette ingredients **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Other **Aims:** Electronic cigarette (EC) use is a highly prevalent phenomenon with undetermined effects on health. Liquids used in ECs are primarily comprised of some ratio of two 'carrier' ingredients called propylene glycol (PG) and vegetable glycerin (VG), typically nicotine, and undisclosed flavoring additives. To determine the perceived effects of the most common EC ingredients (PG and VG), and other EC usage characteristics, a nationwide Internet survey was conducted.**Methods:** Adults from a non-EC internet marketplace who were US citizens and used ECs as their primary source of nicotine completed a 46-question survey during the spring of 2016. **Results:** A total of 523 individuals (291 females, 55.6%), with an average age of 33.0 years (*SD*=10.2), completed the survey. Participants that "pay attention to" the amount of propylene glycol (PG) and vegetable glycerin (VG) in their EC liquids (*N*=239, 47.23%) reported typically using liquids with more VG (*m*=62.9%, *SD*=21.5) than PG (*m*=36.0%, *SD*=21.0). When asked to rate whether a series of common EC effects were more closely associated with PG or VG, participants indicated that PG causes significantly greater "dry mouth," "sore throat," "headache," and feeling "dizzy," while VG produces a "bigger cloud," "better smell," and "better taste." EC device characteristics included average of 3.1 volts (*SD*=2.0), 1.1 ohms (*SD*=.8), and 18.2 watts (*SD*=18.8), and average use of 22.9 ml (*SD*=26.0) of liquid per week at an average nicotine concentration of 9.1 mg/ml (*SD*=7.2). Multiple factors motivating liquid selection were rated on a scale from 0 (least important) to 100 (most important) and the most important factor was "good taste" (*m*=88.0, *SD*=13.6), followed by "availability" of the product (*m*=73.8, *SD*=13.6) and "decreased health risks, avoid certain ingredients" (*m*=73.4, *SD*=26.9). **Conclusions:** Key findings are that VG and PG are associated with different profiles of EC effects, greater concentrations of VG are typically used, and taste is the primary variable driving liquid selection. These findings suggest that PG and VG may have a significant role in EC abuse liability. **Financial Support:** This study was funded by the University of Kentucky

Abstract - ID: 626 **Author(s):** Anahita Bassir Nia **(Presenter)**, Icahn School of Medicine at Mount Sinai

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Igor Galynker, Icahn School of Medicine at Mount Sinai

Yasmin Hurd, Icahn School of Medicine at Mount Sinai **Title:** Synthetic cannabinoid use in relation to psychosis: Evaluation of the role of stress and immune systems **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Marijuana/Cannabinoids **Topic:** Behavior **Aims:** Synthetic cannabinoids (SC) are more potent and efficient cannabinoid receptor agonists compared to THC (tetrahydrocannabinol), the main psychoactive substance of natural cannabis. There is increasing evidence of the association between use of SCs and psychosis. However, these studies are mostly limited to self-report evaluations. In addition, though cannabinoids widely affect immune and stress responses, there is lack of studies on the interaction of these systems with psychosis in SC users. **Methods:** The first phase of our project was a retrospective chart review to determine the potential association between self-report SC use and psychosis. The second phase is a cross-sectional study of patients with psychotic symptoms admitted to an inpatient unit in a period of six months. After informed consents, blood and urine samples were obtained for toxicology, cortisol and interleukins levels. A comprehensive psychiatric evaluation was conducted to evaluate clinical profile of participants. Regression analysis was performed to evaluate the association between the use of SCs with psychosis and its interaction with the level of immune and stress biomarkers. **Results:** The data from the first phase verified a significant association between self-report SC use and psychosis compared to cannabis use (Odds ratios 4.35 and 2.64, respectively). Preliminary results from the second phase demonstrate similar demographic factors and SC use among subjects. Life history of SC use was reported in 25% and cannabis in 62% of participants. Both natrual and synthetic cannabinoid users had less positive and more negative symptoms of psychosis, compared to non-users. We will present results from the toxicology, stress and immune markers in association with clinical symptoms. **Conclusions:** There is little known about the psychiatric profile of psychotic patients with SC use. This study would provide information about the specific SCs use in association with psychosis severity and related factors. **Financial Support:** This study is funded by Mount Sinai health system.

Abstract - ID: 627 **Author(s):** Suchitra Krishnan-Sarin **(Presenter)**, Yale School of Medicine

Grace Kong, Yale School of Medicine

Stephanie O'Malley, Yale School of Medicine

Barry Green, Yale University

Eugenia Buta, Yale University **Title:** Examining menthol and nicotine effects in youth using e-cigarettes **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Adolescent **Aims:** The presence of characterizing flavors, including menthol, has been shown to increase the appeal of tobacco product among youth. However, there is limited evidence on whether flavors are by themselves reinforcing and whether they alter subjective effects of nicotine. We aimed to conduct a study of the interactive effects of menthol and nicotine administered via e-cigarettes among youth (ages 16-20). **Methods:** A chemosensory pilot study (n=16) determined the optimal doses of menthol that produced low and high cooling effects. 60 non-treatment seeking e-cigarette users (50% female, 18.8±0.8 years old, baseline cotinine= 961±577) were randomized into one of three nicotine dose groups (0 mg/ml, 6 mg/ml, 12 mg/ml) and participated in three laboratory sessions during they received the nicotine dose along with one of three doses of menthol (0, 0.5%, 3.5%) via V2 e-cigarettes containing e-liquids purchased from Pace Engineering Concepts. Each session, held at least two days apart, and conducted after overnight abstinence from tobacco products, consisted of two periods. The first period (45 mins) consisted of 3 e-cigarette bouts (10 puffs with 30 secs inter-puff interval) every 10 mins, and the second period (30 mins) was an ad-lib self-administration period. During the first period we assessed changes in e-cigarette craving, taste, liking and nicotine withdrawal symptoms. **Results:** For craving, there was a main effect of menthol dose ($p < 0.001$; higher menthol doses produced greater craving), but no nicotine*menthol interaction was observed. For taste, there was a main effect of menthol dose ($p < 0.001$) and a nicotine*menthol interaction ($p < 0.05$); at 12 mg nicotine both low and high doses of menthol were rated as tasting better than no menthol. For e-cigarette liking there was a main effect of menthol dose ($p < 0.001$) and a trend towards a nicotine*menthol interaction ($p=0.06$). No significant effects were observed on nicotine withdrawal symptoms. Evidence from the ad-lib period will also be presented. **Conclusions:** These preliminary results suggest that both low and high menthol doses administered via e-cigarettes are by themselves reinforcing, and that they also alter the subjective taste and liking of e-cigarettes containing nicotine. **Financial Support:** Research reported in this abstract was supported by Yale TCORS grant P50DA036151 from NIDA and the FDA Center for Tobacco Products. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration

Abstract - ID: 628 **Author(s):** Frances Kay-Lambkin **(Presenter)**, University of Newcastle

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Kathleen Brady, Medical University of South Carolina

Mark Deady, University of New South Wales

Jenny Geddes, University of Newcastle **Title:** A randomised controlled trial of online and social networking interventions in youth with alcohol use disorders and comorbid depression (the iTreAD Study) **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Treatment **Aims:** This paper will report on the use of novel digital tools (namely Facebook and social networking) in the largest trial to date of online treatments for comorbid depression and binge drinking in young Australians. The iTreAD study aimed to examine the effect of combining social networking with online psychosocial treatment for young people with alcohol use disorder and comorbid depression. We hypothesize that the combination of social networking and online psychosocial treatment will be associated with increased use of the online treatment program, and superior reductions in alcohol use and depressive symptoms in young people. **Methods:** Participants aged 18-30 years were recruited via Facebook to a study comparing online monitoring for alcohol use disorder and comorbid depression, with online automated cognitive behaviour therapy, with a clinician-moderated online social networking application (Breathing Space) over 12-months. Followinf baseline assessmnet, participants were randomized to treatment condition, with Independent follow-up occurring at 6-, 12-, and 18-months post-baseline.**Results:** Of the 3,700 young people who completed screening data for the trial, 426 participants met eligibilty criteria and commenced the study. On average, Breathing Space (a purpose-built social networking site) participants accessed the site 51 times over 12 months (5-6month, maximum 1,320), posted an average of 3 times (maximum 23), provided an average of 12 comments, and made an average of 7 empathic responses per participant. Young people reported that being able to post about their thoughts and feelings in a non-judgmental and “safe” environment was beneficial, and preferred to “real time” support offered via telephone or other modes of delivery. Participants randomized to the Breathing Space also completed significantly more modules of the online automated CBT intervention than participants in the other conditions (48% vs. 28% completed 2 or more modules). Over time, significant reductions in alcohol use were reported by participants in all conditions ($p=0.01$), with the largest effect observed among those in the Breathing Space condition. Significant reductions in depression were also observed across all treatment conditions ($p=0.01$). 12-month data relating to treatment outcomes, and satisfaction with treatment will be discussed**Conclusions:** The past decade has seen the proliferation of e-health applications across disease categories. With the emergence of the next generation of Internet-based applications, Web 2.0, there are increasing opportunities for integrating these technologies into treatment approaches for comorbid mental health and alcohol/other drug use problems, in a way that engages and empowers like never before. Web 2.0 platforms show promise for delivering treatment to traditionally hard-to-reach populations (young people, and comorbid mental health and addiction), and may enhance uptake of online psychosocial interventions.**Financial Support:** The iTreAD study was funded by the National Health and Medical Research Council (NHMRC) of Australia project grant. Frances Kay-Lambkin is funded by a NHMRC Senior Research Fellowship.

Abstract - ID: 629 **Author(s):** Erin Winstanley **(Presenter)**, West Virginia University

Yifan Zhang, West Virginia University

Rebecca Mashni, University of Cincinnati

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Jonathan Penm, University of Cincinnati

Jill Boone, University of Cincinnati

Cameron McNamee, State of Ohio Board of Pharmacy

Neil MacKinnon, University of Cincinnati **Title:** Mandatory use of a prescription drug monitoring program and impact on opioid dispensing **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Policy **Aims:** The purpose of this study was to determine whether Ohio House Bill 341, which mandated the use of Ohio's Prescription Drug Monitoring Program (PDMP), was an effective regulatory strategy to change opioid prescribing patterns in Ohio. Ohio HB341 required prescribers to check the PDMP prior to initiating a prescription for opioids or benzodiazepines and subsequently re-checking the PDMP every 90 days for patients who were maintained on these medications. We hypothesized that mandating the use of the PDMP would reduce the quantity of opioids dispensed and doctor shopping after the legislation became effective in April 2015**Methods:** A secondary analysis of Ohio's PDMP records from January 2010 to March 2016 was conducted and Stata Version 14.2 was used to analyze the data. An interrupted time series analysis (ITSA) was used to determine whether there was a statistically significant change in the amount of opioids dispensed after the effective date of HB 341. The Ohio Board of Pharmacy defines doctor shopping as individuals that had five or more prescribers for an opioid and/or benzodiazepine within one month and this definition was used in this analysis. Given that hydrocodone and tramadol were rescheduled during the time frame, ITSA models were run separately for hydrocodone, tramadol and oxycodone. Oxycodone served as the control, as it was not subject to any schedule changes or regulatory policies during the time period. **Results:** Between 2010 and 2016, there were reductions in the quantity of opioids dispensed per capita, as well as reductions in the proportion of opioids dispensed at ? 80 MME (morphine milligram equivalence). In first quarter of 2010, the quantity of opioids (solid doses) per capita was 0.25 and in the first quarter of 2016 the quantity had reduced to 0.22 per capita. The proportion of prescription opioids (pain only) dispensed at ? 80 MME was 11.5% in the first quarter of 2010 and 10.0% in the first quarter of 2016. In 2010, there were 14,158 individuals with evidence of doctor shopping and by 2015 that number was reduced to 3,995. The primary ITSA model found that the quantity of opioids dispensed did not decline after the passage of HB 341 in April 2015. There were an estimated 293,224 fewer opioids dispensed per month after HB341 became effective, however this decline was not statistically significant (p=0.07). The secondary ITSA models, found that there was a statistically significant reduction in hydrocodone dispensed after it was re-scheduled but not after the passage of HB 340**Conclusions:** In conclusion, there was a 5% decrease in the quantity of opioids dispensed and reductions in doctor shopping were observed. The quantity of opioids dispensed in Ohio had started to decline prior to mandating the use of the PDMP. Rescheduling of opioids may be more effective at changing prescribing patterns, than mandating the use of the PDMP.

Financial Support: Ohio Board of Pharmacy

Abstract - ID: 630 **Author(s):** Patricia Simon **(Presenter)**, Yale School of Medicine

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Meghan Morean, Oberlin College

Dana Cavallo, Yale School of Medicine

Suchitra Krishnan-Sarin, Yale School of Medicine **Title:** Socioeconomic status and adolescent e-cigarette use: The mediating role of e-cigarette advertisement exposure **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Nicotine/Tobacco **Topic:** Epidemiology **Aims:** Among adolescents, low socioeconomic status (SES) is associated with greater exposure to cigarette advertising and cigarette use, yet these associations are not well understood for e-cigarettes. This study examined exposure to e-cigarette advertisements as a mediator of the relationship between SES and adolescent e-cigarette use. **Methods:** Adolescents (N=3473; 51% Female) from 8 high schools in Connecticut completed an anonymous survey in Spring 2015. Path analysis in Mplus examined whether the total number of channels of recent e-cigarette advertising exposure mediated the association between SES (measured by the Family Affluence Scale) and frequency of e-cigarette use. This model clustered for school and controlled for other tobacco product use, age, gender, race/ethnicity and perceived social norms for e-cigarette use**Results:** The hypothesized mediation model was supported (B = 0 .06, SE = 0.03, 95% CI 0.01, 0.11). Specifically, high SES, relative to low SES, was associated with greater recent advertising exposure (B = 0.71, SE = 0.16, 95% CI 0.40, 1.03), which was in turn associated with greater frequency of e-cigarette use (B = 0.08, SE= 0.03, 95% CI 0.02 .15). **Conclusions:** Higher SES is associated with greater exposure to e-cigarette advertising, suggesting that regulations to reduce youth exposure to e-cigarette advertisement may be especially relevant to higher SES youth. Future research should examine the types of advertisements targeting different SES groups. **Financial Support:** This research reported in this publication was supported by NIH grants P50DA009241 and P50DA036151 (Yale TCORS) and the FDA Center for Tobacco Products (CTP). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration.

Abstract - ID: 631 **Author(s):** Joseph Goulet **(Presenter)**, Veterans Affairs

Jeanette Tetrault, Yale University

Amy Justice, Yale University

William Becker, Yale University **Title:** Pain among individuals with HCV and substance use disorders: Impact of direct-acting antiviral treatment **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Other (specify) **Other Drug Category:** Medical complications, HCV comorbidity **Topic:** Other **Aims:** Chronic hepatitis C virus infection (HCV) and pain often co-occur and there appears to be a causal relationship between the two. Direct-acting antiviral (DAA) therapies for HCV have led to markedly improved treatment accessibility, adherence, and treatment completion rates. These improvements are likely to have durable effects on HCV-related complications and mortality. Still, patients with chronic pain may be more likely to accept DAA treatment if it improves pain and providers may be more willing to consider patients as potential treatment candidates; in general, potential symptom relief is a potent motivator for treatment acceptance. We hypothesized that DAA treatment would be associated with decreased pain among patients with chronic HCV. **Methods:** Within the Veterans Aging Cohort Study, we identified patients with an HCV diagnosis and evidence of DAA initiation from 2013 – 2016. We limited the sample to patients with three or more pain numerical rating scale (NRS) scores in the year prior to treatment that averaged ? 4, indicating moderate-to-severe pain; 4 or more dispensed DAA prescriptions; and three or more post-treatment NRS scores. We used T-test to compare mean pre- and post-treatment NRS.**Results:** We identified 390 patients meeting eligibility criteria: 98% were male; 59% black and 39% white; mean age at DAA initiation of 61 years; 68% had a substance use disorder diagnosis; 26.5% had an alcohol use disorder diagnosis; 30.3% had both. Average decrease in NRS from pre- (mean=5.5) to post-DAA (mean=4.9) was 0.6 ($p < 0$ .0001). **Conclusions:** DAA treatment is associated with clinically and statistically significant decreases in pain among patients treated for HCV, most of whom had substance use disorders. These data add to the growing benefits of treating patients with chronic HCV with DAAs and may enhance motivation for treatment among patients with chronic pain. **Financial Support:** Veterans Health Administration CRE 12-012 (Goulet), NIH/NIAAA (U10 AA013566; Tetrault, Justice, Becker)

Abstract - ID: 632 **Author(s):** Brenda Gannon **(Presenter)**, University of Texas Health Science Center

Kayla Galindo, University of Texas Health Science Center

Melson Mesmin, University of Texas Health Science Center

Kenner Rice, NIH, NIDA

Gregory Collins, University of Texas Health Science Center **Title:** Abuse-related effects of mixtures of cocaine and caffeine in rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Stimulants **Topic:** Drug Interactions **Aims:** Cocaine is often mixed with other pharmacologically active compounds (e.g., caffeine) before sale. Although caffeine is probably added because it is legal, cheap, and can mimic some of the effects of cocaine, there is also evidence to suggest that caffeine may enhance some of the abuse-related effects of cocaine. We aimed to determine whether caffeine alters the reinforcing effects of cocaine. **Methods:** Full dose-response curves for cocaine (0.032-1.78 mg/kg/inf) and caffeine (0.1-1.78 mg/kg/inf) were generated in male Sprague-Dawley rats responding under a progressive ratio (PR) schedule of reinforcement. Cocaine and caffeine were mixed at three fixed ratios (3:1, 1:1, and 1:3) relative to the mean ED_{50} for each drug to maintain responding. Dose addition analyses were used to define the predicted additive dose-response curve for mixtures of cocaine and caffeine. Dose-response curves for the 3:1, 1:1, and 1:3 mixtures were obtained under the PR schedule of reinforcement and compared to those predicted for a strictly additive interaction**Results:** Cocaine and caffeine each maintained dose-dependent responding, but cocaine was a more effective reinforcer than caffeine. Although high levels of responding were maintained by each of the mixtures, the potency and effectiveness of the cocaine:caffeine mixtures did not differ from the effect levels predicted for an additive interaction**Conclusions:** Since the interactions between cocaine and caffeine were found to be additive, these studies suggest that caffeine does not enhance the reinforcing effects of cocaine when both are administered in the same preparation. Further research is needed to determine whether differential interactions exist for other abuse-related or toxic effects of these drug preparations. **Financial Support:** This study was supported by grants R01 DA039146 and T32DA031115 from the NIH and NIDA and also by the NIH IRP of NIDA and NIAAA.

Abstract - ID: 633 **Author(s):** Francesco Leri **(Presenter)**, University of Guelph

Stephen Daniels, University of Guelph

Mick Pratt, University of Guelph **Title:** Effects of steady-state methadone exposure on hedonic reactivity and related gene expression in laboratory rats **Abstract Category:** Original Research **Abstract Detail:** Animal Study **Drug Category:** Opiates/Opioids **Topic:** Behavior **Aims:** It is well known that central opioid systems regulate hedonic responses to incentive stimuli. What is less clear, however, is how these responses are affected by chronic, steady-state, activation of mu-opioid receptors that is characteristic of maintenance on agonist drugs such as methadone. **Methods:** To explore this question, male Sprague-Dawley rats were implanted with methadone-filled mini-pumps (control, 10 and 30 mg/kg/day; n = 12/15 each), and calories obtained from eating rat chow and drinking a high fructose corn syrup (HFCS) solution were monitored over 13 days. During this period, taste reactivity to HFCS and spontaneous locomotor activity were also tested. Six days following removal of the mini-pumps, we quantified mu-opioid receptor (MOR) mRNA in the nucleus accumbens core and shell, D2 receptor (D2R) mRNA in the caudate-putamen (CP), and proopiomelanocortin (POMC) mRNA in the hypothalamus (HYP). **Results:** Methadone dose-dependently reduced body weight and calories obtained from chow, but increased caloric intake from HFCS. Interestingly, this effect on HFCS drinking was noted primarily during the initial few days of treatment, and could not be ascribed to changes in HFCS palatability or motor deficits. The CP and HYP of methadone-treated animals did not display the significant alterations in D2 and POMC mRNA levels, respectively, that were otherwise observed in control animals. No effects were noted on MOR mRNA expression. **Conclusions:** This study established that chronic steady-state methadone dose dependently increases consumption of a sweet incentive through mechanisms that do not involve alterations in palatability. This effect, however, was noted primarily during the initial period of drug exposure, and did not appear to be associated with changes in expression of genes involved in food consumption and reward seeking. In addition, during the methadone treatment period, rats consumed overall less calories and consequently lost weight. Therefore, these findings in rats suggest that possible increases in body mass index observed in opioid dependent subjects treated with methadone maintenance may not be directly caused by the effects of methadone on feeding and/or hedonic responses. **Financial Support:** This research was conducted with the support of the Ontario Brain Institute, funded in part by the Government of Ontario.

Abstract - ID: 634 **Author(s):** Kevin Patrick May, Rocky Mountain Poison and Drug Center

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Zachary Margolin **(Presenter)**, Rocky Mountain Poison and Drug Center

Richard Dart, Rocky Mountain Poison and Drug Center

Jody Green, Rocky Mountain Poison and Drug Center **Title:** Prevalence of non-medical use of prescription drugs in the United States in 2016 **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Polydrug **Topic:** Epidemiology **Aims:** The Survey of Non-Medical Use of Prescription Drugs (NMURx) Program was used to describe non-medical use (NMU) of prescription drugs among adults in the US. **Methods:** NMURx was administered online in 3Q2016 to adults (18+ years). NMU was defined as medication use without a doctor's prescription or for any reason other than what was recommended by a doctor. We applied post-stratification weights to data to reflect the distribution of adults in the US. Prevalence and 95% confidence intervals (CI) were calculated for demographics; lifetime use, lifetime NMU and past 90 day NMU of opioids, benzodiazepines, stimulant medications, and GABA analogues; and lifetime and past-year use of illicit drugs **Results:** A total of 30,522 adults, representing 247,773,709 US adults, completed NMURx. Prevalence of lifetime use was higher for opioids (62.9%; 95% CI: 62.3, 63.5) than benzodiazepines (22.7; 22.2, 23.2) and stimulants (12.0; 11.6, 12.4). Prevalence of lifetime NMU was higher for opioids (13.1; 12.7, 13.5) than benzodiazepines (3.4; 3.2, 3.6), stimulants (4.3; 4.0, 4.5), and GABA analogues (0.7; 0.6, 0.8). Prevalence of past-90 day NMU was higher for opioids (5.7; 5.4, 6.0) than benzodiazepines (1.0; 0.9, 1.2), stimulants (1.0; 0.9, 1.1), and GABA analogues (0.4; 0.3, 0.4). Among those reporting lifetime NMU of opioids, 66.3% (64.7, 67.9) report lifetime use of illicit drugs. **Conclusions:** While NMU of opioids, benzodiazepines, stimulants, and GABA analogues is reported by the general US adult population, NMU is highest for prescription opioids. Almost half of those who reported lifetime NMU of opioids reported NMU in the past 90 days. NMU of prescription opioids is common even among those that do not use illicit drugs. **Financial Support:** RADARS System is supported by subscriptions from pharmaceutical manufacturers. It is the property of Denver Health and Hospital Authority, a political subdivision of the State of Colorado, whom retains exclusive ownership of all data. Subscribers do not participate in data collection, analysis, and cannot access data.

Abstract - ID: 635 **Author(s):** Matt Webster **(Presenter)**, University of Kentucky

Megan Dickson, University of Kentucky

Michele Staton, University of Kentucky College of Medicine

Carl Leukefeld, University of Kentucky **Title:** Driving under the influence of benzodiazepines among high-risk rural women **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Sedative-Hypnotics **Topic:** Behavior **Aims:** Benzodiazepine use has been shown to negatively affect driving-related skills and increase crash risk, but there is limited research on benzodiazepine-impaired drivers, particularly in rural areas where illicit use is high. The present study adds to the limited research by examining benzodiazepine-impaired driving among high-risk rural women. Specifically, the current study compares the drug use, impaired driving, and other risk behaviors of rural women who drive under the influence of benzodiazepines to other rural women impaired drivers.**Methods:** As part of a study on drug use and high risk behavior among rural women, participants from three rural jails were randomly selected, screened, and consented. During a face-to-face baseline interview, participants were asked about their past year drug use, impaired driving, and other risk behaviors. Illicit benzodiazepine-impaired drivers (n=106) were compared to other impaired drivers (n=156) using t-tests and chi-square tests.**Results:** Although the two groups did not differ demographically, benzodiazepine-impaired drivers were more likely ($p < .05$) to have past year crack, methadone, Demerol, buprenorphine, and multiple drug use. They were also more likely ($p < .05$) to have driven under the influence of marijuana, opioids, and crack as well as drive impaired more frequently. Other risk behaviors that were more prevalent ($p < .05$) among benzodiazepine-impaired drivers included trading sex for money, having unprotected sex, and having a drug overdose. Other impaired drivers did not have a significantly higher prevalence on any dependent measure.**Conclusions:** Findings suggest that self-reported illicit benzodiazepine-impaired drivers may be more impaired and engage in more risk behaviors than other impaired drivers. Future research should examine patterns of benzodiazepine-impaired driving, including when used in conjunction with alcohol or other drugs which can result in greater impairment and crash risk. Implications for prevention and intervention of benzodiazepine- and other impaired driving will be discussed. **Financial Support:** NIDA R01DA033866

Abstract - ID: 636 **Author(s):** David Barondess **(Presenter)**, Michigan State University

Samantha J. Bauer, Michigan State University

Hsueh-Han Yeh, Michigan State University

James Anthony, Michigan State University **Title:** Sex differences in heroin use: United States, 2002-2014 **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Opiates/Opioids **Topic:** Epidemiology **Aims:** We acknowledge under-representation of daily heroin users in standard epidemiological field surveys. Instead, we aim to study sex differences at earlier stages, with focus on past-onset newly incident heroin users (PONIHU) in the community. We estimate male-female differences in incidence, and study persistence of heroin use among PONIHUs. **Methods:** For each National Survey on Drug Use and Health, 2002-2014, the study population was the United States (US) non-institutionalized population age 12+ years. These surveys yield a nationally representative sample of newly incident heroin users identified via computer-assisted self-interviews, including 1078 PONIHUs with onsets 13-24 months before assessment. Heroin incidence and Poisson count distributions for heroin-using days were estimated.**Results:** Females and males were equally likely to start using heroin and to persist. For example, among PONIHUs, we found 342/618 males and 252/460 females whose heroin use persisted into the 12-month interval before assessment (i.e., 55%). Means and variances for counts of heroin-using days did not differ appreciably by sex (K-S test $p>0.10$). **Conclusions:** Published counts of heroin users in treatment show a male excess, but these NSDUH estimates show no male-female differences in risk of starting to use, in persistence, or in Poisson distributions for number of days of heroin use. Acknowledging bias in survey estimates, we judge that male excess among treated cases must be traced to later differential stage-transitions (e.g., into daily use) or treatment barriers. The NSDUH continue to provide our best nationally representative samples of newly incident heroin users, deserving of study because they can become future heroin overdose victims, may advance to become heroin dependence cases, and generate newly incident users via person-to-person spread during a ‘honeymoon’ phase soon after onset of heroin use**Financial Support:** NIDA T32DA021129 & K05DA015799 (JCA)

Abstract - ID: 637 **Author(s):** Joy Gabrielli **(Presenter)**, Geisel School of Medicine/Norris Cotton Cancer Center

Mike Stoolmiller, Michigan State University

Zoe Brennan, Department of Biomedical Data Science at Dartmouth

James Sargent, Department of Biomedical Data Science at Dartmouth **Title:** Restrictive media parenting predicts alcohol-related attitudes and drinking onset in youth **Abstract Category:** Original Research **Abstract Detail:** Human **Drug Category:** Alcohol **Topic:** Adolescent **Aims:** To replicate and extend prior work on the predictive association between parental R-rated movie restrictions, alcohol-related attitudes and early-onset alcohol use. **Methods:** 6522 US youth aged 10-14 years completed a random digit dial telephone survey in 2003 (response rate = 32%) and were followed up every 8 months for 3 more surveys (wave 4 *N*=4575). Data for this study were restricted to baseline never drinkers (*N*=5803), and baseline and W4 data were used for analyses. Restrictive media parenting (RMP) was indicated by the question, "How often do your parents let you watch movies or videos that are rated R?" (never, once in a while, sometimes, all the time). R-rated movie exposure was identified through youth self-report of movie viewership. Alcohol-related attitudes were assessed through a combined measure of expectancies, willingness and intentions to drink. Alcohol use onset was obtained by the question, "Have you ever drunk alcohol that your parents did not know about?" (Yes/No). **Results:** By W4, 25% of participants had initiated alcohol use. Adjusting for sociodemographics, peer and parent drinking, baseline smoking status and personality characteristics (e.g., sensation seeking), a structural model with two latent parenting constructs: authoritative parenting and RMP revealed that RMP had a significant direct inverse path to alcohol-related attitudes and both parenting constructs had significant indirect paths through lower R-rated movie exposure (Model Fit: $?^2_{(9)}$ =122.879, *p* (0.040–0.054) =.047, CFI =.986, SRMR =.012). Data from a model with youth alcohol initiation as the outcome provided similar results. **Conclusions:** Results demonstrate consistent effects of RMP in reducing risk for youth alcohol use initiation and alcohol-related positive attitudes, independent from other parenting factors.

Financial Support: National Institutes of Health: CA077026 and AA021347 (Sargent); T32 DA037202 (Gabrielli)

Abstract - ID: 638

Author(s):

Noël Warren **(Presenter)**, Icahn School of Medicine at Mount Sinai
Stephanie Sillivan, Icahn School of Medicine at Mount Sinai
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Title: ELK1 is a key regulator of synaptic plasticity and heroin addiction

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Opiates/Opioids

Topic: Neurobiology

Aims: The abuse of opiate drugs has become an epidemic, emphasizing the need to identify the molecular pathophysiology of heroin abuse. Chronic heroin use is known to alter synaptic plasticity in brain regions relevant to addiction that can contribute to heroin-seeking behaviors. We have previously shown that phosphorylated ELK1, a transcription factor downstream of μ-opioid receptor signaling, is reduced in the striatum of human heroin abusers and linked to genetic polymorphism of the μ-opioid receptor. Additionally, the level of pELK1 negatively correlates with history of heroin intake in rats that self-administer heroin. The mechanism by which ELK1 contributes to heroin addiction is unknown. Previous work has shown that the cytoplasmic localization of ELK1 attenuates dendritic branching. We hypothesize that cytoplasmic, and thus unphosphorylated, ELK1 impairs synaptic function and increases heroin-seeking.

Methods: Striatal and cortical neurons were cultured from E18 Long-Evans rats and treated with morphine every other day from DIV8-14 or transfected with ELK1 vectors. Spine density was measured using confocal microscopy and NeuronStudio. To determine *in vivo* function, a peptide inhibiting ELK1 nuclear import, thereby increasing unphosphorylated cytoplasmic levels, was infused into the accumbens of rats prior to a cue-induced relapse heroin self-administration session.

Results: Consistent with the literature, we show that chronic morphine exposure reduces striatal spine density (ANOVA, $p < 0.001$). Overexpression of unphosphorylated ELK1 reduces spine density (t-test, $p < 0.05$), recapitulating the chronic heroin phenotype. Furthermore, infusion of the inhibitory ELK1 peptide increases heroin-associated lever pressing (t-test, $p < 0.05$).

Conclusions: Our data suggests that cytoplasmic unphosphorylated ELK1 alters synaptic plasticity and increases heroin-seeking behavior. These findings provide neurobiological insights suggesting an important link of ELK1 cellular localization to heroin addiction vulnerability.

Financial Support: Supported by grants 5T32DA007135 and DA015446.

Abstract - ID: 639

Author(s):

Carla López Núñez, Private Technical University
Roberto Secades Villa, University of Oviedo
Sara Weidberg, University of Oviedo
Alba González Roz **(Presenter)**, University of Oviedo

Title: Contingency management for abstinence vs. contingency management for shaping cessation among treatment-seeking smokers in a community setting

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: Aim: Contingency management (CM) has been shown to be effective in reducing smoking consumption. Previous literature has suggested that reinforcing the closer approximations to smoking abstinence could shape smokers' behavior when reducing cigarette consumption. The aim of this study was to analyze whether a Cognitive-Behavioral Treatment (CBT) plus CM for Shaping cessation (CMS) increases the efficacy of CBT plus CM for Abstinence (CMA) among treatment-seeking patients from the general population.

Methods: Methods: A total of 110 patients were randomly assigned to CBT+CMA (N=55) or CBT+CMS (N=55). CMA included a voucher program through which nicotine abstinence was reinforced on a schedule of escalating magnitude of reinforcement with a reset contingency. Additionally, CMS reinforced the closer approximations to smoking abstinence. Self-reported smoking status was confirmed with both carbon monoxide (CO) level in expired air and cotinine levels in urine.

Results: Results: Of the patients who received CBT+CMA 89.1% completed 6 weeks of treatment, versus 96.4% of those who received CBT+CMS ($p>.05$). At the post-treatment assessment, 94.5% of the patients assigned to both CBT+CM groups achieved abstinence ($p>.05$). At one-month follow-up, 65.5% of the patients who received CBT+CMA maintained smoking abstinence, versus 54.5% in CBT+CMS group ($p>.05$). At six-month follow-up, 43.6% of the patients who received CBT+CMA maintained smoking abstinence in comparison to 33.3% in CBT+CMS group ($p>.05$). Finally, 40.0% of patients assigned to CBT+CMA achieved abstinence at twelve-month follow-up, versus 29.1% in CBT+CMS group ($p>.05$).

Conclusions: Conclusions: Results from this randomized clinical trial showed that there are no differential effects between both CM procedures. It seems that CM for shaping cessation does not improve the efficacy of CM for smoking abstinence among treatment-seeking patients in a community setting.

Financial Support: Spanish Ministry of Science and Innovation (MICINN) Grant (PSI2011-22804).

Abstract - ID: 640

Author(s):

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Title: Effects of the nicotinic agonist varenicline, the novel nicotinic antagonist r-bPiDI, and the dopamine transporter inhibitor r-modafinil on co-use of alcohol and nicotine in female P rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Polydrug

Topic: Treatment

Aims: Aim 1: Develop a preclinical model of alcohol and nicotine co-use using female P rats.

Aim 2: Examine the dose-dependent effects of (1) varenicline, a nicotinic acetylcholine partial agonist that is FDA approved for smoking cessation, (2) r-bPiDI, an ?6?2 subtype-selective nicotinic acetylcholine antagonist shown to reduce the reinforcing properties of nicotine and (3) R-modafinil, a unique dopamine uptake inhibitor found to reduce nicotine self-administration in P rats.

Methods: Toward developing a preclinical model of co-use, female alcohol-preferring (P) rats were trained for voluntary oral ethanol drinking and i.v. nicotine self-administration in three phases: (1) alcohol alone (0 vs. 15%, 2-bottle choice); (2) nicotine alone (0.03 mg/kg/infusion, active vs. inactive lever); and (3) concomitant access to both alcohol and nicotine. Using this co-use model, we next examined the dose-dependent effects of (1) varenicline (0 and 3 mg/kg ip), a nicotinic acetylcholine partial agonist that is FDA approved for smoking cessation, (2) r-bPiDI (0, 10, and 20 mg/kg ip), an ?6?2 subtype-selective nicotinic acetylcholine antagonist shown to reduce the reinforcing properties of nicotine and (3) R-modafinil (0,56, and 100 mg/kg ip), a dopamine uptake inhibitor found to reduce nicotine self-administration in P rats.

Results: In both phases 1 and 2, pharmacologically relevant intake of both alcohol and nicotine were achieved. However, in the concurrent access phase (phase 3), alcohol intake was decreased. Results also showed that varenicline (3 mg/kg), r-bPiDI (20 mg/kg), and R-modafinil (100 mg/kg) all decreased nicotine self-administration; however, no effect on alcohol consumption was achieved.

Conclusions: As predicted, the highest dose tested for all three treatment drugs decreased nicotine self-administration in P rats. While no effect on alcohol was achieved, it is likely that low consumption rates during phase 3 played a role in the failure to detect decreases in ethanol consumption during this phase. Future research will examine methods of increasing baseline ethanol consumption during the concurrent access phase in order to evaluate the efficacy of potential pharmacotherapies for co-use.

Financial Support: Supported by funding from National Institute of Health UL1 TR000117

Abstract - ID: 641

Author(s):

Declan Barry **(Presenter)**, Yale School of Medicine
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Lynn Madden, APT Foundation, Inc.
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Kathryn Eggert, APT Foundation, Inc.
Robert Freeman, APT Foundation, Inc.
Ehab Hussein, APT Foundation, Inc.

Title: Chronic pain, trauma, and psychosocial functioning among patients entering methadone maintenance treatment

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: To explore the prevalence and associated functioning of co-occurring chronic pain (i.e., pain lasting at least 3 months) and trauma (either physical or sexual assault) among patients entering methadone maintenance treatment (MMT).

Methods: 536 consecutive patients entering MMT at the non-profit APT Foundation in New Haven, CT were evaluated using self-report measures (Pain and Physical Activity Screener, Life Events Checklist, 5th edition, Behavior and Symptom Identification Scale [BASIS-24]).

Results: Participants ranged in age from 18 to 67 years (M = 36.3, SD = 10.9); 60% were men; 79% were white; and 15% were Hispanic. 47% reported chronic pain, 51% reported physical assault, and 27% reported sexual assault. 29% reported chronic pain along with physical or sexual assault. Patients with compared to those without chronic pain were more likely to report physical assault (59% vs. 44%, p

Conclusions: Chronic pain and trauma are common among patients entering MMT and are associated with lower levels of functioning. MMT programs may benefit from the development of evidence-based interventions that address both chronic pain and trauma.

Financial Support: APT Foundation, Inc.

Abstract - ID: 642

Author(s):

Brionna Davis-Reyes **(Presenter)**, University of Texas Medical Branch
Veronica Campbell, University of Texas Medical Branch
Noelle Anastasio, University of Texas Medical Branch

Title: Implication of disrupted serotonin: Glutamate synergy upon impulsivity

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Neurobiology

Aims: Impulsivity, broadly defined as behavior without sufficient forethought, has been noted in cocaine-dependent human subjects, and contributes to relapse in cocaine use disorder. There is evidence that glutamate (Glu) neurotransmission within the corticoaccumbens circuit may contribute to both impulsivity and cocaine addiction. Vesicular glutamate transporters (VGLUTs) sequester cytosolic glutamate into synaptic vesicles for release from the presynaptic terminal. VGLUT3 is localized on heterogeneous neurons that have been demonstrated to co-release Glu and serotonin (5-HT). VGLUT3 has been causally linked to cocaine-mediated behaviors in part through strengthened postsynaptic receptor plasticity (e.g., AMPAR/NMDAR) in rat models. *We hypothesized that an imbalance in VGLUT3, Glu-receptive AMPAR and 5-HT-receptive 5-HT$_{2C}$R homeostasis in the NAc associates with individual differences in impulsivity.*

Methods: Outbred male Sprague Dawley rats were identified as high (HI) or low (LI) impulsive using the one-choice serial reaction time (1-CSRT) task in which nose-pokes after presentation of a visual stimulus resulted in food pellet delivery. Following phenotypic identification, NAc synaptosomal protein was extracted and VGLUT3, AMPAR, and 5-HT$_{2C}$R protein levels determined via immunoblot.

Results: The HI/LI phenotype was stable in that HI rats made significantly more premature responses than LI rats across 70 days of training ($p < 0.001$). HI rats expressed higher NAc synaptosomal VGLUT3 ($p < 0.05$), but lower GluA1 AMPAR ($p < 0.05$) and 5-HT$_{2C}$R ($p < 0.05$), vs LI rats. There was a positive correlation between NAc VGLUT3 expression ($r=0.643$, $p=0.02$) and impulsivity.

Conclusions: These data putatively suggest that in HI rats, elevated VGLUT3 expression may augment Glu:5-HT tone resulting in a compensatory downregulation of NAc Glu and 5-HT-responsive receptors, as a component of homeostatic synaptic plasticity.

Financial Support: R00 DA033374

Abstract - ID: 643

Author(s):

James Kasper **(Presenter)**, University of Texas Medical Branch
David McCue, University of Texas Medical Branch
Jonathan Hommel, University of Texas Medical Branch

Title: A novel neuropeptide regulator of cocaine self-administration

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Behavior

Aims: Neuromedin U (NMU) is a neuropeptide expressed in the mesolimbic pathway. NMU receptor 2 (NMUR2) is a GPCR and found in addiction associated areas of the brain including the nucleus accumbens shell (NAcSh). NMU signaling regulates responses to drugs of abuse, and we recently demonstrated that NMU decreases cocaine sensitization through actions at NAcSh presynaptic NMUR2. Therefore, we evaluated the effects of NMU on cocaine self-administration.

Methods: NMU's effect on taking of cocaine, motivation for cocaine, and responding for cocaine related was assessed by self-administration chamber responding after peripheral injection of NMU (0, 0.1, 0.3, or 1 mg/kg) into male Sprague-Dawley rats (n=12-14/group). The role of presynaptic NMUR2 in the NAcSh was evaluated using retrograde knockdown of NMUR2 followed by cocaine self-administration (n=10/group). Data were analyzed using one-way ANOVA.

Results: NMU did not alter cocaine taking or latency at any dose ($p < 0.05$). NMU, however, does attenuate responding on a progressive ratio in a dose dependent manor ($p < 0.05$). Cue responding decreased at 0.3 mg/kg NMU but not at any other dose ($p < 0.05$). Knockdown of presynaptic NMUR2 in the NAcSh has the opposite effect; no change in cocaine taking but potentiates progressive ratio and cue responding ($p < 0.05$).

Conclusions: NMU decreases aspects of motivation and relapse to cocaine in a rat model. The likely site of action for this behavioral effect is presynaptically expressed NMUR2 in the NAcSh. This work suggests NMUergic circuitry in the NAcSh is a key regulator of complex behaviors associated with cocaine use disorder.

Financial Support: R03DA033437, P30DA028821, T32DA07287, and Peter F. McManus Charitable Trust

Abstract - ID: 644

Author(s):

Robert Kohler **(Presenter)**, Western Michigan University
Shane Perrine, Wayne State University
Lisa Baker, Western Michigan University

Title: Effects of low dose mixtures of MDPV and cocaine on locomotor activity and brain monoamine content in Sprague-Dawley rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Polydrug

Topic: Behavior

Aims: Synthetic cathinones, known as "bath salts" on the illicit drug market, pose a significant and growing public health concern. 3,4-Methylenedioxypyrovalerone (MDPV), one of several popular constituents of the illicit bath salts, produces similar pharmacological actions to cocaine, albeit with greater potency. Recreational users report similar subjective experiences with MDPV and cocaine and preclinical self-administration studies indicate MDPV has a high abuse liability. Although polysubstance use is common, few preclinical studies have investigated the effects of concomitant exposure to synthetic cathinones and other stimulants. The present study sought to characterize behavioral and neurochemical effects of repeated exposure to MDPV alone and in combination with cocaine.

Methods: Male Sprague-Dawley rats were randomly assigned to one of four treatments: 1 mg/kg MDPV, 5 mg/kg cocaine, 1 mg/kg MDPV + 5 mg/kg cocaine, or saline. To assess differences between acute and chronic effects, separate groups of rats were assigned a dosing regimen consisting of a single injection (acute) or repeated daily injections for seven days (chronic). In the animals administered repeated injections, locomotor activity was assessed for one hour immediately before and one hour immediately after injections on days 1 and 6. Brains were harvested 20 minutes after the final injection on day 7. Total monoamine content within the anterior striatum, medial prefrontal cortex, and nucleus accumbens was determined with High-Performance Liquid Chromatography (HPLC).

Results: Drug-induced increases in horizontal activity were significantly greater on treatment day 6 compared to treatment day 1 in all three drug treatment groups in comparison to the saline control group. Moreover, MDPV produced significantly higher increases in activity compared to either saline or cocaine. Although the total increase in activity following treatment with the MDPV+COC mixture was not greater than that produced by either drug alone, the temporal pattern of activity indicated a delayed onset and lower peak effects produced by the mixture compared to MDPV alone, indicative of some intriguing interactions between these substances. Neurochemical analyses indicated a reduction in the whole tissue content of dopamine, serotonin, and their metabolites in the nucleus accumbens following repeated dosing with MDPV or MDPV+COC and an increase in medial prefrontal cortex dopamine content following repeated dosing with this drug mixture.

Conclusions: Further investigations targeting possible changes in DA receptor sensitivity following repeated exposure to MDPV may help elucidate the mechanistic changes responsible for MDPV-induced behavioral sensitization.

Financial Support: National Institutes of Health (R15 DA038295)

Abstract - ID: 645

Author(s):

Philip Spechler **(Presenter)**, University of Vermont
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Stephen Higgins, University of Vermont
Hugh Garavan, University of Vermont

Title: Neural correlates of inhibitory control in abstinent vs. satiated smokers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Imaging

Aims: Inhibitory control impairment, a neurobiological marker of nicotine dependence, differs between smokers and former smokers. It's still unclear whether brain activation characteristics during inhibitory control are more pronounced when the smokers are allowed to smoke freely (satiated) or are required to abstain from smoking prior to testing. It would be of high value to determine the optimal procedures with regard to smoking state (abstinent vs. satiated) for revealing these brain activation differences.

Methods: N=15 smokers and N=15 non-smokers were assessed using neuroimaging and behavioral measurements. Those with a history of psychiatric disorders were excluded. Smokers were scanned twice following ad lib access to their regular cigarettes (the last cigarette must be smoked 15 minutes prior to scanning) and an overnight abstinence (order counterbalanced). Smokers with a cigarette use of less than 5 cigarettes per day were not included. CO levels were measured at baseline, abstinence and satiety. Brain activation maps of inhibitory control were generated from the Stop Signal task fMRI paradigm, measuring response inhibition, for successful inhibitions. Age, gender, handedness, education level were included as covariates in the design matrix.

Results: Abstinent and satiated smokers showed greater inhibitory control activity compared to non-smoker controls in the IFG (with a 91% spatial overlap, corrected $p < .05$), a key region of the brain involved in response inhibition. There were no whole-brain differences within smokers in comparing abstinent vs. satiated conditions. Nor were there any behavioral performance differences within smokers or between smokers and non-smokers.

Conclusions: Abstinent smokers were characterized by the highest levels of functioning in the IFG and are, thus, more sensitive probes than satiated smokers for elucidating differences between smokers and non-smokers in nicotine dependence studies assessing inhibitory control.

Financial Support: Tobacco Centers of Regulatory Science award P50DA036114

Abstract - ID: 646

Author(s):

Carol Paronis **(Presenter)**, McLean Hospital, Harvard Medical School
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Title: Increases in locomotor activity in mice following cannabinoid antagonists and during spontaneous cannabinoid withdrawal

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Marijuana/Cannabinoids

Topic: Dependence

Aims: Evaluate precipitated and spontaneous withdrawal in laboratory animals by comparing effects of cannabinoid (CB) antagonists in CB agonist-naive, and CB agonist-dependent mice.

Methods: Effects of rimonabant, a CB1 antagonist with putative inverse agonist properties, and AM4113, a putative neutral CB1 antagonist, were evaluated in in CD1 mice that had not received any CB agonists. Effects of rimonabant were further evaluated in CB-dependent mice receiving daily injection of 0.03-0.1 mg/kg AM2389, a full CB1 agonist. In addition, spontaneous cannabinoid withdrawal was assessed 0-72 hours after cessation of daily AM2389 administration. Behavioral (locomotor activity) and physiological (body temperature) measures were recorded via implanted emitters that provided continual monitoring of activity and core temperature in freely moving animals through telemetry. Data were recorded over a three hour period, beginning either at the time of antagonist injection or 4-24 hours after the cessation of daily cannabinoid administration, and beginning at different times relative to the diurnal cycle.

Results: A low dose of rimonabant (0.1 mg/kg) decreased locomotor activity compared to saline, whereas 1-10 mg/kg rimonabant and 0.1-10 mg/kg AM4113 dose-dependently increased locomotor activity. Similarly, locomotor activity was increased in mice treated daily with the CB-agonist AM2389 at 18-24 hours following the last injection of AM2389; i.e., during spontaneous withdrawal. Acute effects of AM2389 on locomotor activity were reversed following administration of 1 mg/kg rimonabant but did not exceed effects of rimonabant in CB-naïve mice. Further, 0.1-10 mg/kg rimonabant did not augment increases in locomotor activity seen during spontaneous cannabinoid withdrawal.

Conclusions: These data demonstrate behavioral similarities between acute injection of cannabinoid antagonists and spontaneous cannabinoid withdrawal, but do not offer evidence of precipitated cannabinoid withdrawal.

Financial Support: Funded by NIH/NIDA DA035411

Abstract - ID: 647

Author(s):

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Title: Improving care with standardized triage, assessment, placement and utilization review

Abstract Category: Program Descriptions

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Technology Issues

Aims: Although accepted by a majority of U.S. states as the medical necessity basis for publicly funded addiction treatment, the ASAM Criteria have been used in non-standard fashion. New healthcare reform and parity laws create a need for a national standard for comprehensive patient clinical assessment, reliable data collection, and valid decision making for placement and utilization review (UR).

Methods: Comprehensive assessment with CONTINUUM™, the standard implementation of ASAM's Criteria (2013), employs a computer-guided, structured interview and algebraic decision engine for use by intake clinicians and subsequent UR. Los Angeles' (population: 10.1 million) Substance Abuse Prevention and Control (SAPC) program began piloting in July 2016. SAPC/UCLA are evaluating feasibility, counselor/patient satisfaction, training needs, validity and impact on intakes and patient engagement. Massachusetts is following with a similar pilot.

The web application captures: patient clinical characteristics (DSM-5, ASI-5, CIWA-Ar, CINA), duration of assessment, completion rates, recommended placements, reasons for discrepant placements, and satisfaction ratings.

CONTINUUM Triage™ is the first derivative product of CONTINUUM, commissioned by LA County and in use in Massachusetts, also. This 20-question, computer-guided, structured interview (10-15 minutes, telephonic or in-person) determines the provisional level of care in which to complete the patient's CONTINUUM comprehensive assessment.

Results: Findings from both pilots will be presented, including the frequency/percent of Triage provisional recommendations that correctly match to CONTINUUM final recommendations. The data may determine whether and how to proceed with system-wide adoption; how to streamline Medicaid and commercial insurance UR; what new levels of care and numbers of beds/slots are needed; and areas for quality improvement.

Conclusions: Prior studies have demonstrated in various populations that multiple SUD outcomes are improved when patients are matched to care according to ASAM's CONTINUUM. Through the U.S. Center for Medicare and Medicaid Services' 1115 Waiver program, county and state Medicaids across the country are preparing to adopt it. These two large-scale public system pilots will indicate the feasibility and adoption needs of introducing these tools into routine clinical care.

Financial Support: CONTINUUM was supported by a contract from the U.S. Substance Abuse and Mental Health Services Administration. Funding for pilot evaluation was provided through the Los Angeles Department of Public Health Substance Abuse Prevention and Control Program, and the Commonwealth of Massachusetts Department of Public Health Bureau of Substance Abuse Services.

Abstract - ID: 648

Author(s):

Keli Herr **(Presenter)**, Western Michigan University
Lisa Baker, Western Michigan University

Title: LSD discrimination in male and female Sprague-Dawley rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Other (specify)

Other Drug Category: Psychedelics/Hallucinogens

Topic: Behavior

Aims: The hallucinogen lysergic acid diethylamide (LSD) is one of the most potent and safest drugs known to man. A resurgence of interest in the psychotherapeutic potential of LSD is apparent in the current clinical and scientific literature. Future acceptance of LSD as a psychotherapeutic adjuvant may be predicated on new knowledge about its neural mechanisms of action. In this regard, preclinical studies offer invaluable models to determine the mechanisms underlying LSD's behavioral and subjective effects. Specifically, nonhuman drug discrimination methods have a special utility for determining the neural mechanisms involved in the interoceptive effects of psychoactive drugs. While early studies (1966 to mid-1990s) established LSD as a discriminative stimulus in rodents and elucidated the predominant involvement of serotonergic, and to some extent, glutamatergic actions in these effects, these studies exclusively used male subjects. There is currently a significant gap in preclinical research concerning sex as a biologically relevant variable in the discriminative stimulus effects of hallucinogens. The present study represents the first known preclinical assessment of possible sex differences in the discriminative stimulus effects of LSD.

Methods: Adult female (n=8) and male (n=8) Sprague-Dawley rats were trained to discriminate 0.08 mg/kg LSD from saline under a fixed ratio 20 schedule of food reinforcement. Once discrimination was established, substitution tests were conducted with other hallucinogens (mescaline, DOM, psilocybin), mixed psychedelic-stimulants (MDMA, (+)?MDMA, (-)-MDMA, (+)-MDA, (-)-MDA), and synthetic cathinones (MDPV, 4-MMC).

Results: Stimulus substitution results indicate higher levels of LSD-substitution with other serotonergic hallucinogens in females compared to males and some evidence for sex differences in the level of partial substitution by synthetic cathinones and the enantiomers of MDMA and MDA. Specifically, greater partial substitution was observed with (±)-MDMA, (+)?MDMA, (+)-MDA, MDPV, and 4-MMC in males and greater partial substitution was observed with (-)-MDMA and (-)-MDA in females.

Conclusions: These findings suggest the relative contribution of serotonergic versus dopaminergic activity to the LSD cue may vary between males and females. Furthermore, these findings may be informative for future investigations with human populations regarding possible sex differences in the subjective effects of LSD.

Financial Support: National Institutes of Health (R15 DA038295)

Abstract - ID: 649

Author(s):

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Kenzie Preston, NIDA Intramural Research Program

Title: The impact of environmental disorder on stress, craving, and mood

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Technology Issues

Aims: This study examined the natural ecology of drug use, as reflected in relationships between subjective states and urban environmental disorder.

Methods: Opioid and cocaine users (n = 184) in opioid agonist therapy were monitored using ecological momentary assessment (EMA) and GPS for 16 weeks. Participants reported stress, mood, and drug craving 3 times/day in randomly timed EMA assessments. We mapped participants' GPS tracks for 5 hours before an EMA entry, tying the data to an independently obtained observer rating of visible neighborhood disorder (NIfETy). SAS Proc Mixed was used to analyze EMA reports as a function of cumulative exposure to each NIfETy variable and a factor score at 30 minute increments up to 5 hours. Each model controlled for event-level (i.e., home vs. elsewhere) and person-level predictors (i.e., age, sex, race).

Results: Stress and negative mood increased as disorder exposure increased (Factor score, all times: Stress $p < .01$, negative mood $p < .05$). Stress was greater in the presence of vacant lots, boarded abandoned buildings, people loitering, and people using drugs; negative mood was greater in the presence of boarded abandoned buildings, vacant commercial properties, people yelling, and people consuming alcohol. In contrast, craving (for both cocaine and opioids) decreased as disorder increased. The effect was stronger and more consistent for cocaine craving (Factor score: all times $p < .0001$) than for heroin craving (Factor score: $p < .05$ at 60, 90 and 210 minutes).

Conclusions: These results show relationships between the built environment and moment-level psychological states related to drug use. For individual users, such relationships can become the basis of mobile "just in time" interventions to prevent craving and lapse. For communities, such relationships may suggest interventions supporting environmental improvements that reduce triggers and risk behaviors.

Financial Support: NIDA, IRP

Abstract - ID: 650

Author(s):

Erica Holliday **(Presenter)**, University of Texas Medical Branch
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Title: The 5-HT2A receptor in the medial prefrontal cortex controls incubation of cocaine cue reactivity

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Neurobiology

Aims: Success in recovery from cocaine use disorder (CUD) is challenged by vulnerability to relapse driven in part by cue reactivity (sensitivity to cues previously linked with drug-taking). The mPFC 5-HT$_{2A}$R regulates cocaine cue reactivity and the selective 5-HT$_{2A}$R antagonist (M100907) potently suppresses cocaine cue reactivity following either systemic or intra-mPFC administration in rats. An intensification of cue reactivity occurs during extended abstinence ("incubation"), a phenomenon linked to time-dependent neuronal plasticity in the mPFC. We tested the hypothesis that enhanced neuroplasticity of mPFC 5-HT$_{2A}$R system underlies incubation of cue reactivity.

Methods: Three cohorts of rats were trained to self-administer cocaine (0.75 mg/kg/inf, i.v.; 14 days). For cohort 1, the ability of M100907 (0.03-0.3 mg/kg, i.p.) to suppress cue reactivity was measured on forced abstinence day 1(FA1) or FA30. Cohort 2 was killed on FA1 or FA30 and mPFC was dissected and 5-HT$_{2A}$R protein assessed by Western blot. Cohort 3 received an intra-mPFC 5-HT$_{2A}$R shRNA or a non-silencing control (NSC) viral vector infusion on FA1 and cue reactivity assessed on FA30.

Results: Cue reactivity was significantly elevated on FA30 *vs* FA1; M100907 was more effective in suppressing cue reactivity at FA30 *vs* FA1 ($p < 0.05$). Cortical 5-HT$_{2A}$R membrane expression was higher at FA30 *vs* FA1. Unexpectedly, mPFC 5-HT$_{2A}$R knockdown significantly augmented cue reactivity *vs* NSC ($p < 0.05$).

Conclusions: These data suggest that the mPFC 5-HT$_{2A}$R system is vulnerable to neuroadaptations related to cocaine exposure that contribute to incubation of cue reactivity. Ongoing research is needed to understand the regulatory mechanisms that contribute to augmented cue reactivity following decrements in mPFC 5-HT$_{2A}$R signaling, information which may provide conceptual directions toward novel therapeutics for the prevention of relapse in CUD.

Financial Support: T32DA07287 (EDH, DJS), P50DA033935 (KAC/NCA), K05DA020087 (KAC)

Abstract - ID: 651

Author(s):

Linda Cottler **(Presenter)**, University of Florida
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Title: Typologies of female cocaine use rely on transitions from initiation, to first symptom, to heaviest use, by age and comorbid marijuana use

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Epidemiology

Aims: Among adult female cocaine users, we examined transition from 1st use to 1st cocaine related symptom, to heaviest use and current cocaine use status by age and comorbid marijuana use. Analyses will serve as preliminary data for a back translational model from human typologies to rat models.

Methods: 1018 female cocaine users were identified by combining data from three NIDA-NIAAA funded community outreach studies focused on out of treatment women with high risk drug use behaviors. Age at 1st use, heaviest use, 1st symptom and last use was calculated as well as marijuana use history. Chi-square tests were conducted using SAS 9.4.

Results: Younger users (18-34 years old) reporting cocaine without marijuana use (CO) had longer transitions from 1st use to the 1st symptom of cocaine use disorder (p=0.0425) and from 1st use to heaviest use (p=0.014) vs older (35+ years) CO users. Among cocaine and marijuana users (CMj), the opposite was found; younger users had shorter transition from 1st use to heaviest use (p=0.0026). When comparing younger users, we found that CMj users had shorter transitions from 1 st use to heaviest use than CO users (CO: 37% within one year vs CMj 57% within one year, P=0.027). Conversely, for the older group, CMj users had longer transitions than CO users (p=0.0026). Nearly all users continued to use cocaine and there were no differences by age or marijuana use status.

Conclusions: Age was associated with transitions from 1st to heaviest use but the pattern differed by marijuana use status. This trajectory requires new models of inquiry among humans that can be tested in rat models.

Financial Support: T32 DA035167 R01 DA027951

Abstract - ID: 652

Author(s):

Colin Haile **(Presenter)**, University of Houston
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Title: Predator-odor stress enhances alcohol self-administration in female rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Alcohol

Topic: Other

Aims: The purpose of this study was to examine whether PTSD-like symptoms induced by exposure to predator-odor stress would alter ethyl alcohol (EtOH) or sucrose self-administration in female rats.

Methods: We first trained two groups of female rats to orally self-administer EtOH (10%) or sucrose (3%) under a FR2 schedule of reinforcement in standard operant chambers. Once stable responding was achieved, rats were then randomly confined to one chamber in a place conditioning apparatus and exposed to either no odor or predator odor for 15 min. Rats were then allowed to explore all chambers and time spent recorded 24 hr and 10 days after odor exposure. Anxiety-like behaviors thought to be reflective of PTSD were assessed with elevated plus maze (EPM) and open field tests at baseline and 9 days post odor exposure.

Results: Results showed rats increased lever pressing for EtOH, but not for sucrose, across several days (3, 8, 11 and 15) post-odor exposure. Rats from the EtOH group displayed heightened anxiety-like behaviors compared to the sucrose group such as increased time spent in closed arms of the EPM and decreased time spent in the center zone in the open field test. Predator odor exposure was associated with a significant decrease in time spent in the odor-paired chamber (i.e., conditioned avoidance) that was observed in the EtOH group only.

Conclusions: These data extend previous reports in male rats, to female rats, showing predator-odor stress induces enduring anxiety-like behavior indicative of PTSD and is associated with persistent increases in EtOH self-administration. Results support the concept that predator-odor stress-induced facilitation of EtOH self-administration may represent a PTSD/AUD comorbidity model in rats.

Financial Support: This work was supported by NIH/NIAAA (AA013476, TAK).

Abstract - ID: 653

Author(s):

Vitor Tardelli **(Presenter)**, Universidade Federal de Sao Paulo
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Title: Contingency management and pharmacological treatment for stimulant users: A review

Abstract Category: Literature Review

Abstract Detail: Human

Drug Category: Stimulants

Topic: Dependence

Aims: Introdution/Aim: Stimulants Use Disorder (SUD) has been a Public Health concern for many years. Despite its epidemiological importance, its treatment remains a challenge. Although several medications seem promising, there is no consensus about pharmacological treatment. Among the psychosocial interventions, Contingency Management (CM) is a high-efficacy treatment based on applying positive reinforcement, so patients receive rewards that overcome the positive effects of substance use. The aim of this paper is to review the literature on the association of CM and pharmacological treatment of SUD.

Methods: Methods: we screened clinical trials that performed CM and did any pharmacological treatment for SUD. We searched PubMed, Lilacs and SCIELO for articles published until September 2016. Our search strategy included the terms *Contingency Management* and *Cocaine* or *Amphetamines* or *Stimulants*. Data extracted included: medication tested, study design, substance of abuse, sample size and main results.

Results: Results: Eighteen papers were included. Among those, 83.3% evaluated cocaine users. Modafinil was the most studied drug in combination with CM, being present in 16.7% of the papers reviewed. In 6 papers (33.3%), efficacy of CM was not different from control, either evaluated as an intervention itself or as adjunctive approach to pharmacotherapy. **Discussion:** though many papers did not evaluate CM as a primary outcome, patients whose pharmacological treatment was enhanced by CM had i) a more significant clinical improvement, ii) better medication compliance, iii) higher number of visits to the medical unit and iv) seemingly better results combined with drugs which shared a dopamine-agonist effect, such as bupropion and modafinil.

Conclusions: Conclusion: CM is regarded as a promising psychosocial approach for SUD and it may play a role in enhancing the efficacy of pharmacological interventions. Future clinical trials on SUD could benefit from the implementation of CM interventions on their designs.

Financial Support: None

Abstract - ID: 654

Author(s):

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Title: Mental disorders and persistent alcohol/tobacco use among adolescents in São Paulo, Brazil: A follow-up study

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Adolescent

Aims: To examine the relationship between alcohol/tobacco use with mental disorders in a longitudinal school-based sample of adolescents (N =117) from São Paulo, Brazil.

Methods: Data from a school-based stratified sample of adolescents (ages 12 at baseline, 13 at follow-up) from public schools in two different neighborhoods. All adolescents answered a semi-structured psychiatric interview, the Schedule for Affective Disorders and Schizophrenia for School-Aged Children Present/Lifetime Version on two occasions, approximately one year apart. Depression (DEP), Oppositional-Defiant Disorder (ODD) and Attention Deficit and Hyperactive Disorders (ADHD) were evaluated, as well as alcohol and tobacco use (ATU). ATU was defined as never used or as persistent use (using at both points).

Results: The overall prevalence of ATU at baseline was 9.4% and 34.2% at follow-up. 61.7% of adolescents did not engage in ATU at baseline nor at follow-up and 30% were persistent ATU. Prevalence of ATU among adolescents not diagnosed with any of the three disorders was 79.8% at baseline and 78.7% at follow-up. Prevalence for DEP at baseline was 9.6% and 6.8% at follow-up. For adolescents with DEP at baseline, the prevalence for alcohol/tobacco use was 41.7%. At follow-up, 87.9% of those with DEP identified as persistent users. The prevalence of ADHD was 13.4% at baseline and 6.8% at follow-up. For adolescents with ADHD, the baseline prevalence for ATU was 23.2%. At follow-up, 46.2% of adolescents identified as persistent users. The prevalence of ODD was 7.4% at baseline and 9.4% at follow-up. For adolescents with ODD, the ATU baseline prevalence for was 29.8%. At follow-up, 87.4% of adolescents with ODD identified as persistent users.

Conclusions: This study sheds light on the persistent use of alcohol/tobacco among adolescents with a mental disorder in the Brazilian context.

Financial Support: Columbia President’s Global Innovation Fund (Martins)

Abstract - ID: 655

Author(s):

Brent Moore **(Presenter)**, Yale School of Medicine
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Declan Barry, Yale School of Medicine
Richard Schottenfeld, Yale School of Medicine
David Fiellin, Yale School of Medicine

Title: The Recovery Line supports harm reduction in methadone maintenance

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Treatment

Aims: Relapse, drug use, and treatment dropout are common challenges facing methadone maintained patients. Though effective, multiple barriers to face-to-face counseling exist. The Recovery Line (RL), an automated Interactive Voice Response (IVR) system based on Cognitive Behavioral Therapy (CBT), is an adjunctive treatment that provides low cost, consistent delivery and immediate therapeutic availability 24 hours a day.

Methods: The current study was a 12-week randomized clinical efficacy trial of treatment-as-usual (TAU) only or RL+TAU for methadone maintenance patients with continued illicit substance use (N=82). Previous small trial phases evaluated methods to increase participant engagement and use of the RL and were incorporated into the current RL version. Primary outcomes were urine screens negative for illicit drugs and monthly self-reported days of illicit drug use.

Results: The percent of urine screens negative for illicit drugs did not differ by group or by group over time (p=.27). However, for TAU+ RL, self-reported days of illicit use decreased from baseline (23.4, SD=15.6) to months 1-3 (17.3), but did not for TAU only patients (BL=18.8, M 1-3=20.0). TAU+RL participants called M=10.9 times (SD=16.2) and had total system contact of M=60.4 (SD=86.2) minutes. The number of system calls was significantly correlated with the percent of urine screens negative for illicit drugs (r=.44, p=.005), but not self-reported days of illicit drug use (.21). Total minutes of system contact was significantly correlated with percent of negative urine screens (r=.59, p

Conclusions: Although the RL did not impact abstinence as indicated by urine screens, findings suggest that it supports harm reduction, leading to reduced days of drug use. Preliminary qualitative analyses suggest several facilitators and barriers to participants' use of the Recovery Line, with many appreciating the ability to use of the RL at any time and any place.

Financial Support: NIDA R01034678

Abstract - ID: 656

Author(s):

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Title: Tolerance and cross-tolerance to the discriminative-stimulus effects of CB1 agonists

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Marijuana/Cannabinoids

Topic: Tolerance/Dependence

Aims: The aim of this study was to investigate the development of tolerance and cross-tolerance to the discriminative-stimulus effects of cannabinergic (CB1) agonists in nonhuman primates.

Methods: Squirrel monkeys were trained to discriminate the intramuscular injection of 0.01 mg/kg of the high-efficacy CB1 agonist AM 4054 from vehicle. After dose-effect data were obtained for substitution by AM 4054, AM 2389, JWH-018, and ? 9-THC, training was discontinued and subjects were treated once daily with 0.01 mg/kg of the long-acting CB1 agonist AM2389. Subjects were tested once or twice weekly to evaluate the position of the AM 4054 dose-effect curve. When it was shifted 30-fold rightward, training resumed, using the dose that produced full substitution (0.3 mg/kg) as the new training dose. Subsequently, cross-tolerance to the other CB1 agonists was assessed.

Results: AM 4054, AM 2389, and JWH018 produced dose-related and full CB1-discrimination before and during chronic treatment with AM 2389. However, the dose-effect curve for each drug was shifted 10-fold (AM 2389) or 30-fold (AM 4054, JWH 018) rightward, indicative of surmountable cross-tolerance. In contrast, ?9-THC , up to doses 100-fold higher than the dose that initially produced full CB1-discrimination, failed to produce any CB1-like effects, suggesting insurmountable cross-tolerance.

Conclusions: The present results are consistent with the idea that CB1 agonists that differ in efficacy can produce similar acute behavioral effects but suggest that THC may have reduced subjective effects in subjects chronically exposed to higher-efficacy CB1 agonists.

Financial Support: RO1DA 023142

Abstract - ID: 657

Author(s):

David Metzger **(Presenter)**, University of Pennsylvania
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Carolyn Carpenedo, Treatment Research Institute
Karen Dugosh, Treatment Research Institute

Title: Impact of multi-session SBIRT within primary care for people living with HIV/AIDS

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: AIDS/Immune

Aims: Continued substance use by people living with HIV/AIDS (PLWHA) has been associated with reduced access and poorer adherence to ART and less success in sustained viral suppression. Interventions designed to engage PLWHA in substance use treatment have had limited success. Here we report on the impact of a randomized trial testing the impact of a substance use intervention within a Federally Qualified Health Center (FQHC).

Methods: Patients (N=1,847) attending primary care appointments at a large urban FQHC were screened for harmful substance use. Of those who screened positive (N=494), 235 were randomized to either: 1) single brief intervention session and referral (SBIRT) or, 2) 2 to 6 on-site counseling sessions and referral (SBIRT+). Sub group analyses were conducted to examine the impact of the integrated intervention among PLWHA.

Results: Sixty of those randomized were PLWHA: 27 to SBIRT and 33 to SBIRT+. This subset of patients had a mean age of 49 years (SD=8.2), 88% were black, and 65% were male. Gender and age were comparable across the two groups, however, race was significantly different (77% vs 97%; p At 3 and 6 moths the SBIRT+ group also reported significantly (p

Conclusions: PLWHA who were assigned to the SBIRT+ group showed significant and sustained reductions in illicit drug use compared to those assigned to the SBIRT group. No significant differences were seen among those who were uninfected with HIV. HIV infection may be serve as a motivational factor to reduce drug use within the context of a multi-session intervention.

Financial Support: Commonwealth Universal Research Enhancement Program grant awarded by the Pennsylvania Department of Health (SAP No. 4100055578).

Abstract - ID: 658

Author(s):

Isadora D. Calma **(Presenter)**, Rush University Medical Center
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Title: Brain and behavior parkinsonism-like pathology in rats with a history of self-administered methamphetamine: Exacerbation by rotenone

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Dependence

Aims: Methamphetamine (meth) abusers are at risk for developing Parkinson's disease (PD). We revealed that rats self-administering (SA) meth exhibit an abstinence time-dependent reduction in striatal and nigral tyrosine hydroxylase (TH) (Kousik *et al.*, JPET 351:432,2014). These findings led to our hypothesis that meth initiates a pathological trajectory that even after terminating meth use, may result in PD. Thus, we hypothesized that a meth-compromised state would be vulnerable to dopaminergic insults. To test these hypotheses, we administered a subthreshold dose of rotenone, a dopaminergic toxin, in meth SA rats and saline-yoked controls and measured brain and behavioral markers of PD.

Methods: Male Sprague-Dawley meth SA rats (0.1mg/kg/0.1mL infusion) and saline-yoked controls were subjected to 14 once-daily, 3 hr sessions. After the last sessions, rats were randomly assigned to receive vehicle or rotenone (1mg/kg/day) *via* sc osmotic minipumps for 6 days. Rats were sacrificed 1 or ~56 days after treatment. Motor assessments (forelimb akinesia and rearing) were performed throughout the study. Markers for PD-like brain pathology were assessed in the striatum using immunohistochemistry (TH) or immunoblotting (VMAT-2) at 1 and ~56 days post treatment.

Results: Behavioral and biochemical markers were not altered by rotenone. In meth SA rats, rearing was not altered by meth, but akinesia appeared ($p=0.0002$) by 36 days. By 50 days, meth+rotenone rats exhibited greater deficits than meth alone ($p < 0.0001$). VMAT-2 was not changed by any condition. There was a 50% TH reduction in meth SA rats compared to saline-yoked rats 56 days after rotenone ($p=0.0195$), but was not exacerbated in meth+rotenone rats.

Conclusions: A subthreshold dose of rotenone was sufficient to exacerbate the emerging akinesia effects of meth SA, but not dopamine terminal markers.

Financial Support: NIH ES02592

Abstract - ID: 659

Author(s):

Renee Goodwin **(Presenter)**, CUNY School of Medicine
Lauren Pacek, Duke University School of Medicine
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Title: Cannabis use disorders among cigarette smokers in the United States, 2002-2014: Implications for the future of tobacco control

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Epidemiology

Aims: Cigarette smoking has declined substantially in the United States (U.S.), yet this trajectory has decelerated over the past 15 years. One possible contributing factor to this slowed decline could be a simultaneous increase in cannabis use disorder. Cannabis use is legal in some states, and is strongly associated with cigarette smoking persistence. The goal of this study was to investigate the relationship between cannabis use disorder and daily and non-daily cigarette smoking, and to estimate changes in the prevalence of cannabis use disorder among daily, non-daily, former and non-smokers by demographic characteristics from 2002-2014 in the US.

Methods: The National Survey on Drug Use and Health (NSDUH) is an annual, nationally representative cross-sectional study conducted from 2002-2014 among individuals age 12 and older in the US.

Results: From 2002-2014, cannabis use disorder was most common among non-daily cigarette smokers (5.6%) and daily smokers (3.9%), relative to non-smokers (0.9%). Youth who were daily (29.9%) and non-daily cigarette smokers (29.1%) were at approximately twentyfold increased odds of cannabis use disorder compared to youth who did not smoke cigarettes (2.2%); the relationship between cigarette smoking and cannabis use disorder was significantly stronger among youth ages 12-17, compared with those over 18, and among women, compared with men. After adjusting for demographics, an increase in the prevalence of cannabis use disorder was observed among non-daily smokers (5.37% in 2002 vs. 5.64% in 2104, p=0.04) and former smokers, while there was no significant change in the prevalence of cannabis use disorder among never smokers (0.31% in 2002 vs. 0.44% in 2014, p=0.2). Cannabis use disorder decreased among daily smokers, though this change was no longer significant after adjusting for demographics (4.33% in 2002 vs. 3.49% in 2014, p=0.89). Numerous differences in the strength of the relationships between smoking and cannabis use disorder emerged by income and race and over time.

Conclusions: Cannabis use disorder occurs among primarily among cigarette smokers with a relatively small percentage occurring among non-smokers. Cannabis use disorder has increased significantly among non-daily and former smokers over the past decade with particularly rapid increases among youth and female smokers. There are substantial disparities in the prevalence of cannabis use disorder by smoking status and various demographic characteristics. Future research is needed to monitor the observed increase in cannabis use disorder among non-daily and former cigarette smokers and ensure that increases in cannabis use disorders do not lead to further deceleration of progress in tobacco control.

Financial Support: This study was supported by grant #DA20892 from NIDA/NIH.

Abstract - ID: 660

Author(s):

Ryan Black **(Presenter)**, Inflexxion, Inc
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Paul Coplan, Purdue Pharma L.P.

Title: Exploring various approaches to account for prescribed availability when estimating prescription opioid abuse rates using the ASI-MV®

Abstract Category: Program Descriptions

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: Abuse of prescription opioids remains a significant health and societal problem in the United States. Real world, epidemiological studies intended to measure prescription opioid abuse rates are conducted using the ASI-MV® data collected from a network of substance abuse treatment centers on substances abused, including prescription opioids, by adult individuals entering treatment in the United States. The system is built on a modified version of the Addiction Severity Index (ASI) which is a standard intake assessment designed for use on admission to drug and alcohol treatment. To date, most epidemiological studies conducted using the ASI-MV® and other data streams have estimated prescription-adjusted prevalence using prescriptions or units dispensed as a denominator. This approach assumes that prescribed availability of a prescription opioid product has a direct, proportional relationship with the product's prevalence of abuse. Such an assumption, if incorrect, could lead to invalid estimates of abuse rates and ultimately misinformed decisions about the abuse liability of prescription opioids. The purpose of this research endeavor is to determine the optimal approach to account for prescribed availability when estimating and comparing product-specific abuse rates using the ASI-MV® data.

Methods: The steps to carry out this exploration include determining: (1) the observed (empirical) relationship between prescribed availability and the prevalence of abuse for various prescription opioid products and (2) the appropriate way(s) to account for the product-specific relationships when estimating and comparing abuse rates.

Results: An in-depth analysis of the advantages and disadvantages as well as the explicit and implicit assumptions of the various methods to account for prescribed availability when estimating and comparing product opioid abuse rates will be presented.

Conclusions: Preliminary estimates of product-specific abuse rates derived from each of the methodological approaches will be reported.

Financial Support: Inflexxion, Inc., Waltham, MA

Abstract - ID: 661

Author(s):

Adam Brooks **(Presenter)**, Treatment Research Institute
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Elizabeth Byrne, Treatment Research Institute
Douglas Boyd, Treatment Research Institute

Title: Developing a shared decision-making graphic novel curriculum on medication-assisted treatment

Abstract Category: Program Descriptions

Abstract Detail: Human

Drug Category: Alcohol

Topic: Treatment

Aims: Patients in early treatment for addiction face difficult decisions and knowledge gaps regarding the role that medication can play in their recovery. Clinically useful tools designed to discuss medication decisions with patients with alcohol and opioid use disorders are needed.

Methods: Our research group convened a group of patients, peer specialists, and counselors into a Patient and Counselor Team (PACT) that worked with investigators across a series of design meetings to develop a patient education curriculum in the form of serialized educational graphic novels. Scripting themes and decisions were made by the PACT, and involved integrating psychoeducation about addiction medication with behavioral and motivational exercises useful in counseling in early addiction treatment. Character choices were selected to reflect patients diverse in gender, race, and ethnicity.

Results: This process resulted in a four volume, serial graphic novel narrative telling the story of three fictional patients in early treatment deciding on whether to take medication as part of their recovery process. The booklets contain information about medications for addiction, model thoughtfully engaging in the decision process, and include behavioral exercises (goal setting, scheduling, etc.) that counselors can employ to engage patients as they are acclimating to SUD treatment. The booklets address medication decisions for alcohol and opioid treatment, as well as psychiatric medication decisions.

Conclusions: This graphic novel series is currently being tested as part of a full-powered randomized clinical trial. If successful, this strategy could be effective to address other psychoeducational needs.

Financial Support: PCORI CDR-1310-07308

Abstract - ID: 662

Author(s):

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Title: Long-term opioid prescribing after inpatient surgery

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: Little is known about the incidence and risk factors for long-term opioid prescribing in U.S.-based patients undergoing various types of surgery. In a retrospective cohort study, we link patient information that is available at the time of surgery with opioid prescription (Rx) patterns to ascertain opioid Rx fill rates in a diverse cohort of in-patient surgery patients and then identify characteristics associated with long-term opioid therapy after surgery.

Methods: Unique patients (n=6,442) with claims in the Colorado All Payer Claims Database (APCD) were matched with 20,501 encounters in a clinical database (Epic). Rates of Rx were defined by at least one opioid claim received by APCD in monthly intervals relative to date of surgery and were evaluated overall and by pre-operative Rx, i.e. whether patients filled an opioid Rx in the 2-3 months prior to surgery. Associations of other characteristics (e.g. sex, type of surgery, age) with long-term opioid therapy will be evaluated with methods including generalized linear mixed models.

Results: Overall, rates of patients filling opioid Rx within-month 1, 2, and 6 months following surgery were 62%, 27%, and 21%, respectively. Of those who filled Rx at 2 months, 65% filled Rx again at 3 months and 56% filled Rx at 6 months (p's< 0.0001). Trajectories of opioid Rx in patients with pre-operative opioid Rx (29.7%) remained significantly elevated at all months (p's < 0.0001) relative to patients without pre-operative opioid Rx (70.3%).

Conclusions: Having a pre-operative opioid Rx is one characteristic associated with long term opioid therapy post-operatively and our ongoing analysis of these data will identify other potential risk factors. Regardless of pre-operative Rx, filling an opioid Rx at 2 months was highly associated with long-term (6 month) opioid Rx. Knowledge of risk factors for long-term opioid therapy after surgery is critical for the development of safer post-operative pain management practices. These results could trigger earlier referrals to specialty pain care and interventions to increase the safety of opioid prescribing.

Financial Support: K23DA040923, DA034604

Abstract - ID: 663

Author(s):

Beth Ann Griffin
Sean Grant **(Presenter)**, RAND Corporation
Sarah Hunter, RAND Corporation
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Title: Developing decision rules for adolescent substance use treatment settings: Perspectives from four online stakeholder engagement panels

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Treatment

Topic: Adolescent

Aims: This study sought the perspectives of key stakeholders (substance use treatment providers, policymakers, researchers, and parents) on the client needs and treatment outcomes that should be used to guide tailored decisions regarding the setting for an adolescent's substance use treatment.

Methods: We recruited a convenience sample to participate in one of 4 online stakeholder engagement panels. Panels were conducted using RAND's ExpertLens system and consisted of an online modified-Delphi process. Stakeholders completed 2 iterative questionnaires, interspersed with group feedback, on the importance of specific client needs and treatment outcomes that could be included in decision-rules for adolescents. We then compared participants' responses across the 4 different panels to identify the needs and goals identified as most important.

Results: 188 stakeholders participated (77 substance use providers, 53 policymakers, 32 researchers, and 26 parents). Across panels, stakeholders identified co-occurring mental health concerns and an adolescent's internal motivation to reduce or stop substance use as important client needs to consider, whereas important treatment goals included reduction of substance use and harm reduction. Participants also emphasized the importance of: addressing access to high quality care (e.g., transportation needs, qualifications of providers), a strong therapeutic alliance between provider and adolescent, adequate insurance coverage for adolescent substance use treatment, coordination of care across all service sectors, and taking a holistic approach to deciding treatment that is patient-centered and involves shared decision-making.

Conclusions: Stakeholders from varying perspectives have important insight into what factors may be most important for determining the setting of treatment for adolescent substance use. We will use the information provided in these panels to test specific decision-rules for adolescents receiving treatment in the US.

Financial Support: NIDA Grant

Abstract - ID: 664

Author(s):

Lysa Remy **(Presenter)**, Postgraduate Program in Pharmaceutical Sciences, Federal University of Rio Grande do Sul
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Kevin Lynch, University of Pennsylvania, Department of Psychiatry
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Title: Reduction in cocaine use during a topiramate clinical trial among cocaine- and alcohol-dependent participants predict better scores of SF-36 for quality of life after treatment

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Treatment

Aims: Determining a successful outcome in cocaine pharmacotherapy trials is a topic of great interest. While abstinence is clearly preferred, it is often difficult to achieve. However, a significant reduction in cocaine use may be clinically meaningful, as seen in alcohol studies where a reduction in alcohol use has been associated with significant improvements in health and quality of life. This secondary analysis addresses this issue by examining improvement in quality of life associated with reductions in cocaine use in a 12-week clinical trial of topiramate for treatment of cocaine dependence using results from the Short Form-36 Health Status Questionnaire (SF-36).

Methods: These data were drawn from a 12–week double-blind placebo controlled trial of topiramate for comorbid cocaine and alcohol dependence involving 170 subjects. Subjects completed the SF 36 at baseline, at 12 weeks and at a one month follow up. The clinical measures used in these analyses included the number of abstinent weeks based on self-report and UDS tests, and the SF-36. To test the association between changes in SF-36 scales and these measures, separate regression models predicting end-of-treatment SF-36 scales from the baseline version of the Sf-36 scale and the clinical measures were used. A binary factor for topiramate was included as a main effect, and topiramate interactions with the clinical measures were also examined.

Results: Reductions in self-reported percent days of cocaine use between the 90-day pre-study period and the last three weeks of the study were slightly greater in the topiramate group (men=37.5, se=3.3) than in the placebo group (mean=29.2, se=3.4), but the difference was not significant (p=0.07). For the full sample, these reductions were positively associated with improvements in all SF-36 scales, but reached significance only for the Role Limitation due to Physical Problems (p=0.01), Social Functioning (p=0.047) and Role Limitation due to Emotional Problems (p=0.03) scales. There were no significant effects of topiramate on the improvements in the SF-36 scales, and no significant topiramate interactions on the associations between the reductions in self-reported cocaine use and improvements in SF-36. The number of clean weeks was positively associated with improvements in the General Health and Social Functioning scales ($p < 0$ .001 for each).

Conclusions: In this trial, reductions in cocaine use short of complete abstinence were associated with significant improvement in patient reported quality of life.

Financial Support: Grant support was provided from the National Institute on Drug Abuse P60-DA-05186-17, P50 DA012756, and T32 MH065218.

Abstract - ID: 665

Author(s):

Emily Greene **(Presenter)**, Columbia University
Pia Mauro, Columbia University
Silvia Martins, Columbia University

Title: Associations between past month stimulant use and HIV-status in a representative sample of adults in the United States

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: AIDS/Immune

Aims: Stimulant use among people living with HIV/AIDS (PLWHA) is associated with multiple serious health concerns. While the relationship between HIV and stimulant use has been studied in high-risk populations, little is known in the general adult population in the U.S.

Methods: Using adult data from the 2005-2014 National Survey on Drug Use and Health (NSDUH, N=382127) public use data files, logistic regression analyses examined the associations between past month stimulant use and HIV status, controlling for sociodemographic characteristics. Further, among PLWHA, sociodemographic correlates of recent stimulant use were examined. We also examined past month heavy drinking, marijuana, and tobacco use, as these have also been shown to interfere with ART adherence.

Results: Overall, PLWHA comprised 0.2% of the sample (n=548); 9% of PLWHA used stimulants in the past month, compared to 1% of people who were not ($p < 0.0001$). People living with HIV/AIDS had significantly higher odds of past month stimulant use (aOR=5.47, 95% CI=3.46-8.62) controlling for sociodemographics. Within the sub-sample of PLWHA, past month stimulant use was significantly associated with past month heavy drinking (aOR=6.29, 95% CI: 2.10-18.81), but not tobacco or marijuana use.

Conclusions: Given the poor HIV-related health outcomes associated with stimulant use, higher stimulant use among PLWHA in this study is concerning. This concern is augmented by the increased odds of heavy drinking by stimulant-using PLWHA individuals, as alcohol use has been linked with poor health outcomes in this population. Integrated services that address the complex medical needs of people living with HIV, including substance use and related issues, may be needed to ultimately reduce incident HIV in the U.S.

Financial Support: T32DA031099 (Hasin), R01DA037866 (Martins)

Abstract - ID: 666

Author(s):

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Title: Pharmacogenetic impact of the serotonin 2C receptor (5-HT2CR) Cys23Ser single nucleotide polymorphism on receptor functional capacity

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Neurobiology

Aims: The application of pharmacogenetics provides an opportunity to greatly improve treatment outcome by identifying potential biomarkers to facilitate the development of more effective, personalized pharmacotherapies for cocaine use disorder. Serotonin neurotransmission through its 5-HT $_{2C}$ receptor (5-HT$_{2C}$R) is a critical driver of the cognitive and/or behavioral dimensions underlying cocaine use disorder. A non-synonymous SNP of the human 5-HT$_{2C}$R gene (*HTR2C*) that converts a cysteine (Cys) to a serine (Ser) at amino acid codon 23 (Cys23Ser) appears to impact 5-HT $_{2C}$R pharmacology at a cellular and systems level. The Cys23Ser SNP has been linked clinically to several psychiatric disorders, including impulsivity and cocaine cue reactivity, and the efficacy of psychiatric therapeutics and thus may serve as a pharmacogenetic biomarker for cocaine use disorder. We tested the hypothesis Cys23Ser SNP alters 5-HT $_{2C}$R intracellular signaling via changes in receptor subcellular localization *in vitro*.

Methods: We generated clonal CHOp38 cell lines *stably* expressing the Cys23 or Ser23 variant and employed a combination of pharmacological, biochemical, and cellular and molecular biology techniques.

Results: Serotonin evoked a concentration-related Ca_i^{++} release in the Cys23 variant (EC_{50} ~0.79 nM) and the Ser23 variant (EC_{50} ~4.07 nM) cell lines. The Ser23 variant demonstrated 44% lower maximum 5-HT-induced Ca_i^{++} release vs the Cys23 variant ($p < 0.05$). Western blot data indicate lower 5-HT$_{2C}$R plasma membrane expression, but not total homogenate, in the Ser23- vs. the Cys23 variant cell lines ($p < 0.05$).

Conclusions: These data suggest that the Ser23 variant exhibits a distinct pharmacological and subcellular localization profile relative to the Cys23 variant. Our novel cellular model system will be the first to systemically explore how the Cys23Ser SNP alters 5-HT$_{2C}$R functional capacity and subcellular localization.

Financial Support: R00 DA033734; P50 DA033935, K05 DA020087, T32 DA07287

Abstract - ID: 667

Author(s):

Theresa Carbonaro **(Presenter)**, University of North Texas Health Science Center
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Matthew Johnson, Johns Hopkins School of Medicine
Roland Griffiths, Johns Hopkins School of Medicine

Title: Comparative psychopharmacology of psilocybin and dextromethorphan

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Club/Designer Drugs

Topic: Other

Aims: Dextromethorphan (DXM), an NMDA antagonist used as a cough suppressant, is sometimes abused at high doses for psychedelic-like effects. In previous research a high dose DXM (400mg/70kg) produced subjective effect ratings similar to those produced by psilocybin, a 5-HT-mediated psychedelic. The purpose of this study was to compare the subjective effects of DXM and psilocybin.

Methods: Twenty psychedelic-experienced volunteers participated in 5 sessions (placebo; 400mg/70kg DXM; 10, 20, 30 mg/70kg psilocybin) under counter-balanced, double-blind conditions. Participants rated subjective effects at the end of the session. Staff rated drug effects throughout the session.

Results: Inspection of the data showed similar time-course of effects for both drugs with effects subsiding by the end of session. For rating of peak drug intensity all 4 drug conditions were significantly higher than placebo. Psilocybin produced dose-related increases, with DXM effects not different from the high psilocybin dose. For ratings of meaningfulness, spiritual significance, liking, and mystical experience (Mystical Experience Questionnaire), all 4 drug conditions were significantly higher than placebo. Psilocybin produced dose-related increases and DXM produced intermediate increases that were significantly lower than the high dose of psilocybin. On the Psychological Insight Questionnaire, all three doses of psilocybin were significantly higher than placebo. In contrast DXM was not significantly different from placebo and was significantly lower than all three psilocybin doses. On a measure of disembodiment, DXM produced significantly higher scores than all three psilocybin doses and placebo.

Conclusions: In a controlled laboratory study, psilocybin and DXM produced robust subjective effects. DXM produced greater ratings of disembodiment whereas psilocybin was rated as producing greater psychological insight, liking, and mystical experience.

Financial Support: NIH grants T32DA007209 & R01DA003889

Abstract - ID: 668

Author(s):

Konrad Ben **(Presenter)**, The Rockefeller University
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Teresa Milner, Weill Cornell Medicine
Mary Jeanne Kreek, The Rockefeller University

Title: Chronic (10-day) immobilization stress has no effect on quantitative AVP and AVPR1B mRNA levels in the male or female Sprague-Dawley rat hypothalamus

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Other (specify)

Other Drug Category: Stress (pilot study for opioid + stress study)

Topic: Genetics

Aims: Arginine vasopressin (AVP) is a modulator of hypothalamic-pituitary-adrenal (HPA) axis activation and is implicated in the motivational effects of major drugs of abuse, such as heroin, cocaine, and alcohol. Activation of one of its target receptors, V1b, has been shown to be implicated in stress-induced drug seeking and HPA activation. As both AVP and V1b receptors are expressed in the hypothalamus, the current study aimed to evaluate the effects of chronic immobilization stress (CIS) on hypothalamic *AVP* and *AVPR1B* mRNA levels in male and female rats.

Methods: Male and female Sprague-Dawley rats (age 8-9 weeks; n=6 for each sex) were subjected to CIS for 30 minutes daily for 10 days. Control animals (n=6 for each sex) were handled but not subjected to CIS. Rats were euthanized with CO_2 on day 11 and their brains were harvested. The hypothalamus was extracted and total RNA was isolated using Qiazol and miRNeasy kits (Qiagen). The quality and quantity of RNA was assessed with the 2100 Bioanalyzer (Agilent Tech). Quantification of *AVP* and *AVPR1B* mRNA was performed using SYBR Green qPCR. Data were analyzed for effects of sex and stress using ?Ct and 2-way ANOVA.

Results: 2-way ANOVA revealed no effects of sex, stress, or their interaction on levels of *AVP* or *AVPR1B* mRNA in the hypothalamus.

Conclusions: The 10-day CIS regimen had no effect on quantitatively-measured hypothalamic *AVP* and *AVPR1B* mRNA levels in male or female Sprague-Dawley rats. Furthermore, no baseline sex differences in expression of the two genes were observed.

Financial Support: NIH-NIDA (DA008259-22; T.A.M., M.J.K. and B.S.M.) and the Dr. Miriam and Sheldon G. Adelson Medical research Foundation (M.J.K.)

Abstract - ID: 669

Author(s):

Michael Mancino **(Presenter)**, University of Arkansas for Medical Sciences
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Janette McGaugh, University of Arkansas for Medical Sciences
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Alison Oliveto, University of Arkansas for Medical Sciences

Title: Impact of alcohol dependence diagnosis on self-reported alcohol and cocaine use in cocaine-dependent patients

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Dependence

Aims: We previously showed that recently-abstinent cocaine dependent patients in a clinical trial of sertraline (SRT) showed that those with a current alcohol dependence diagnosis (ADD) were more likely to relapse to cocaine than those who did not, but those with ADD receiving SRT were less likely to relapse than those with ADD receiving placebo (PLA). We determined whether SRT's impact on cocaine relapse was due to differentially altering self-reported relapse to alcohol use in those with ADD after a two-week residential stay.

Methods: Data were obtained from two 12-wk randomized, double blind, placebo-controlled clinical trials in which cocaine-dependent volunteers (N=126), with depressive symptoms (Hamilton score > 15), and no major psychiatric or medical disorder or contraindication to SRT maintenance that were housed on a drug-free residential unit (wks 1-2) and randomized to receive SRT or PLA. Volunteers then participated on an outpatient basis during wks 3-12 while continuing to receive study medication, receiving counseling in a substance abuse day treatment program during wks 1-2 and weekly CBT during wks 3-12. Seven-day timeline recall of self-reported cocaine and alcohol use were obtained weekly. The primary outcomes were difference between ADD and non-ADD participants in terms of number of days and dimes of cocaine or number of days of drinks and number of drinks per week at baseline. We also examined differences in self-reported alcohol and cocaine use over time. Factors included treatment group and/or ADD diagnosis.

Results: Rank sum tests revealed no differences in baseline self-report of cocaine or alcohol use between the SRT and PLA groups. Baseline self-reported cocaine use did not differ between those with and without ADD but alcohol use (# of drinks and days of drinking per wk) was significantly greater in patients with ADD ($p < 0.0001$). Self-reported cocaine use did not differ by ADD ($t=-0.45$, $p=0.63$); but was significantly less in the SRT group relative to PLA ($t=3.82$, $p=0.0002$).

Conclusions: It appears that while sertraline has an effect on cocaine urine data that is influenced by ADD, self-reported cocaine use or alcohol use is not impacted by ADD, suggesting that SRT's effects may be impacting cocaine use directly, rather than indirectly through decreasing alcohol use.

Financial Support: P50-DA12762 and K05-DA00454 (TRK) from the National Institute on Drug Abuse and, in part, by the Arkansas Biosciences Institute, a partnership of scientists from Arkansas Children's Hospital Research Institute, Arkansas State University, the University of Arkansas-Division of Agriculture, the University of Arkansas, Fayetteville, and the University of Arkansas for Medical Sciences.

Abstract - ID: 670

Author(s):

Paul Faulkner **(Presenter)**, UCLA
Dara Ghahremani, UCLA
Nicole Petersen, UCLA
Edythe London, UCLA

Title: Sex differences in behavioral and neural responses to reduced-nicotine cigarettes

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Sex Differences

Aims: Smoking is the greatest preventable cause of death in the U.S., and it seems that different strategies for smoking cessation are needed for men and women. Women have more difficulty maintaining long-term abstinence from smoking than men (Smith et al., 2016), partly because they experience greater craving and withdrawal during abstinence (Leventhal et al., 2007). Reduced-nicotine cigarettes (RNCs) alleviate craving and withdrawal in women more than in men (Perkins & Karelitz, 2015), and may effectively aid smoking cessation attempts (Donny et al., 2015), especially in women (Vogel et al., 2014). We aimed to provide the first examinations of the neural substrates of the sex differences in responses to smoking RNCs.

Methods: We measured craving, withdrawal and negative affect, and used fMRI to assess resting state functional connectivity (RSFC) of two brain regions implicated in these symptoms, the insula and striatum. On 4 days, daily smokers (11 men, 10 women, 18-25 yr), were tested before and after smoking the first cigarette of the day - a research cigarette delivering 0.027, 0.110, 0.231 or 0.763 mg nicotine.

Results: Women reported greater negative affect and psychological withdrawal during abstinence than men, and these symptoms were related to right anterior insula and ventral striatal RSFC to the anterior cingulate cortex (ACC) in women more than in men. Smoking RNCs alleviated craving and withdrawal, with no effects of nicotine dose, and reduced negative affect and psychological withdrawal in women more than in men. Smoking RNCs reduced ventral striatal RSFC in men more than in women, with no effect of nicotine dose, and this effect was more related to reductions in craving, psychological withdrawal and negative affect in women than in men.

Conclusions: Our results indicate that smoking-induced reductions in craving and withdrawal do not depend on nicotine in smokers of either sex. They also indicate that the greater negative affect and psychological withdrawal experienced by women during abstinence, and the greater reductions in such symptoms due to non-nicotine factors of smoking, depend on connectivity of the right anterior insula and ventral striatum to the ACC.

Financial Support: R01DA036487-03

Abstract - ID: 671

Author(s):

Meredith Meacham **(Presenter)**, UCSF
Danielle Ramo, UCSF
Alex Kral, RTI International
Elise Riley, UCSF

Title: Prevalence of stimulant and opioid use among medical cannabis, non-medical cannabis, and non-cannabis using homeless and unstably housed women

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Epidemiology

Aims: Stimulant use has been linked to poor overall health, violence, and un-prescribed opioid painkiller use among unstably housed women. While several recent studies suggest that legalization of medical cannabis may be associated with reductions in opioid use, its influence on stimulant use, particularly in high-risk populations like unstably housed women, has received less attention.

Methods: We analyzed cross-sectional data from 245 women in the SHADOW study, a community based cohort in San Francisco, CA, in which HIV+ women were oversampled (126 HIV+ and 119 HIV-). Women reported whether they had used cannabis in the past 6 months and if they had a prescription for medical cannabis.

Results: Compared to no cannabis use (51%), non-medical cannabis use (28%) was associated with a higher adjusted odds of using stimulants (Adjusted Odds Ratio [AOR] = 4.34, 95% confidence interval [CI]: 2.17-8.70) and opioids (AOR = 3.81, 95% CI: 1.78-8.15); however, medical cannabis use (21%) was not significantly different from no cannabis use with respect to stimulant and opioid use. Compared to non-medical cannabis use, medical cannabis use was associated with lower adjusted odds of using stimulants (AOR = 0.42, 95% CI: 0.18-0.96). These associations were not modified by HIV status.

Conclusions: Findings show that medical and non-medical use of cannabis has differential associations with use of stimulants and opioids. Research and policy considering the influence of cannabis on the use of other drugs may benefit by distinguishing between medical and non-medical cannabis use.

Financial Support: T32 DA007250, R01 DA015605, R01 DA036301

Abstract - ID: 672

Author(s):

Phillip Coffin **(Presenter)**, San Francisco Department of Public Health
Aminta Kouyate, Brown University School of Medicine
Caitlin Turner, San Francisco Department of Public Health
Glenn-Milo Santos, UCSF

Title: What actually causes a stimulant overdose death? Comparison of clinical causes of death among opioid, cocaine, and methamphetamine overdose deaths

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Epidemiology

Aims: Our understanding of drug overdose death is limited by a focus on opioid-specific mortality and a poor understanding of what causes stimulant overdose death. To address this research gap, we compared clinical causes of death and pre-existing morbidity in opioid and stimulant overdose deaths.

Methods: We analyzed the records of all 1,944 deaths due to opioid, cocaine, or methamphetamine (meth) toxicity in San Francisco from 2005-2015, taken from the California Electronic Death Record System. We coded causes of death and significant conditions for each case; any death involving opioids was coded as an opioid death when comparing to stimulants.

Results: The mean age of decedents was 49 years, 73% where male, 55% white and 27% black. Overall, 62% of deaths involved opioids and 61% involved stimulants (42% cocaine, 19% meth). Cerebral hemorrhage was the most common clinical cause of death (5% of cases), followed by cardiac causes (4%); 38% of deaths had pre-existing cardiac disease. Compared to opioid deaths, stimulant deaths were older (50 years for stimulants v 48 years for opioids; $p < 0.001$), more likely to be male (79% v 70%, $p < 0.001$) and non-white (59% v 48%, $p < 0.001$); more likely to involve cardiac (6% v 2%, $p < 0.001$) and cerebrovascular (13% v 0.3%, $p < 0.001$) causes of death; and more likley to have existing cardiac disease (35% v 26%; $p < 0.001$). Compared to cocaine deaths, meth deaths were younger (47 years for meth, 50 years for cocaine, $p < 0.001$), more likely to be male (83% v 73%, $p < 0.001$) and white (66% v 40%, $p < 0.001$); less likely to involve opioids (31% v 53%, $p < 0.001$); and more likely to be caused by cerebral hemorrhage (10% v 6%, $p=0.003$).

Conclusions:

Although stimulant deaths occurred at a similar rate as opioid deaths, with substantial overlap of causal substances, stimulant deaths were more likely among older, persons of color with pre-existing cardiac disease. The higher prevalence of cardiac and cerebrovascular causes of death among stimulant deaths, and in particular cerebral hemorrhage among deaths due to meth overdose, may be due to cardiovascular effects of chronic stimulant use, such as systemic hypertension. Long-term stimulant use should be recognized as a significant cardiac risk factor.

Financial Support: NIDA, R03DA038084

Abstract - ID: 673

Author(s):

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Noelle Anastasio, University of Texas Medical Branch
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Robert Fox, University of Texas Medical Branch
Huang-Chi Du, University of Houston

Title: Beta-Arrestin2 involvement in the serotonin 5-HT2C receptor signalosome

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Neurobiology

Aims: Selective 5-HT_{2C}R agonists have promise in the treatment of obesity and addictive disorders. Disruption of the interaction between the 5-HT_{2C}R with protein phosphatase and tensin homologue (PTEN) by the small peptide 3L4F (homologous to the site of PTEN interaction on the 5-HT_{2C}R) suppresses addictive-like behaviors in rodents with a reduced side effect profile relative to selective 5-HT_{2C}R agonists. These data suggest that disrupters of the 5-HT_{2C}R:PTEN interaction could potentiate endogenous 5-HT signaling with therapeutic implications. The peptide 3L4F, which induces potentiates 5-HT-indcued intracellular calcium release through G protein-dependent mechanisms, may also result in G protein-independent signal transduction through beta-arrestin$_2$ recruitment. Here, we tested the hypothesis that disruption of the 5-HT_{2C}R:PTEN complex by 3L4F will enhance 5-HT-induced recruitment of beta-arrestin$_2$.

Methods: We employed an enzyme complementation-based assay (DiscoverX) which provides a quantifiable method to assess 5-HT_{2C}R-dependent beta-arrestin$_2$ recruitment in engineered human osteosarcoma cells stably expressing the 5-HT_{2C}R. Beta-arrestin$_2$ recruitment to the 5-HT_{2C}R was measured by chemiluminescence signals in cells treated with 5-HT alone (10 pM-10 μM), 3L4F alone (1-100 nM) or the combination of 3L4F (1 nM, 30 min pretreatment) *plus* 5-HT (10 pM-10 μM).

Results: Serotonin, but not 3L4F alone, induced a concentration-dependent beta-arrestin$_2$ recruitment to the 5-HT_{2C}R (EC_{50} ~20.1 nM). Pretreatment with 3L4F elevated the 5-HT-induced Emax (23%), signifying that 3L4F potentiates 5-HT-induced beta-arrestin$_2$ recruitment ($p < 0.05$ *vs*. 5-HT alone).

Conclusions: Disruption of the 5-HT_{2C}R:PTEN complex by 3L4F elevates ?-arrestin$_2$ recruitment to the 5-HT_{2C}R. Thus, this protein:protein interaction may regulate 5-HT_{2C}R G protein-dependent and –independent signaling and offers a novel therapeutic target to suppress addictive behaviors.

Financial Support: DA030977, DA020087, DA07287

Abstract - ID: 674

Author(s):

Anna Harrison **(Presenter)**, UCSF
Marina Tolou-Shams, UCSF

Title: Drug use and mental health of caregivers of youth in the juvenile drug court: Implications for holistic family-based intervention

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Treatment

Aims: Justice-involved youth have high rates of drug use and mental health problems. Family-based interventions are most efficacious in improving behavioral health outcomes for these youth; thus, it is critical to engage caregivers when designing and implementing interventions. Most efforts to improve family engagement do not take into account the caregivers' own substance use or mental health needs. We seek to address this limitation by describing the substance use and mental health symptoms of caregivers of youth involved in drug court.

Methods: Caregiver data was collected as part of a family-based HIV prevention and substance use intervention for 60 juvenile drug court offenders (Project RAP: 5K23DA021532). We measured mental health symptoms (Symptom Checklist-90-Revised; SCL-90-R) and substance use (Alcohol Use Disorders Identification Test; AUDIT, and AIDS Risk Behavior Assessment; ARBA). Demographic differences were explored.

Results: Of the 59 caregivers, 93% were biological parents, 90% were female, 66% identified as non-Hispanic White with mean age of 42 years. Sixty percent of caregivers had ever used marijuana, 25% had used crack/cocaine, 3% had used heroin, and 17% had used other drugs. Past 90 days drug use was infrequent. Over 60% used alcohol in the past 90 days; mean AUDIT score was 2.4 (SD=2.6) indicating low rates of hazardous drinking. Caregivers self-reported high rates of mental health symptoms. Over half of the caregivers scored in the clinical range for Depression (53%), 30% for Anxiety, and 40% for Obsessive Compulsive symptoms. There were no significant demographic differences in caregiver mental health or drug use; non-Hispanic white caregivers were more likely than non-white caregivers to use alcohol ($X2=7.2$, p

Conclusions: Despite reporting a history of substance use, relatively few caregivers had reported recent drug use or heavy alcohol use. However, prevalence of current mental health symptoms was high among caregivers. These data can be used to inform the development of holistic family-based intervention to improve justice-involved youth and caregiver outcomes.

Financial Support: National Institute for Drug Abuse (NIDA) (5K23DA021532)

Abstract - ID: 675

Author(s):

Sean Allen **(Presenter)**, Johns Hopkins University
Ju Park, Johns Hopkins University
Brian Weir, Johns Hopkins University
David Holtgrave, Johns Hopkins University
Susan Sherman, Johns Hopkins University

Title: Understanding syringe distribution policy change in Baltimore, MD: Effects on syringe distribution and HIV incidence among people who inject drugs

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: AIDS/Immune

Aims: Syringe services programs (SSPs) are associated with decreases in prevalence and incidence rates of HIV and viral hepatitis among people who inject drugs (PWID). The core goal of SSPs is to decrease the circulation time of contaminated syringes and to increase the "coverage" of sterile needles and syringes for every injection. There are two common syringe distribution policies at SSPs: *one-for-one exchange* and *needs-based distribution.* In October 2014, the Baltimore SSP shifted from a strict one-for-one syringe distribution policy to a needs-based distribution policy. The purpose of this research is to examine the impact of this policy change on syringe distribution and HIV incidence among PWID.

Methods: Syringe distribution data from April 2013 to December 2015 were abstracted from the Baltimore SSP and divided into monthly observations. These data were used to build an ARIMA model that forecast the estimated number of syringes that would have been distributed had the syringe distribution policy not changed in the 15-month period following the policy change. Surveillance data for PWID-associated HIV incidence were used to compare HIV incidence per month before and after the policy change.

Results: There were significant (p

Conclusions: Changing syringe distribution policy can result in significant increases in syringe distribution and support the public health needs of PWID.

Financial Support: This research was supported by a grant (PI: Dr. Susan Sherman) from amfAR, The Foundation for AIDS Research.

Abstract - ID: 676

Author(s):

Irene Pericot **(Presenter)**, University of Vermont
Diann Gaalema, University of Vermont UHC Campus
Rebecca Elliott, University of Vermont
Philip Ades, University of Vermont Medical Center
Stephen Higgins, University of Vermont

Title: Gender differences in smoking and use of nicotine and tobacco products among cardiac patients

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Sex Differences

Aims: The negative effects of using nicotine and tobacco products, particularly cigarette smoking, on health are well documented. These effects are remarkably adverse in patients with a cardiac disease, but many patients continue using these products even after experiencing an acute event. Details about which tobacco products are being used by cardiac patients and whether there are gender differences in patterns and predictors of use is unclear. The aims of the current study are to investigate gender differences in which nicotine and tobacco products are being used among cardiac patients, as well as differences in other demographic and health-related characteristics.

Methods: Participants were 206 individuals (67% males) hospitalized due to a recent cardiac event who reported using nicotine or tobacco products in the 3 months prior to their hospitalization. Participants were asked to complete a questionnaire about their pattern of smoking and use of tobacco and nicotine products, as well as about certain factors associated with smoking and use of tobacco products including educational attainment, body mass index, smoking among partners, family members and friends, perceived consequences of using nicotine and tobacco products on health, and both depressive and anxiety symptoms.

Results: When gender differences were explored, women (88.2%) compared to men (72.1%) were significantly more likely to be cigarette smokers ($x^2 = 5.89$, $p = .015$). Conversely, men (19.9%) compared with women (7.4%) reported higher use of other tobacco products such as chew tobacco or snus ($x^2 = 4.45$, $p = .035$). Regarding other characteristics, the presence of anxious ($x^2 = 4.24$, $p = .039$) and depressive symptomatology ($x^2 = 4.832$, $p = .028$) was significantly higher among women (83.8% and 67.6%) compared to men (69.3% and 50.4%).

Conclusions: Results showed gender differences in the use of tobacco and nicotine products, and in some risk factors among cardiac patients. This study suggests that among tobacco-using cardiac populations women are more likely to be using the most damaging of tobacco products, cigarettes, and may also have elevated depressive and anxious symptoms, which could make cessation more challenging. Future studies should explore the mechanisms underlying the complex relationship between psychiatric symptoms and smoking among these women, since this knowledge may help to identify the form and nature of efficacious clinical treatment.

Financial Support: Supported by the Center of Biomedical Research Excellence award P20GM103644 from the National Institute of General Medical Sciences and Tobacco Centers of Regulatory Science award P50DA036114 from the National Institute on Drug Abuse.

Abstract - ID: 677

Author(s):

Kathi Harp **(Presenter)**, University of Kentucky
D. Keith Branham, University of Kentucky

Title: Changes in demographic characteristics and drug use among non-medical prescription opioid users, 2005-2014

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Policy

Aims: Non-medical Rx opioid use has become a major public health problem in the U.S. Between 1999 and 2007, the number of opioid analgesic associated unintentional overdose deaths rose from less than 4,000 to ~12,000 annual deaths, while treatment admissions for Rx opioids nearly quadrupled. In response to the growing epidemic, several intervention efforts have been developed to prevent overprescribing and decrease access to and/or the potential abuse of Rx drugs. Two such interventions are the development of Rx drug monitoring programs and the creation of abuse-deterrent formulations of Rx drugs. In addition to the growing problem of non-medical Rx opioid use, the past decade or so has seen increases in heroin access and use. The combination of increased Rx opioid related policy and availability of illicit substance alternatives (e.g. heroin), may have had an influence on the Rx opioid using population in terms of demographic makeup and drug use behavior. To better understand the Rx opioid using population and how it has changed in recent years, this study aims to a) describe the demographic characteristics and use of various categories of drugs among Rx opioid users; and b) compare these differences from year-to-year over the past decade.

Methods: Data on substance use were obtained from the National Survey on Drug Use and Health public use files for years 2005 through 2014. Demographic and drug use variables were compared across year groupings. Chi-square was used to test for differences in each variable, with weighted percentage distributions and standard errors reported. Each year group was compared to the year group immediately preceding it and to the first year group in the study (2005-06).

Results: Both the 2011-12 and the 2013-2014 year groups differed significantly from the 2005-06 year group, with both appearing to have a smaller proportion of white non-Hispanics and greater proportions of the other race/ethnicity categories than the 2005-06 year group. Additionally, the 2011-12 year group differed significantly from the 2009-10 year group in race/ethnicity, similarly with a smaller proportion of white non-Hispanics and a greater proportion of all other race/ethnicity categories. A possible trend appears across year groups with the proportion of those reporting any race/ethnicity other than white non-Hispanic increasing with time. Additionally, there was a statistically significant difference in age for all year groups when compared to 2005-06, with a pattern of older individuals representing a greater proportion of the non-medical pain reliever (NMPR) using population in later years.

Conclusions: The results of the study indicate that when comparing the population of NMPR users over the past decade, racial and ethnic diversity has increased, users are now older, frequency of NMPR use has increased, and non-medical OxyContin use peaked around the middle of the study period and then began to drop. Numerous factors likely contributed to changes in distribution of the population’s characteristics and drug use across time, which will be discussed.

Financial Support: N/A

Abstract - ID: 678

Author(s):

Frank Buono **(Presenter)**, Yale School of Medicine
Daniel Lloyd, Yale School of Medicine
Ryan Sullivan, APT Foundation, Inc
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Natalia Zenoni, APT Foundation, Inc
Brent Moore, Yale School of Medicine

Title: The development of game-based incentives to increase utilization of an automated, computer-based treatment for methadone-maintained patients

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Prevention

Aims: Methadone maintenance is effective in treating opioid use disorder, yet rates of relapse, lack of engagement, and treatment drop-out are still high. Automated computer-based systems may improve retention, engagement and drug use outcomes. However, patient use of such systems is often low. The current study used different achievement based strategies (e.g. points, levels, and other rewards) in order to increase patient engagement of the Recovery Line, an automated (IVR) system based on Cognitive Behavioral Therapy (CBT).

Methods: We conducted progressive cycles of development and evaluation of the game-based incentives. Each cycle included development and programming of the functions (i.e., a point system based on patient use and access to different system sections) and evaluation of methadone patients with continued drug use for 2-weeks. All patients across the three phases were introduced to the level system within their orientation. Positive praise or social consequences were provided within each cycle to increase engagement. Levels progressed based on exploration of new modules, days of consecutive calls, and time length, similar to that of a game-based computer criterion. Additionally, subsequent cycles increased content on system level, points, and points needed to access the next level that were provided to the patient via text messages.

Results: Qualitative results reported participants found the IVR system attractive and interesting. Descriptive statistics demonstrated increased call time from phase one (M=50.1, SD=5.3) to phase 2 (M=55.6, SD=6.2). Additional findings correlated that all illicit drugs decreased with increased use of the line.

Conclusions: Further outcomes showed that patients who reached the final level had greater reductions in substance use, engagement in the system, and rated the system as the most likable. These initial findings suggest that the use of game-based incentives can increase patient use of automated systems.

Financial Support: R01 DA034678

Abstract - ID: 679

Author(s):

Bader Chaarani **(Presenter)**, University of Vermont
Philip Spechler, University of Vermont
Alexandra Ivanciu, University of Vermont
Stephen Higgins, University of Vermont
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Title: Cerebral blood flow changes within abstinent vs. satiated smokers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Imaging

Aims: Cerebral blood flow (CBF) differs between smokers and non-smokers but acute effects of nicotine on CBF have rarely been investigated in the human brain with brain perfusion imaging. Here, we test whether these CBF differences are more pronounced when the smokers are allowed to smoke freely (satiated) or are required to abstain from smoking prior to testing. It would be of high value to determine the optimal procedures with regard to smoking state (abstinent vs. satiated) for revealing these differences.

Methods: 15 smokers and 15 controls (non-smokers) were recruited on whom neuroimaging and behavior data were acquired. Those with a history of psychiatric disorders were excluded. Smokers were scanned twice following ad lib access to their regular cigarettes (the last cigarette must be smoked 15 minutes prior to scanning) and an overnight abstinence (order counterbalanced). Smokers with a cigarette use of less than 5 cigarettes per day were not included. Carbon monoxide levels were verified at baseline, abstinence and satiety. Whole-brain parametric perfusion maps were generated using Pseudo-Continuous Arterial Spin Labeling (pCASL) and compared among smokers and non-smokers with age, gender, educational level and handedness included as covariates in the design matrix.

Results: Abstinent and satiated smokers showed less CBF levels compared to non-smoker controls in the IFG, the occipital lobe and right posterior cortical regions (cluster-corrected at $p < 0.05$). There was no nicotine effects on CBF within smokers. Roi-level analysis revealed that abstinent smokers have the lowest global CBF while satiated smokers show intermediate global CBF between satiated and non-smokers.

Conclusions: Abstinent smokers were characterized by the lowest levels of global CBF in the brain and are, thus, more sensitive probes than satiated smokers for elucidating differences between smokers and non-smokers in nicotine dependence studies assessing brain perfusion.

Financial Support: Tobacco Centers of Regulatory Science award P50DA036114

Abstract - ID: 680

Author(s):

Evan Herrmann **(Presenter)**, Columbia University Medical Center
Ziva Cooper, Columbia University and NYSPI
Gillinder Bedi, Columbia University
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Margaret Haney, Columbia University Medical Center

Title: Effect of varenicline alone and in combination with nabilone on cannabis withdrawal and relapse in tobacco-smoking cannabis users

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Treatment

Aims: Tobacco use is a negative predictor of cannabis cessation attempts outcomes, and vice versa. We have shown that cannabis users who smoked cigarettes were 19X more likely to relapse to cannabis in the laboratory than non-smokers. This study assessed whether the partial nicotinic agonist, varenicline, alone, and in combination with the cannabinoid agonist, nabilone, decreased cannabis withdrawal and relapse relative to placebo.

Methods: Non-treatment-seeking cannabis and tobacco users (n = 77) were randomized to varenicline or placebo-varenicline, and then completed a 15-day outpatient phase, to titrate varenicline to 1.0 mg BID, and to attempt tobacco cessation. Participants who completed the outpatient phase then enrolled in a 16-day inpatient phase. Inpatient phases consisted of two 8-day blocks. Participants smoked active cannabis during the first 2 days of each block (baseline), and received nabilone or placebo-nabilone on the last 6 days, in counter-balanced order. During the first 3 days of each 6-day medication period, placebo-cannabis was available for self-administration (withdrawal). On the last 3 days, active cannabis was available (relapse).

Results: Forty-six participants completed the inpatient phase. Participants receiving varenicline were more successful at quitting cigarettes (57% vs. 17%) based on urinary cotinine, and reported less negative mood and cigarette craving at inpatient baseline. Nabilone reversed withdrawal-related disturbances in mood and sleep in both groups. Nabilone reduced relapse in the varenicline group, but not the placebo group. Overall, rates of cannabis relapse were low in this study.

Conclusions: Varenicline facilitated outpatient tobacco cessation in daily cannabis smokers. Nabilone reversed withdrawal-related disruptions in mood and sleep in both groups, but only reduced relapse in the varenicline group. These findings support further clinical testing of varenicline to promote smoking cessation in heavy cannabis users.

Financial Support: 5R01DA031005

Abstract - ID: 681

Author(s):

Karma McKelvey **(Presenter)**, UCSF
Danielle Ramo, UCSF

Title: Content analysis: Tobacco status project Facebook smoking cessation RCT

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: Smoking cessation interventions delivered through social media offer an opportunity to engage young people in behavior change interventions through a medium that is well-integrated in their lives, and to use social networks to facilitate change. We conducted content analysis of interactions within the Tobacco Status Project, a Facebook cessation intervention for young adults, to broadly characterize interactions in this novel medium and to examine content by motivation to quit and receipt of a monetary incentive for engagement.

Methods: We analyzed data from the treatment arm of a randomized trial testing the efficacy of the *Tobacco Status Project* Facebook intervention. Young adults age 18 to 25 (N=138, 56% female, 71% white) were recruited online and placed into a secret Facebook group tailored to readiness to quit. Daily messages posted to groups for 90 days were tailored to Transtheoretical Model readiness to quit (Not Ready [33%], Thinking [46%]; Getting Ready [20%]). Groups were randomized to receive up to $90 for commenting on posts ("incentive") or no incentive ("control"). Content analysis was conducted by two coders using open coding until thematic saturation had been reached. Themes were classified by readiness to quit group and incentive.

Results: Dominant themes in Not Ready groups were: personal experiences with smoking and quitting (incentive) and people/scenarios that may motivate them to quit (control); the second most common theme was friends and family (both). For Thinking groups, coping skills was the most dominant theme; followed by friends and family (incentivized) and personal experiences (controls). For Getting Ready groups, coping strategies was the dominant theme; second were motivation (incentive) and invited support (control).

Conclusions: Consistent with stage-matched intervention theory, content in not ready groups related to motivational enhancement through values and pros of change. In more motivated groups, content was focused on strategies for quitting rather than personal experience. Intervention messages tailored to readiness to quit appear effective in eliciting the desired responses from young adult smokers.

Financial Support: Ramo: Drug Abuse (NIDA) [grant number K23 DA032578] McKelvey: National Cancer Institute (NCI) [grant R25 CA113710

Abstract - ID: 682

Author(s):

Carlos Mahaffey **(Presenter)**, University of Kentucky
Danelle Stevens-Watkins, University of Kentucky
Paris Wheeler, University of Kentucky

Title: Risks for nonmedical use of prescription opiates among incarcerated African-American men

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Behavior

Aims: The rate of accidental deaths from drug overdoses has increased 137% since 2000 (Rudd, Aleshire, Zibbell, & Gladden, 2016). Opioids represent 61% of drug overdose deaths in 2014, with prescription opioids responsible for at least half (CDC, 2016). Research has shown that more than 10 million people use prescription opioids for non-medical reasons (Compton, Jones, Baldwin, 2016), mainly obtained from friends or relatives (SAMHSA, 2016). However, few studies are targeted beyond college campuses and rural, White populations. The purpose of this study is to examine the risks associated with non-prescription opiate use among soon-to-be released, African American men (N = 206).

Methods: Self-reported data was collected from incarcerated African American males to conduct bivariate correlations and binomial logistic regression. The dependent variable of interest was "Have you ever used opiates that were not prescribed to you by a health provider?" with responses coded as 0 = no and 1 = yes. Independent variables included age, lifetime experience of depression, lifetime experience of anxiety, number of times treated for drug abuse, and abuse of prescription drugs by immediate family. It is hypothesized that younger men who have experienced depression and anxiety, have been treated for drug abuse more often, and have immediate family members who abuse prescription drugs would be more likely to use engage in using non-prescription opiate drugs.

Results: Results of the binomial logistic regression: Men who experienced a significant period of depression in their lifetime were 2.4 (95% CI, 1.02 to 5.59) times more likely to use opiates that were not prescribed to them (Wald $x^2(1) = 3.99$, $p < .05$). Men who had members of their immediate family that abused prescription drugs were 4.5 (95% CI, 2.06 to 10.04) times more likely to use opiates that were not prescribed to them by a health care professional (Wald $x^2(1) = 14.00$, $p < .001$). Age, lifetime experience of anxiety, and the number of times treated for drug abuse were not significant.

Conclusions: Little is known about nonmedical use of prescription drugs among African Americans. The current study adds to the literature in that it examines risks associated with nonmedical use of prescription opiates among soon-to-be released African American men. Future studies are needed to examine differences in rural and urban settings that men return to after release and the impact on opiate and other prescription drug use.

Financial Support: NIDA K08-DA032296, PI: Stevens-Watkins & NIDA T32-DA035200, PI: Rush

Abstract - ID: 683

Author(s):

Angela Heads **(Presenter)**, University of Texas Health Science Center
Joseph Dickson, Prairie View A and M University
Joy Schmitz, University of Texas Health Science Center
Aisha Asby, Asby Consulting

Title: Risk and protective factors for sexual risk behaviors in college students: Marijuana use, binge drinking, HIV risk knowledge and coping style

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Prevention

Aims: Behaviors such as binge drinking, risky sexual behavior(RSBs) and substance use(SU) place young adults at a higher risk for negative health consequences including HIV and other STIs. The present study was designed to estimate the incidence of RSBs, determine the impact of alcohol and/or marijuana use on engagement in RSBs, and to examine how coping style may be related to this set of risk behaviors within a predominantly African-American college student population.

Methods: Participants were primarily African American students attending a Historically Black College/University (HBCU) and participating in HIV education and prevention outreach efforts. Data regarding substance use, binge drinking and RSBs are reported. The sample consisted of 266 students. 89.4% identified as African American (n=237) 36.1% of participants identified as male and 63.5% identified as female. The mean age for participants was 20.82 years (SD = 4.46). Chi square tests and logistic regression were used to determine gender, race and residence differences and significant coping related predictors of risk behaviors.

Results: 37.5% of participants reported participating in binge drinking, 41.0% reported unprotected sex and 37.2% reported marijuana use in the 30 days prior to the survey. There were no significant differences between men and women and on- campus or off-campus residents in rates of binge drinking, SU or SRBs. Logistic regression analyses revealed that active coping, substance use coping and behavioral disengagement were significant predictors of binge drinking in the sample. The overall model was significant (X^2= 29.762, p < .05, explaining 31% (Nagelkerke R^2) of the variance. Substance use coping was a significant predictor of marijuana use. Although the overall model was significant, (X^2= 27.218, p < .05, 31% of variance explained), none of the other coping styles contributed significantly. The model predicting sexual risk behaviors was not significant.

Conclusions: Findings indicate that active coping and behavioral disengagement were associated with fewer health risk behaviors and may be examined as a protective factor in future studies. The impact of HIV risk knowledge and risk perception are also discussed. Implications for intervention and prevention in African American college students are discussed.

Financial Support: SAMHSA H79 SP020196

Abstract - ID: 685

Author(s):

Traci Rieckmann **(Presenter)**, Oregon Health and Science University
Aimee Campbell, Columbia University and NYSPI

Title: Clinician attitudes, perceived social norms, and intentions to implement Web-delivered interventions

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Technology Issues

Aims: INTRODUCTION: Internet-delivered interventions (IDI) are thought to deliver effective treatment while decreasing barriers to access, but additional feedback from clinicians about their experiences and intentions to implement IDI is needed. The Theory of Reasoned Action (TRA) states that the best determinant of behavior is intention, which is driven by attitude and perceived social norms. To better understand IDI implementation, we employed the TRA to examine the impact of attitudes and social norms on intentions to use IDI.

Methods: METHODS: This study was part of a large longitudinal efficacy trial funded by NIDA's Clinical Trials Network. Collecting provider survey data, we compared data from 46 clinicians using the web-based Therapeutic Education System (TES) and 83 delivering treatment-as-usual (N=129). We assessed change in clinician attitudes, social norms and intentions at three points: baseline (pre-implementation), follow-up 1 (treatment completion), and follow-up 2 (post study outcomes sharing).

Results: RESULTS: Within the sample 57% of participants had at least 5 years of counseling experience, 57% held at least a Master's degree, 73% were counselors or clinical supervisors, and 30% reported being in recovery. The mean participant score on the attitude scale increased slightly over time, from .98 at baseline to 1.14 at follow-up 2 (-3 to 3 scale). At baseline, intention to implement TES was positively associated with perceived social norms (p = .0048), but there was no significant relationship between intention and attitudes toward IDI (p = .5484). At follow-up, intention to implement TES was positively associated with attitudes toward IDI (p = .041) and perceived social norms (p = .0008).

Conclusions: DISCUSSION: Given the impact of clinician perceptions on implementation and full-scale adoption of IDI, it's important to understand and develop mechanisms to enhance or improve provider intentions and support for these innovative interventions. Using TRA, we found that social norms appear to have a greater influence on intentions, and counselor attitudes seemed to fluctuate in their influence over time. Based on this study it's possible that TRA does not capture the complexities and nuances of provider experiences, beliefs and intentions to implement new practices.

Financial Support: This study was part of a large longitudinal efficacy trial funded by NIDA's Clinical Trials Network.

Abstract - ID: 686

Author(s):

Anne Skinstad **(Presenter)**, University of Iowa
Sean A Bear , University of Iowa College of Public Health, National American Indian and Alaska Native ATTC

Title: Honoring our Native American warriors

Abstract Category: Program Descriptions

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Co-Occurring (alcohol, club/designer drugs, inhalants, marijuana/cannabinoids, nicotine/tobacco, opiates/opioids, polydrug, sedative-hypnotics, stimulants)

Topic: Treatment

Aims: The primary aim of this project is to improve the service received by American Indian and Alaska Native (AIAN) Veterans by sharing knowledge of AIAN history, culture, and spiritual ways. The curriculum is intended to help providers create a safe and culturally-affirming environment in which AIAN Veterans with substance use and co-occurring mental health disorders can begin to heal.

Methods: This curriculum was developed at the National AIAN ATTC led by Sean Bear 1st, BA, CADC, Meskwaki. A series of qualitative interviews with AIAN Veterans was conducted in order to better-inform the project, and parts of the curriculum have been piloted at conferences across the country.

Results: This curriculum is still in pilot stages. Desired results include providers approaching treatment with increased knowledge about this history of AIAN warriors and the historical trauma that contributes to substance use and other co-occurring mental health disorders among AIANs; providers adopting a strengths-based, more-informed attitude on how to work with AIAN clients; and providers using culturally-adpated, evidence-based or experienced-based methods in their work with AIAN Veterans.

Conclusions: In many American Indian and Alaska Native (AIAN) tribes, it is considered a high honor to serve as a warrior. According to the Department of Defense, AIAN Veterans serve at some of the highest rates in the country. Upon returning from duty, many of these AIAN veterans suffer from mental health disorders such as Posttraumatic Stress Disorder (PTSD) and/or substance use disorders. These issues can be further compounded by the historical or generational trauma faced by AIANs due to the historic removal of AIANs from their land, broken treaties, and children being removed from their homes (which many AIANs view as ongoing cultural genocide).

The National AIAN ATTC, led by Senior Behavioral Health Consultant and Training Coordinator Sean Bear 1st, Meskwaki, has put together a curriculum celebrating the strength and long history of service as a warrior to be shared with providers who work with AIAN Veterans and with Veterans themselves. This presentation will be aimed at sharing valuable cultural and historical information with providers to help increase knowledge, attitudes, and skills when working with AIAN Veterans. This curriculum is strengths-based and has been put together with respect to AIAN spiritual and cultural ways.

Financial Support: The National American Indian and Alaska Native ATTC is funded by the Substance Abuse and Mental Health Administration (SAMHSA) Center for Substance Abuse Treatment (CSAT)

Abstract - ID: 687

Author(s):

Brian Fairman **(Presenter)**, National Institute of Child Health and Human Development
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Stephen Gilman, National Institute of Child Health and Human Development

Title: State-level alcohol policies and trajectories of heavy episodic drinking from 10th grade into young adulthood

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Alcohol

Topic: Policy

Aims: Studies of alcohol policies typically assess cross-sectional or ecologic associations with alcohol use. We investigated the association between 19 state-level alcohol policies and trajectories of heavy episodic drinking (HED) from high school into young adulthood.

Methods: Data were from 6 annual waves of the NEXT Generational Health Study, a nationally-representative cohort of 10th graders (mean age=15.8 yrs.) followed into young adulthood (mean age=20.8 yrs.; n=2744). Participants reported frequency of HED in the past 30 days. Alcohol policies in effect at wave 1 were scored for strength and covered laws targeting underage drinkers, providers, and beer taxes. Latent class growth analysis was used to categorize adolescents according to their HED frequency over time. Multinomial logistic regression related state-level policies, neighborhood alcohol outlet density, and participant demographics to class membership.

Results: Four classes of heavy episodic drinking were identified: 1) consistent low class (63.8%), 2) increasing class (19.0%), 3) moderate stable class (14.2%), and 4) high increasing class (3.0%). Relative to the low drinking class, participants were less likely to be in the high increasing (relative risk ratio, RRR = 0.2) or moderate stable classes (RRR = 0.8) in states with stronger furnishing policy, or in the increasing class with stronger possession, purchasing (both RRR ~ 0.5), and training policies (RRR=0.4). Unexpectedly, stronger policies related to on-premises bartenders, hosting, and zero tolerance were associated with a higher likelihood to be in the increasing class (RRR range = 1.3 to 2.7).

Conclusions: State alcohol policies, with some exceptions, were associated with adolescent and emerging adult membership in trajectory classes of HED favoring lower HED. Future work is needed to examine associations of individual and combinations of policies as well as heterogeneity across population subgroups.

Financial Support: The NEXT Generation Health Study is supported by the Intramural Research Program of the Eunice Kennedy Shriver National Institute of Child Health and Human Development (Contract # HHSN267200800009C), and the National Heart, Lung and Blood Institute (NHLBI), the National Institute on Alcohol Abuse and Alcoholism (NIAAA), Maternal and Child Health Bureau (MCHB) of the Health Resources and Services Administration (HRSA), and the National Institute on Drug Abuse (NIDA).

Abstract - ID: 688

Author(s):

Susan Mikulich-Gilbertson **(Presenter)**, University of Colorado School of Medicine
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Joseph Sakai, University of Colorado School of Medicine

Title: Evaluating interrelationships between trajectories of choice behavior and ICA-derived brain network activation by game trials ordered according to self-benefit relative to other-harm in adolescents with substance use disorder and controls

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Imaging

Aims: Adolescents in treatment for substance use and conduct problems (SCP) often make decisions which benefit themselves but may harm others (e.g., theft). A novel paradigm examining self-vs.-other decision making discriminates groups on simplistic behavior outcomes and using MRI, we have identified a brain network engaged during such decisions. Here we compare trajectories of choice behavior in SCP patients and controls using different trial orderings determined by relative contribution of self-benefit and other harm. We will also estimate associations between these choice trajectories and brain networks determined by Independent Component Analysis (ICA) that have the strongest temporal correlation with periods of decision.

Methods: Adolescent patients (n=21) and controls (n=24) played a game in the MRI where they accepted or rejected offers pairing varying levels of monetary self-benefit with varying levels of loss to a charity donation. We evaluated whether ordering trials in terms of self-benefit to other harm (1) ratio or (2) difference explained more choice behavior. Trajectories of choices based on orderings were compared between groups with generalized linear mixed models (GLMM). With multivariate GLMM we will estimate associations between choice trajectories and ICA-determined brain networks compare them between groups.

Results: Trajectories of trials ordered by either decreasing (1) ratio of self-benefit/other harm or (2) difference (self-benefit–other harm) were significantly elevated in SCP patients who always accepted more trials ($p < 0.001$) and showed less decrease in acceptance as other harm increased ($p< 0.001$) than controls. Ordering trials by difference explained more choice behavior than by ratio, particularly in controls.

Conclusions: Trajectories of choice behavior differed between SCP patient and control adolescents, whether trials were ordered by decreasing ratio or by the difference between self-benefit and other harm. Associations between these choice trajectories and brain networks determined by ICA that have the strongest temporal association with periods of decision will be estimated and compared between SCP patients and controls.

Financial Support: DA034604, DA031761, WAGNER15A0, Kane and Hewit Family Foundations

Abstract - ID: 689

Author(s):

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Title: Impact of Florida PDMP introduction, pill mill legislation and oxycontin reformulation on tablets dispensed in Florida and California

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Dependence

Aims: We studied the impact of 2 interventions on dispensing of extended-release oxycodone (OxyContin) and immediate-release (IR) oxycodone single-entity (SE), stratified by highest (80mg OxyContin and 30mg IR oxycodone SE) and lowest tablet strengths (10mg and 5mg, respectively); higher tablet strengths have higher illicit resale value. The interventions were 1) introduction of OxyContin reformulated with abuse-deterrent properties in August 2010 and 2) introduction of pill mill legislation and prescription drug monitoring program (PDMP) in Florida (FL) by September 2011. California (CA) was used as a comparator state.

Methods: Change in tablets dispensed from 1 month before to 4 months after OxyContin reformulation (7/2010 to 11/2010) and from 1 month before to 4 months after FL legislation/ PDMP introduction (8/2011-12/2011), using IMS Xponent data.

Results: The number of 80mg OxyContin tablets dispensed after its reformulation decreased in FL (-37%) and CA (-46%), while IR oxycodone SE 30mg tablets increased (+8% and +43%, respectively) and IR oxycodone SE 5 mg tablets did not change (0% and 1%) with little change for 10mg OxyContin tablets (0% and +4%). After FL legislation/ PDMP introduction, IR oxycodone SE 30mg tablets decreased in FL (-32%) but not CA (-3%) with little change in IR oxycodone SE 5 mg tablets (-3% and 0%), and little change in OxyContin 80mg tablets (-7% and -3%) or 10mg tablets (+1% and -3%).

Before (8/2011) the FL PDMP introduction, 29 times more tablets of IR oxycodone SE 30mg than OxyContin 80mg were dispensed in FL, and 9 times more in CA..

Conclusions: After the national reformulation of OxyContin, the number of OxyContin 80mg tablets dispensed decreased substantially in both FL and CA with increases in IR oxycodone SE 30mg. A year later with the FL legislation/ PDMP (and no analogous actions in CA at that time), IR oxycodone SE 30mg tablets dispensed decreased in FL but not CA, with little change in OxyContin dispensing. The OxyContin reformulation and FL state interventions had distinct effects on oxycodone dispensing.

Financial Support: Purdue Pharma L.P.

Abstract - ID: 690

Author(s):

Ivori Zvorsky **(Presenter)**, Vermont Center on Behavior and Health
Joan Skelly, Vermont Center on Behavior and Health
Stephen Higgins, University of Vermont

Title: The utility of a cigarette purchase task in detecting differences in the reinforcing efficacy of cigarettes between opioid-maintained and non-dependent pregnant cigarette smokers

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: Smoking during pregnancy is the leading preventable cause of poor pregnancy outcomes in the US. Prior research has validated the ability of the Cigarette Purchase Task (CPT), which simulates hypothetical demand for cigarettes, to predict important individual differences among pregnant women trying to quit smoking. The primary aim of this study is to investigate whether the CPT can provide insight into how demand for cigarettes varies in relation to opioid dependence in this population, which often predicts a low likelihood of quitting.

Methods: Participants were 72 pregnant cigarette smokers (36 opioid-dependent and 36 non-opioid dependent) enrolled in an on-going smoking-cessation trial. All opioid-dependent women were enrolled in opioid-substitution therapy. All participants completed the CPT, demographic, and smoking-characteristic questionnaires at study intake. Non-parametric Mann-Whitney U tests were utilized to examine CPT indices. Chi-square analyses were utilized to examine biochemically verified smoking status at a late pregnancy (? 28 weeks gestational age) visit.

Results: While robust significant differences were observed in late pregnancy smoking status, with 97% of opioid-maintained women continuing to smoke compared to 53% of non-dependent women ($X^2(1, N=72)=17.47$, $p< .001$), we discerned no significant differences on any CPT indices.

Conclusions: While preliminary, these findings suggest that demand as measured by the CPT may not capture the smoking characteristics that contribute to the difficulties in quitting experienced by pregnant opioid-dependent women. Clearly, more remains to be learned about the processes and mechanisms underlying the relationship of continued smoking and opioid dependence, which makes quitting difficult, for opioid-dependent pregnant women.

Financial Support: Supported by R01HD075669, T32DA007242, P20GM103644

Abstract - ID: 691

Author(s):

Nicole Petersen **(Presenter)**, UCLA
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Title: Sex differences in subjective evaluations of reduced nicotine cigarettes

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Sex Differences

Aims: Male and female smokers respond differently to reduced nicotine cigarettes (RNCs). In one previous study, men reported subjectively liking and being satisfied by RNCs of 0.10 mg nicotine yield significantly less than women did, and in a randomized trial of RNCs for smoking cessation, more women than men remained abstinent at 36 weeks. However, the extent to which men and women subjectively enjoy ("like") RNCs across a wide range of nicotine yields, both above and below 0.10 mg, has not been compared previously. Therefore, the aim of this study was to evaluate sex differences in subjective evaluations of RNCs.

Methods: Female and male daily smokers (18-25) years old smoked RNCs delivering 0.027, 0.110, 0.231, or 0.763 mg nicotine, or their own preferred cigarette, on one of five test days. Questionnaire measures were obtained both after overnight abstinence and after smoking.

Results: Men were able to detect differences in the nicotine yield of the different RNCs, but women did not differ in their reports of the perceived nicotine content of the RNCs. Similarly, men reported subjectively liking RNCs with higher nicotine yields more than those with lower nicotine yields, whereas women did not report differently liking RNCs of different nicotine yields. Smoking RNCs of any nicotine yield significantly increased positive affect in women, but no RNC increased positive affect significantly in men.

Conclusions: These findings may be important to policymakers as they evaluate a reduction in the nicotine yield of commercially available cigarettes. Because men are more sensitive to the nicotine yield in RNCs, setting a nicotine standard in cigarettes below a yet-unknown threshold may pose a greater problem to the subjective evaluation of RNCs in men than in women. Because women like RNCs more than men, and experience increased positive affect after smoking any RNC, women may be more likely to switch from conventional cigarettes to RNCs than men.

Financial Support: This study was funded by NIH/NIDA R01DA036487 to EDL and the National Center for Advancing Translational Sciences UCLA CTSI Grant UL1TR000124 to EDL and NP.

Abstract - ID: 692

Author(s):

Darrick May **(Presenter)**, Johns Hopkins Bloomberg School of Public Health
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Title: Psilocybin mushroom occasioned experiences: Impact on attitudes about death and dying

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Hallucinogens

Topic: Other

Aims: In clinical trials, psilocybin has shown promise as a potential treatment to reduce psychological distress including death anxiety and to increase life satisfaction in patients with a life-threatening cancer diagnosis. The present survey, which focused on perspectives on death and dying, aimed to characterize the phenomenology and attribution of enduring effects of experiences occasioned by ingestion of psilocybin mushrooms.

Methods: Survey respondents completed an anonymous internet survey after endorsing having had an experience occasioned by psilocybin mushrooms that fundamentally altered their beliefs or understanding about death and dying. Questionnaires assessed qualitative features of the experience and changes in attitudes about death and dying before and after the experience.

Results: 92% of the 388 respondents reported decreased fear of their own death after the psilocybin experience. 95% attributed persisting increases in life satisfaction to the experience. 72%, 73%, 68%, and 44%, respectively, rated the experience to be among the top 5 most personally meaningful, spiritually significant, psychologically insightful, and psychologically challenging experiences of their life, with 21%, 36%, 29% and 15% rating it as the single most. 50% met a priori criteria for having had a full mystical-type experience as assessed by the Mystical Experience Questionnaire (MEQ30). Mystical experience scores were significantly negatively correlated with mean change scores (before vs. after psilocybin experience) on the Death Attitude Profile subscales Fear of Death and Death Avoidance.

Conclusions: Consistent with results from clinical trials with psilocybin, the results of this survey suggest that experiences with psilocybin mushrooms may be associated with reduced death anxiety and increased life satisfaction.

Financial Support: NIH grants T32DA007209 & R01DA003889; Heffter Research Institute

Abstract - ID: 693

Author(s):

Aileen Gariepy **(Presenter)**, Yale University
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Erica Miller, Yale University
Lynn Fiellin, Yale University

Title: Development of a mobile game app to reduce high-risk sexual behavior in adolescents under the influence of drugs and/or alcohol

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Adolescent

Aims: To conduct the formative work to inform the development of a mobile game app intervention, using input from the adolescents, aimed at decreasing high-risk sexual behaviors while under the influence of drugs and/or alcohol that can lead to unintended pregnancy and HIV/STIs.

Methods: We recruited 15-17 years old, English-speaking, adolescents who have their own phone from local high schools and youth centers in the community to participate in a patient-centered, iterative, mixed methods study to develop a mobile phone game. We collected quantitative and qualitative data via survey and in-person, semi-structured interviews respectively. Sessions were audio-recorded, transcribed, analyzed, and key themes were identified. We used an iterative process of feedback between adolescents, game developers, and researchers to design a mobile game app.

Results: We conducted seven focus groups (n=26) of adolescents (mean age 15.8 years): Black (44%), Hispanic (62%). Four prominent themes emerged: games and social media permeate adolescents' lives, marijuana and alcohol use escalates high-risk sexual behavior, misperceptions related to sexual behavior impact adolescents' decisions, and adolescents perceive a lack of control (self-efficacy) over their sexual health. Adolescents supported that a mobile game app that teaches and models the consequences of high-risk sexual behavior, including sex under the influence of drugs and alcohol, could decrease high-risk sexual behavior, and made specific and creative suggestions for how the game should work.

Conclusions: Using this qualitative data to create a mobile game app intervention, we will determine its preliminary efficacy with 30 adolescents aged 15-17, collecting baseline and 3-month data in a pre-post design on sexual knowledge, intentions regarding sexual decision making (number of partners, intercourse under the influence of drugs, condom use), risk perceptions, and self-efficacy regarding condom negotiation and use.

Financial Support: Society of Family Planning Research Fund

Abstract - ID: 694

Author(s):

Robin Pollini, West Virginia University-Injury Control Research Center
Catherine Paquette **(Presenter)**, Pacific Institute for Research and Evaluation
Jennifer Syvertsen, Ohio State University

Title: "Hooked on" prescription opioids prior to heroin use among people who inject drugs in Fresno, California

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: Prescription opioid use has been identified as a precursor to heroin use, but the potential contributions of structural level interventions like prescription opioid supply/diversion reduction and tamper resistant reformulations remain poorly understood. We examined prescription opioid abuse prior to heroin use among PWID in Fresno, California.

Methods: We recruited PWID using respondent driven sampling. Eligibility criteria were ≥18 years old and injected in the past 30 days. An interviewer-administered survey included demographics and a detailed drug use history, including drug use trajectories involving opioids.

Results: Among 494 study participants median age was 46 years (IQR: 33-54), 38% were female, and most identified as White (43%) or Hispanic/Latino (39%). A majority (86%) reported ever using heroin, of whom all reported ever injecting heroin. One in four heroin users (26%) reported being "hooked on" prescription opioids before ever using heroin, most commonly OxyContin (52%), Norcos (37%), and/or Vicodin (28%). Routes of prescription opioid administration prior to heroin use were oral (90%), snorting (54%), smoking (34%), and/or injecting (35%). The most common reasons for starting to use heroin were that heroin was cheaper than prescription opioids (36%), it was getting harder to get prescription opioids (24%), and just wanted to try heroin (14%). Overall, 79 participants reported using OxyContin before it was introduced in a tamper resistant formulation; of these, 55 (70%) said their OxyContin use changed after reformulation, including 29 (37%) who substituted heroin for OxyContin. Thirty of the 79 participants who used OxyContin prior to the reformulation said they had never used heroin up to that point; 18 of these PWID (60%) said their first heroin use was a direct result of the reformulation.

Conclusions: Structural interventions to reduce prescription opioid abuse, such as diversion/supply reduction and tamper resistant reformulation, carry the risk of unintended consequences including transitions to heroin use and injection.

Financial Support: National Institute on Drug Abuse grant #R01DA035098

Abstract - ID: 695

Author(s):

Miltika Kanabar **(Presenter)**, Kaiser Permanente
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Title: Achieving opioid safety with patient, clinician and pharmacist partnership

Abstract Category: Program Descriptions

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Tolerance/Dependence

Aims: Reducing opioid burden in a primary care clinic with an institutional Opioid Safety Program

Methods: Program Description: A pilot group of 9 primary care providers at Kaiser Permanente San Francisco referred patients with opioid use greater than 60 days, who have picked up at least 2 refills to the Opioid Safety Program (OSP). The team pharmacists analyzed patient electronic health records and reached out to patients above 18 years of age with non-cancer pain. Patients receiving care from chronic pain, hospice, or palliative care subspecialties were excluded. Patients willing to participate, were given a brief introduction to the program. They were invited to attend an opioid safety class. The team verified health record completeness regarding urine testing and opioid medication agreement letters. Controlled substances were refilled by pharmacist under protocol in accordance with best practices. Under the supervision of referring provider, enrolled patients could be referred to the taper service and followed every few weeks. Their total opioid dose was slowly decreased based on withdrawal symptoms and patient preference. Withdrawal medications or alternate therapies if needed were prescribed by the overseeing providers.

Results: Between September and November 2016, 116 patients were reviewed for the program. Out of this 76 patients met criteria. In the first phase, 40 patients attended the opioid safety class, out of which 5 patients self-referred for opioid taper. There were 4 unexpected urine drug screen results. Other patients are currently being followed by the team. The second phase of the pilot will commence soon.

Conclusions: This program provides needed patient education for opioid safety for opioid use beyond 60 days. Also it helps patients, prescribers and pharmacists to collaborate and reduce the opioid burden in the primary care population. Further data is needed to look at the long term sustainability and success rate of this program.

Financial Support: None

Abstract - ID: 696

Author(s):

Catherine Paquette **(Presenter)**, Pacific Institute for Research and Evaluation
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Title: Mobile phone and Internet use among people who inject drugs in Fresno, California

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Injection drugs - opioids, stimulants

Topic: Technology Issues

Aims: Interest in mobile phone and internet-based health interventions is growing but little is known about access to these technologies among PWID. We examined mobile phone and internet access among PWID in Fresno, California.

Methods: We used respondent driven sampling to recruit participants. Eligibility criteria were ≥18 years old and injected in the past 30 days. An interviewer-administered survey included questions on demographics, drug use history, and cell phone/internet use.

Results: Among 494 PWID median age was 46 years (IQR: 33-54), 38% were female, and most identified as White (43%) or Hispanic/Latino (39%). Seventy-seven percent currently had a cell phone, with a majority having smart phones (87%), voice and internet service (85%), and free service (67%; e.g., through Lifeline Assistance/"Obama" phones). A majority (56%) had their current phone number for less than 3 months, while only 20% had their current number for 1 year or more. With regard to internet use, 80% had ever used the internet, most commonly on their own phone/mobile device (84%), someone else's phone/mobile device (52%), home computer (33%), and/or public library (28%). The internet was most commonly used to access general information on drugs (61%), employment services (59%), housing services (57%), and/or drug treatment (45%). Fewer reported using the internet for information on safer injection methods (20%), syringe access (18%), and HIV/HCV testing (17%). Among participants who had never used the internet, reasons included not knowing how to get online (50%), not knowing how to use a computer (46%), and not needing to/not being interested (43%).

Conclusions: A majority of PWID had a smart phone but two-thirds relied on free phone service and a majority had their current phone number for only a short time; these may be important considerations for designing mobile-based interventions. A majority of PWID used the internet for drug-related and social services information; harm reduction programs should consider directing clients to reliable websites for drug-related information and referrals.

Financial Support: National Institute on Drug Abuse grant #R01DA035098

Abstract - ID: 697

Author(s):

Carla Rash **(Presenter)**, UConn Health
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Title: Characteristics of homeless adults who successfully quit smoking

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: Background: Up to 80% of homeless individuals smoke cigarettes, contributing to significant health disparities and high mortality rates. Understanding how homeless smokers quit smoking is particularly important since so few are successful and standard treatments are usually ineffective. Such information may be used to tailor smoking treatments for this population. **Aim:** To characterize homeless individuals who successfully quit cigarette/cigarillo use.

Methods: Method: A total of 610 individuals who were receiving services at 6 homeless shelters in a large mid-West city completed a health behavior survey and were included in this study.

Results: Results: We identified 49 ex-smokers (8%) in the sample. Ex-smokers reported multiple prior quit attempts (M = 5.3, SD = 4.3) and averaged about 3 years (SD = 4.7) of prior smoking abstinence. Lifetime use of multiple cigarette products was common among ex-smokers (63%; i.e., cigars, chewing tobacco). Some ex-smokers considered these products definitely or somewhat helpful for quitting or reducing cigarette/cigarillo use (6% to 64% depending on specific product). Most ex-smokers (69%) had abstained for more than one year (IQR = 7-112 months) in this cessation attempt, but several individuals reported continued use of other products (e.g., e-cigs, chewing tobacco). The majority of ex-smokers (61%) quit smoking without use of cessation aids. When these aids were used, nicotine replacement products (14% transdermal; 16% other), behavioral options (12%; helpline, phone apps), and e-cigs (12%) were most common. Prescription cessation medication use was rare (2-8%).

Conclusions: Conclusion: Results indicate that tobacco cessation efforts in the homeless population should address the use of multiple tobacco products, direct individuals to freely available resources, and provide education and access to effective cessation options.

Financial Support: Supported by: NIH grants: R21-DA031897, P50-DA009241, P60-AA003510, R01-HD075630, R01-AA021446, MRSG-12-114-01-CPPB, and R01-AA023502. Connecticut Institute for Clinical and Translational Science (CICATS).

Abstract - ID: 698

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Title: A CB1 antagonist reverses analgesia induced by a combination of the cannabinoid WIN55212-2 plus morphine in the mouse formalin test

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Marijuana/Cannabinoids

Topic: Drug Interactions

Aims: The feasibility of using a combination of a cannabinoid and an opioid was investigated as a strategy to reduce the dose of opioid needed for analgesia. Antinociception was measured by formalin-induced paw licking time in the mouse formalin test. Morphine, the cannabinoid WIN55212-2 (WIN), and a CB2-selective agonist, GP1a, all individually induced analgesia in this assay. A combination of WIN (1 mg/kg) plus morphine (1 mg/kg) was super-additive. WIN has been reported to act at both CB1 and CB2 receptors, as well as TrpV1 receptors. The present experiments used the selective antagonists, SR141716, SR144528 and SB366791, for CB1, CB2 and TrpV1 receptors, respectively, to investigate their role in the antinociception induced by the combination of morphine plus WIN.

Methods: At T=-30 min, each animal was injected i.p. with vehicle (5% DMSO), SR141716 (5.0 mg/kg), SR144528 (5.0 mg/kg) or SB366791 (1.0 mg/kg). At T=0, morphine (1.0 mg/kg) and WIN (1.0 mg/kg) were each injected s.c. on opposite sides of the dorsal surface of the body. Controls received 5% DMSO and saline. Immediately following morphine and WIN, 20 ?l of 5% formalin in 0.9 % saline was administered s.c. into the dorsal left hind paw. During the interval (+20 to +35 min), the number of seconds spent licking the formalin-injected paw was scored.

Results: The results of a very recent experiment showed that 1) SR141716, SR144528 or SB366791, alone, had no analgesic effect; 2) The combination of morphine + WIN though not super-additive, produced a significant decrease in licking time ($p < 0.005$), compared to the control group; 3) SR141716 blocked ($p < 0.01$) the antinociception induced by the morphine/WIN combination, but neither SR144528 nor SB366791 antagonized the effect.

Conclusions: It appears that the cannabinoid acts through the CB1 receptor, and its antagonist reversed the antinociceptive effects of both the cannabinoid and the opioid.

Financial Support: a grant from the PA Department of Health.

Abstract - ID: 700

Author(s):

Samantha Scott **(Presenter)**, Arizona State University
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Alyssa Bralich, Arizona State University
Jennifer Hesterman, Arizona State University
Austin Stone, Arizona State University
Janet Neisewander, Arizona State University

Title: Ovarian hormonal status influences 5-HT1B receptor agonist effects on cocaine self-administration in rats

Abstract Category: Original Research

Abstract Detail: Animal Study

Drug Category: Stimulants

Topic: Sex Differences

Aims: Cocaine addiction is a prevalent problem in the United States where approximately 1.5 million users are children 12 years and older and roughly 40 percent of drug abuse related emergency department visits involve cocaine. Despite the detrimental effects of cocaine dependence there are no effective pharmacological treatments for this disorder. Previous research from our lab found pharmacological evidence that the serotonin 5HT $_{1B}$ receptors (5HT$_{1B}$Rs) modulate cocaine self-administration in opposite directions depending on the phase of the addiction cycle in male rats. Specifically, administration of a 5HT$_{1B}$R agonist facilitates cocaine intake when given prior to a daily self-administration session, while inhibiting cocaine intake and attenuating drug seeking behavior following 21 days of protracted abstinence. It has been suggested that women face unique challenges in being more susceptible to craving and relapse. In part, this is due to biological and physiological sex differences between males and females. Specifically, in females, peak levels of endogenous estrogen hormones correspond to an increase in cocaine intake, and an enhanced vulnerability to relapse. In this study, we investigated the effects of CP94253, a selective 5HT $_{1B}$R agonist, on cocaine intake during the estrus and diestrus phases of the estrous cycle on a fixed ratio (FR) schedule of reinforcement during self-administration.

Methods: Female Sprague-Dawley rats were trained to self-administer 0.75 mg/kg, IV cocaine. Rats underwent training on an FR5 schedule of cocaine reinforcement and daily vaginal smears were taken after each session to monitor the estrous cycle. Once reinforcement rates stabilized, rats underwent pretreatment with CP94253 or vehicle and were tested 15 min later on an FR5 schedule of 0.75 mg/kg, IV cocaine for one hour and then the dose of cocaine was reduced to 0.375 mg/kg for the second hour of testing. This test procedure was repeated during the diestrus and estrus phases.

Results: This study is ongoing and thus far, preliminary findings (n=15) suggest no significant differences in active lever response rates or cocaine reinforcement rates between the cycle phases. However, CP94253 appears to facilitate an increase in drug-seeking behavior during the diestrus phase compared to vehicle pretreatment.

Conclusions: The findings suggest that CP94253 effects on cocaine intake may vary depending on cycle phase, a result that has important implications for developing treatments for cocaine dependence in women.

Financial Support: This study was supported by the corresponding grant from NIDA DA011064.

Abstract - ID: 701

Author(s):

Therese Killeen **(Presenter)**, Medical University of South Carolina
Nathaniel Baker, Medical University of South Carolina
Caroline Vrana, Medical University of South Carolina
Victoria Brant, Medical University of South Carolina

Title: Association between PTSD symptom severity, mindfulness and emotional regulation

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Treatment

Aims: Aims: A high percentage of individuals in treatment for substance use disorders (SUD) have comorbid post traumatic stress disorder (PTSD); however, treatment options for PTSD are limited in community SUD treatment programs where resources are scarce. Developing feasible integrated interventions that can be delivered in such settings are important for sustained treatment outcomes. A salient feature in comorbid PTSD and SUD is the inability to tolerate distressing emotional states that are often triggered by trauma associated cues. The current pilot project is part of a behavioral development program to address PTSD symptoms and SUD outcomes in a group of women with PTSD and SUD enrolled in intensive SUD treatment.

Methods: Method: Eleven participants enrolled in intensive outpatient treatment at a community program participated in 8 weekly ninety minute sessions of Mindfulness Based Relapse Prevention (MBRP). Baseline measures of PTSD symptom severity, mindfulness and difficulty with emotion regulation were collected and compared using Pearson correlational analysis.

Results: Results: PTSD symptom severity (PSS-SR) was associated with mindfulness acceptance and awareness (MAAS; r = -.79; p

Conclusions: Conclusion: Emotional dysregulation may be an important target for intervention in this comorbid population.

Financial Support: National Institute of Drug abuse R01 DA040968

Abstract - ID: 702

Author(s):

Andrea Weinberger **(Presenter)**, Yeshiva University
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Jan Copeland, University of South Wales
Renee Goodwin, CUNY School of Medicine

Title: Is cannabis use associated with risk of relapse to cigarette smoking? Potential implications of cannabis use on trends in cigarette smoking in the US

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Epidemiology

Aims: Cannabis use appears to be increasing, while cigarette use is decreasing, in the United States (US). Cannabis use and cigarette smoking co-occur frequently. Prior studies have not examined cannabis use in the risk of cigarette smoking initiation, persistence and relapse. The objective of this study was to prospectively investigate the relationship between cannabis use and the risk of cigarette smoking initiation, persistence, and relapse among cigarette smokers in the US.

Methods: Data were drawn from the National Epidemiologic Survey on Alcohol and Related Conditions (Wave 1, 2001-2001; Wave 2, 2004-2005), a prospective, longitudinal sample of substance use and psychiatric disorders representative of US adults ages 18 and older. Among respondents who reported Wave 1 past-year cannabis use, we used multivariable logistic regression models to calculate the odds of change in Wave 2 smoking status for Wave 1 non-smokers, former smokers, non-daily smokers, and daily smokers.

Results: After adjusting for demographics and other confounding factors, cannabis use was associated with increased risk of cigarette use initiation among non-smokers (AOR=1.86; 95% CI=1.59-2.16) and relapse to cigarette use among former smokers (AOR= 1.64; 95% CI=1.06-2.53) after three years. Cannabis use was not associated with a decreased likelihood of smoking cessation among current smokers (AOR=0.97; 95% CI= 0.86-1.09) after three years.

Conclusions: Our results suggest that cannabis use is associated wtih increased onset and persistenence of cigarette smoking, as well as relapse to smoking among former cigarette smokers. Given the increase in cannabis use in the US population, further investigation and potential public health monitoring may be warranted to examine whether increases in cannabis use may impact trends in cigarette use in the coming years.

Financial Support: Work on this study was supported by grant #DA20892 from NIDA/NIH.

Abstract - ID: 703

Author(s):

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Title: Feasibility of the veterans' recovery line as ancillary care for substance abuse treatment

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Technology Issues

Aims: To evaluate the Veteran's Recovery Line (VRL), an automated CBT-based, Interactive Voice Response (IVR) intervention for use as an ancillary treatment to enhance outcomes of an intensive substance abuse outpatient program in the Veteran's Health Administration (VHA). A brief, 5-week, randomized clinical trial assessed feasibility and acceptability with both patients and staff.

Methods: Veteran patients (N=35) in the Substance Abuse Day Program were recruited over 9 months for a 5-week randomized pilot trial, and randomly assigned to receive treatment-as-usual (TAU; n=15) or to receive the Veterans' Recovery Line plus TAU (VRL+TAU; n=20). Patients were provided access to the VRL tailored to primarily illicit drug or alcohol use based on their primary drug of abuse. Outcome variables included frequency and duration of call time and patient retention and satisfaction with treatment. Qualitative interviews were also conducted with patients and staff.

Results: Age ranged from 24 to 72. Of those assigned to VRL+TAU, 11 had primarily illicit drug use disorder and 9 had primary alcohol use disorder. Patient use of the VRL was reasonably high, with a mean number of calls of 12.7 for the 35-day study; 70% (14/20) called the line 4 or more times, and 55% (11/20) had more than 50 minutes of therapeutic contact. 78% of patients completed the follow-up interview at 5-weeks. In follow-up interviews with staff, clinicians viewed the VRL favorably, and spoke highly of system, and stated that an effective ancillary system would be valuable to patients and staff.

Conclusions: Findings suggest that an IVR, CBT-based, automated telephone system is feasible and acceptable to Veteran patients in a Substance Abuse Day Program and warrants a full-scale efficacy trial.

Financial Support: NIDA R01034678

Abstract - ID: 704

Author(s):

Aaron Johnson **(Presenter)**, Augusta University
Yunmi Chung, Augusta University

Title: Baseline attitudes toward addressing patient drug use: Differences across health professional training programs

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: Not drug specific

Topic: Prevention

Aims: A Substance Abuse and Mental Health Services Administration grant provided training in alcohol and drug screening and brief intervention (SBI) to health professional students in 7 programs across a health sciences university. Pre-training survey data were collected from students in each program and results were compared across programs to identify differences in attitudes toward addressing drug use.

Methods: 345 health professional students in 7 programs were separated into 5 distinct groups: first year medical students, advanced practice registered nursing (APRN) students, medical residents, physician assistant students, and psychology masters students. Analysis of Variance identified between group differences.

Results: Respondents ranked the level of importance placed on reasons for and barriers to addressing drug use in patients. No significant group differences were found on 8 items related to positive outcomes associated with drug SBI (e.g. reducing healthcare costs). Medical students scored significantly higher than residents and psychology masters students on 3 items measuring barriers to performing drug SBI (e.g. uneasiness discussing drug use). Measures of the importance of and confidence in performing different elements of SBI found almost identical scores for first year medical student and psychology masters. Both groups demonstrated significantly lower levels of confidence on all items compared to groups actively seeing patients (residents and APRN students).

Conclusions: Prior to SBI training, first year medical students report greater ambivalence toward addressing patients' drug use compared to medical residents. Likewise, non-practicing students (medical students and psychology masters students) report significantly lower levels of confidence in performing SBI components. Results suggest SBI curricula should not be "one size fits all". Medical student curricula should directly address ambivalence and, for pre-clinical students, curricula should include additional teaching modalities, such as standardized patient encounters and role plays, designed to improve student confidence.

Financial Support: Substance Abuse and Mental Health Services Administration

Abstract - ID: 705

Author(s):

Leila Vaezazizi **(Presenter)**, Columbia University and NYSPI
Peter Bearman, Columbia University Department of Sociology
Marissa King, Yale University
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Title: Association of race and ethnicity on national prescribing patterns for childhood ADHD

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Adolescent

Aims: Evidence-based treatment of childhood ADHD is effective in reducing morbidity and later development of substance use disorders. Previous studies have shown disproportionate prescribing of antipsychotics, a medication class used off-label for attention deficit hyperactivity disorder (ADHD) and other behavioral disorders, to low-income children. Our current study examines whether race/ethnicity is an independent factor contributing to prescribing variability, specifically in the off-label prescribing of antipsychotics for childhood ADHD, which carry a high burden of side effects.

Methods: Prescription information was obtained through Intercontinental Marketing Service, which contains 65% of all prescriptions filled nationally between 2005-2010. There were 612,783 antipsychotic prescriptions identified for children < 1 8 years old with a primary diagnosis of ADHD. Race/ethnicity was estimated using zip-code level demographic measurements from national census data. Antipsychotics were categorized as low (e.g. aripiprazole) or high risk (e.g. olanzapine) based on side effect profile. Logistic regression was performed to evaluate the association of race/ethnicity and insurance type on prescription patterns for low- vs. high- risk antipsychotics.

Results: Preliminary findings show that there is a small but significant effect of race/ethnicity for children with ADHD to receive a low vs. high risk antipsychotic, and children living in zip codes with higher percentage Black (OR = 1.0030, 95% CI=1.0007-1.0053, p = 0.009) populations more likely to receive a high-risk antipsychotic. Zip codes with higher percentage Hispanic population were not significant (OR = 1.0003, 95% CI=0.9985-1.0021, p = 0.742).

Conclusions: These preliminary findings show that race/ethnicity may constitute an additional risk factor in receiving a higher-risk, off-label medication for ADHD, with potential deleterious long-term effects on health and reduced mitigation of future risks associated with childhood ADHD.

Financial Support: Robert Wood Johnson Health Policy Investigator Award (H. Hansen), DA022412 (E. Nunes), 4T32DA007294-24 (Columbia University Health Sciences; L. Vaezazizi), 5T06sM060562-05 (American Psychiatric Association SAMHSA Substance Abuse Minority Fellowship; L. Vaezazizi), 4R25DA033211-04 (Research In Addiction Medicine Scholars; L. Vaezazizi)

Abstract - ID: 706

Author(s):

Mallory Loflin **(Presenter)**, VA Palo Alto Health Care System
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Kendall Browne, VA Puget Sound Healthcare System
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Title: Cross-validation of the CUDIT-R among a sample of veteran medicinal cannabis users: Evidence of poor model fit

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Other

Aims: Aims: The Cannabis Use Disorders Identification Test-Revised (CUDIT-R) is a well validated 8-item measure used to screen for Cannabis Use Disorders (Adamson et al., 2010). Validity, however, has not been evaluated among veterans using cannabis for medicinal purposes. Veterans and medicinal cannabis users report greater frequency and density of cannabis use compared to non-veteran and recreational users, but endorse lower rates of problematic use (Bonn-Miller et al., 2012; Roy-Byrne et al., 2015). Therefore, the current study aimed to test the structural validity and internal consistency of the CUDIT-R among a sample of veterans who use cannabis for medicinal purposes.

Methods: Participants included 68 veterans who receive medicinal cannabis (M_{age} = 49.53, SD = 15.62). Baseline measures included demographics and the CUDIT-R, obtained from an ongoing longitudinal study. Confirmatory Factor Analysis (CFA) and internal consistency analysis were conducted to explore validity.

Results: Results of the CFA revealed that the single factor model, which was previously validated in recreational using samples, only accounted for 31% of total variance in responses on the CUDIT-R and demonstrated poor fit (C^2 = 20.02, df = 20, p = .46; RMSEA = .62) among the current sample. Chronbach's alpha was also under minimum threshold for appropriate model fit (a = .62).

Conclusions: The originally validated single-factor solution for the CUDIT-R demonstrated poor fit among veteran medicinal cannabis users. More psychometric work is needed to determine the reliability and validity of using brief self-report screening tools, such as the CUDIT-R, among samples of veterans and cannabis users who use for medicinal purposes.

Financial Support: None to disclose

Abstract - ID: 707

Author(s):

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Ryan Vandrey, Behavioral Pharmacology Research Unit

Title: Gender differences in cannabis abstinence among adults in treatment for cannabis use disorder

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Sex Differences

Aims: Despite the availability of efficacious treatments for cannabis use disorders (CUD), relapse rates remain high and predictors of treatment outcome are unclear. Progression to problematic use and treatment enrollment for CUD is accelerated among females yet little is known about potential gender differences in treatment outcomes. The purpose of this analysis was to characterize baseline cannabis use and related problems and to compare treatment outcomes between adult males and females enrolled in treatment for CUD.

Methods: 102 adults (40 F) seeking treatment for CUD were enrolled in a 12-week clinical trial and randomized to receive extended-release zolpidem or placebo. All received computerized therapy and abstinence-based contingency management verified by twice-weekly urine screens. Timeline follow-back assessed cannabis use at intake. Number of lifetime quit attempts and Marijuana Problems Scale (MPS) assessed cannabis-related problems and the Marijuana Withdrawal Checklist (MWS) measured cannabis withdrawal during the most recent quit attempt.

Results: No gender differences emerged for demographic, cannabis, or other substance use variables. Males and females had similar rates of current use (28 of the past 30 days) and comparable scores on the MPS and MWC. Treatment retention was equivalent between males and females (57.2 vs 55.2 days). However, males achieved higher rates of abstinence (47% vs 23%, p

Conclusions: Although males and females enrolled in CUD treatment had similar retention rates, females appeared less successful than males at sustained abstinence. These preliminary results suggest that females may benefit from CUD treatments with greater intensity or novel multipronged treatment approaches.

Financial Support: U01-DA031784

Abstract - ID: 708

Author(s):

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James Anthony, Michigan State University

Title: Sex differences in concordance of cannabis self-report and bioassays

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Adolescent

Aims: Aims: The current study was conducted within the NIDA-funded Miami Prenatal Cocaine Study, a prospective, longitudinal study of prenatal cocaine exposure in an urban African American population. Early in the follow-up study, we used bioassay results to complement confidential self-report (SR) results, assuming no male-female difference in concordance of these measurement modalities.

The specific aim of this study is to determine possible male-female differences in concordance for history of cannabis use and assays for cannabinoids in urine and hair in this at risk cohort in late adolescence.

Methods: Methods: In MPCS follow-up exams, we obtained self-report (S-R) and urine and hair assay results for documentation of history of cannabis use. Here, we evaluate possible male-female differences in concordance of these modalities.The MPCS birth cohort inluded 476 infants, of whom 363 had follow-up at age 18/19 years with SR+urine CU assays (n=363) and SR+hair CU assays (n=201). We used non-parametric and 'area under the curve' (AUC) analyses to estimate male-female differences in concordance, with bias-corrected bootstrap replications (n=2000) to derive 95% confidence intervals (CI).

Results: Results: Overall, SR-urine correlations were stronger than SR-hair correlations (e.g., urine AUC ~ 0.5, 0.7; hair AUC ~ 0.3, 0.6; $p < 0.05$), with urine AUC (~0.7) often exceeding hair AUC (~0.6). Even so, there were no appreciable male-female differences in concordance for urine ($p>0.05$) or for hair ($p>0.05$). As a predictor of SR, the urine assay out-performed hair, especially for females, but >30% SR-positives were left undetected by the two bioassays, evaluated alone and in combination.

Conclusions: Conclusion: In adolescent cannabis studies, urine and hair bioassays can strengthen SR, but these tests missed many SR-positives. Over-exaggerated cannabis SR is possible, but seems unlikely. Therefore, these data suggest that studies of marijuana use in late adolescence should incorporate both self-report and biomarkers to detect cannabis use.

Financial Support: P50DA024584; R01DA006556; K01DA016720

Abstract - ID: 709

Author(s):

Krishna Vaddiparti **(Presenter)**, University of Florida
Linda Cottler, University of Florida

Title: Gun-carrying and suicidal behavior among substance-using women

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Epidemiology

Aims: To examine the association between gun carrying and self-reported suicidal ideation (SI) and suicide attempts (SA) among 523 substance using women.

Methods: The data for this analysis come from two community based HIV prevention studies (NIAAA-Sister-to-Sister, and NIDA-Women Teaching Women) conducted in St. Louis, MO. The Computerized Diagnostic Interview Schedule assessed SI and SA. Women were stratified into three groups: Both SI and SA (SISA+), either SI or SA (SI/SA) and, neither (SISA-). The Violence Exposure Questionnaire assessed gun ownership, access and carrying.

Results: Women were predominantly African American (80%), and 38.2 years (± 7.3); 53% had no SI or SA, 25% had both SI and SA and 21% had either SI or SA. SISA + women were more likely than SI/SA and SISA- women to have ever drunk 20 or more drinks in one day (57% vs. 39% vs. 37% p=0.0015); meet criteria for DSM-IV cocaine dependence (83% vs. 81% vs. 66% p < 0 .0001) and meet criteria for DSM-IV major depressive disorder (MDD) (60% vs. 54% 18% p < 0 .0001). Although the three groups of women did not differ significantly with regard to gun ownership and gun access, SISA+ women were more likely than SI/SA and SISA- women to report carrying a gun (36% vs. 26% vs. 17% p=0.0002). After adjusting for demographic, substance use variables and MDD, gun carrying was significantly related to increased risk for both suicide ideation and attempts compared with women with no suicide behavior (OR 2.1; 95%CI 1.19-3.88).

Conclusions: This analyses highlights the relevance of screening for suicide risk among women who use substances and carry a gun.

Financial Support: NIAAA # AA12111, Cottler, PI and NIDA # DA11622, Cottler, PI.

Abstract - ID: 710

Author(s):

Nicolas Schlienz **(Presenter)**, Johns Hopkins University School of Medicine
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Natalie Lembeck, Johns Hopkins University School of Medicine
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Ryan Vandrey, Behavioral Pharmacology Research Unit

Title: Effects of cannabis dose and method of inhalation on subjective, cognitive, and physiological effects measures

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Behavior

Aims: Historic reforms to medicinal and recreational cannabis legislation have occurred alongside changes to the potency of THC in cannabis plant material and development of novel products for cannabis self-administration. Though the physiological, psychoactive, and cognitive effects of cannabis are well documented, the combined effects of potency and method of administration are not fully understood. The present report evaluated the pharmacodynamic effects of cannabis exposure as a function of THC dose (0mg, 10mg, 25mg) and method of inhalation (smoke, vaporize).

Methods: 13 cannabis non-tolerant adults attended six outpatient sessions. Dose was administered sequentially within each inhalation method. Following drug exposure, subjective effects, cognitive task performance, and vital signs were repeatedly assessed and analyzed using repeated measures ANOVA.

Results: The magnitude of the subjective drug effect was larger at the 10mg dose after vaporization compared to smoking ($p=.02$), but comparable between inhalation methods at the 0mg and 25mg doses (ps > .07). Heart rate was significantly higher at the 25mg dose compared to the 10mg dose ($p=.006$) but did not vary by inhalation method ($p=.82$). For psychomotor performance (Digit Symbol Search Test), fewer correct responses were observed following vaporization compared to smoking ($p=.02$), and at the 25mg dose compared to the 0mg dose ($p=.09$). Lastly, on a measure of information processing speed (Paced Auditory Serial Addition Test), accuracy was lower for the 25mg dose compared to the 10mg and 0mg doses (ps < .05), but did not significantly vary as a function of inhalation method ($p=.14$) or the dose by method interaction ($p=.59$).

Conclusions: Active THC doses yielded stronger subjective and psychomotor drug effects following vaporization compared to smoking, suggesting that vaporization is a more efficient dose delivery method compared to smoking. These results have implications for regulation of medicinal and recreational cannabis.

Financial Support: Substance Abuse and Mental Health Services Administration

Abstract - ID: 711

Author(s):

Jasmin Vassileva **(Presenter)**, Virginia Commonwealth University-Psychiatry
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Title: Varieties of impulsivity in opiate and stimulant users

Abstract Category: Program Descriptions

Abstract Detail: Human

Drug Category: Other (specify)

Other Drug Category: 'pure' heroin users, 'pure' amphetamine users, polysubstance users

Topic: Behavior

Aims: Impulsivity is implicated both as an antecedent risk factor and a consequence of drug addiction. However, progress in the field is hampered by the heterogeneity of the impulsivity phenotype, characterized by multiple personality, psychiatric, and neurocognitive dimensions, rarely examined concurrently within the same population; and the heterogeneity of the addiction phenotype, due in part to the high rates of polysubstance dependence, which limit investigations of the common vs. specific effects of different classes of drugs; and our limited understanding of the role of impulsivity in the protracted abstinence stage of addiction.

To address these gaps, we have developed a program of addiction research in Bulgaria, where we have access to mono-substance dependent (‘pure’) heroin and amphetamine users, the majority of whom are in protracted abstinence. The goals of the study are to determine: (1) Which aspects of impulsivity persist in the protracted abstinence stage; (2) which are common and which are specific to opiates and stimulants; and (3) which are related to HIV risk behaviors.

Methods: To date, we have tested 444 participants (105 ‘pure’ heroin users (HDI), 85 ‘pure’ amphetamine users (ADI), 87 polysubstance users (PDI), and 167 controls. We administer a comprehensive battery of neurocognitive and computational indices of ‘impulsive choice’ and ‘impulsive action’; self-report personality measures of trait impulsivity and related traits; and psychiatric indices of impulsivity, which takes over 8 hours to complete. The majority of SDIs are in protracted abstinence at the time of testing.

Results: Our results reveal important differences between opiate and stimulant addictions, observable in the protracted abstinence stage. Some notable findings: (1) Computational modeling analyses of the Iowa Gambling Task, one of the most widely used tasks of decision-making, reveal that impaired decision-making in ADI is mediated by hypersensitivity to reward, whereas impaired decision-making of HDI is driven by hyposensitivity to loss; (2) Machine-learning analyses reveal substance-specific multivariate impulsivity profiles that classify HDI and ADI in new samples with high degree of accuracy. Out of 54 predictors in the machine-learning model, psychopathy is the only predictor common to both opiate and stimulant addictions. Notable dissociations emerge between factors predicting opiate vs. stimulant dependence, some of which show opposite patterns among HDI and ADI; (3) Impulsivity dimensions are differentially associated with HIV risk behaviors in HDI and ADI.

Conclusions: Our findings challenge the unitary account of drug addiction and suggest that opiate and stimulant addictions may be driven by different underlying mechanisms.

Financial Support: R01DA021421 (JV) by NIDA and Fogarty International Center at NIH

Abstract - ID: 712

Author(s):

Catalina Lopez-Quintero **(Presenter)**, Flordia International University

Title: Risk estimates of cannabis use onset among US adolescents with conduct problems

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Epidemiology

Aims: Background and Aims: Consistently conduct problems have been associated with cannabis use. Identifying differential patterns in terms of age of onset for cannabis use and cannabis use related problems among this at-risk population has important implications for prevention and intervention design and implementation. With this in mind, fine-grained age-specific incidence rates were estimated for cannabis use onset and development of cannabis use disorder symptoms among 12-17 year old US adolescents with conduct problems.

Methods: Methods: Estimates are from 12 successive National Surveys on Drug Use and Health (NSDUH), with nationally representative samples drawn each year from 2002 to 2013 (n~214.000). Assessment are conducted via computer-assisted self-interviews. Approximately 33% of the sample reported at least one conduct disorder problem in the year prior to the survey (e.g., stolen or tried to steal anything worth >$50). Analysis-weighted estimates and delta method variances are from NSDUH cross-tabulations, followed by meta-analysis summary estimates.

Results: Results: Meta-analytic summaries show peak age for cannabis use onset for adolescents with a conduct problem at age 17 (16.6%, 95% CI= 15.8, 17.3). About one-third (36.1%) of newly cannabis users reported at leats one cannabis use disorder symptom in the year prior to assessment. The most common symptom experienced by this sample was "Spent great deal of time getting, using, or getting over the effects of cannabis" (25.2%), followed by tolerance (20.7%).

Conclusions: Conclusion: Compared to the general population, adolescents with a conduct disorder problem were significantly more likely to start using cannabis and to experience a cannabis use disorder symptom, although, the peak age of cannabis use onset and cannabis disorder symptoms onset were similar to those seen in the general population. The excess risk exhibited by adolescents who reported at least one conduct disorder problem suggests that targeted interventions are needed for this at-risk group.

Financial Support: NA

Abstract - ID: 713

Author(s):

Amir Abdolahi **(Presenter)**, Philips
Geoffrey Williams, University of Rochester Medical Center

Title: Autonomy and perceived competence for predicting treatment adherence and abstinence among smokers taking varenicline

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: Varenicline is a well-known first-line FDA approved drug for treating smoking dependence superior to placebo, nicotine replacement, and bupropion in helping smokers quit. However, concerns for drug safety among smokers and clinicians, particularly neuropsychiatric symptoms, remain a barrier resulting in underutilization. Thus, we investigated whether autonomous reasons for taking medications and perceived competence for quitting can predict greater adherence to varenicline therapy and long-term abstinence.

Methods: Data from 102 current cigarette smokers prescribed varenicline were derived from the Smokers Health Project, a 24-month pragmatic comparative effectiveness trial informed by self-determination theory. Participants were given questionnaires at baseline, two, four, six, 12, 18 and 24 months to assess autonomy for taking medications (Treatment Self-Regulation Questionnaire, TSRQ), perceived competence for smoking cessation (Perceived Competence Scale, PCS), self-reported medication use and smoking status. Linear regression was used to predict self-reported days taking varenicline and percent adherence to recommendation, and logistic regression for predicting prolonged abstinence at 12, 18 and 24 months.

Results: The TSRQ assessed at 12 months predicted adherence to ($p=0.01$) and days taking ($p=0.10$) varenicline. Similarly, higher PCS scores resulted in increased varenicline adherence when assessed at two, six, 12 and 18 months ($p?0.07$), and consistently predicted days taking varenicline at all time points ($p?0.04$) except six months. The TSRQ up to two months predicted prolonged abstinence at 12, 18 and 24 months ($p=0.03$, 0.01, 0.02, respectively). The PCS at each time point was consistently a strong predictor of prolonged abstinence at 12, 18 and 24 months ($p?0.07$).

Conclusions: These findings provide preliminary evidence that changes in autonomy and perceived competence could predict medication adherence and abstinence and thus may be used to help guide clinicians' decision in recommending varenicline as an effective treatment for current smokers.

Financial Support: R01-CA106668, R01-MH059594, M01-RR00044, UL1RR024160

Abstract - ID: 714

Author(s):

Catherine Woodstock Striley **(Presenter)**, University of Florida
Jasmine Mack, University of Florida
Linda Cottler, University of Florida

Title: Among women in drug court, marginally housed and marijuana only users at more risk for adversity

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Marijuana/Cannabinoids

Topic: Epidemiology

Aims: Studies, including ours, showed that drug use led to exposure to violence and chaos in women's lives. We tested whether lifetime opioid use (heroin or non-medical use of prescription opioids), cocaine/crack cocaine use, or marijuana only use, was associated with lifetime exposure to violence and negative life events among adult women in a Drug Court sample.

Methods: The Sister's Teaching Options for Prevention study recruited women from a Midwest community drug court setting to test the effectiveness of a peer-partnered model to reduce drug use and improve outcomes. Here, among the 334 African American (74%) or white women who endorsed lifetime use of opioids only (37%), cocaine only (51%) or neither but marijuana, we regressed drug use on a count variable of negative life events/violence exposure (mean=1.58, SD=1.55), while adjusting for age (mean=36.09, SD=9.41) race and being marginally housed (41%).

Results: Only 12% of this drug court population used marijuana lifetime with no opioids or cocaine, and they were at higher risk for negative life events and exposure to violence (Wald chi-square 4.91; p=0.027). Increasing age reduced risk while being white increased risk. Being marginally housed also increased risk (4.79; p=0.029) of exposure.

Conclusions: Marijuana users, whites, and those who were marginally housed were at increased risk for negative and violent life events in this drug court sample. Drug court participants who only use marijuana may have different risks than cocaine or opioid users that should be explored among this high risk population.

Financial Support: R01NR09180 (PI: Cottler)

Abstract - ID: 715

Author(s):

Alexander Caudarella **(Presenter)**, University of Toronto
Tim Guimond, University of Toronto
Wiplove Lamba, University of Toronto
Mary Yang, University of Toronto

Title: Elevated risk of leaving hospital against medical advice for substance users admitted to a Canadian hospital

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Polydrug

Topic: Other

Aims: To describe if patients suspected of substance use disorders (SUD) presenting to the emergency department and admitted to a large inner-city hospital in Canada are more likely to leave hospital against medical advice(AMA).

Methods: Relative risk calculations for leaving hospital against medical advice were estimated using data obtained from hospital administrative data used for national reporting for a one year period from April 2015-March 2016. Data from all visits to the emergency department and all admissions to inpatient wards were categorized based on substance use indicators abstracted from triage and physician notes.

Results: 73722 patients presented to St. Michael's Hospital with 4157 (5.6%) of patients suspected to have a SUD. These individuals had a relative risk (RR) of 1.32 (CI 1.15-1.50) of leaving the emergency department(ED) before being seen and a RR of 2.41 (CI 1.94-2.99) of leaving AMA from the ED. Once admitted, patients with a SUD had a RR of 9.85 (CI 7.48-12.97) to leave hospital AMA. The RR of leaving varied widely by department - Medical Units (RR 8.11 [CI 5.80-11.35], Psychiatric Units (RR 2.16 [CI 0.73-6.42]) and Surgical units (RR 7.20 [CI 3.17-16.34]).

Conclusions: Patients with substance use disorders are at a 10 times greater risk of leaving hospital against medical advice in a large inner-city hospital in Canada's largest city. Leaving AMA from the emergency department or hospital places patients at significant risk of increased morbidity and mortality. This represents a public health and policy issue requiring urgent intervention.

Financial Support: St. Michael's Hospital AFP Innovation Funds

Abstract - ID: 717

Author(s):

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Title: Associations between adolescent energy drink use and bullying victimization and other problem behaviors

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Stimulants

Topic: Adolescent

Aims: The increasing prevalence of energy drink (ED) use and its link with negative behaviors/health outcomes has garnered much attention. Adolescent moderate/heavy ED users (6+ times in past 30 days) have been found to be most likely to use licit/illicit substances, with non-ED users least likely and light users (1-5 times in past 30 days) falling in the middle (Polak et al., 2016). The current study sought to examine the association between adolescent ED use patterns and bullying victimization and other problem behaviors.

Methods: Participants were *N*=2897 8th (*n*=1248), 10th (*n*=810) and 12th (*n*=839) graders attending a central VA public school system. Students completed a paper-and-pencil survey. Domains included demographics, personal attitudes, substance use, peer influences and family functioning. Chi-square analyses were used to compare rates of bullying victimization and risky behaviors across moderate/heavy (12.6%), light (30.5%) and non-ED users (57%).

Results: Dose-response like patterns were found for ED use for the following problem behaviors: skipping school; riding in car driven by someone who had been drinking; gang membership; suspension from school; being drunk at school; attacking someone with intent to harm; and gambling (all *p*pp=.018) and bullied in the past year (39.5% vs 26.6%; *p*=.009).

Conclusions: Moderate/heavy ED users were most likely to report risky behaviors and bullying victimization. Within moderate/heavy ED users, females were more likely than males to experience bullying victimization. Results suggest ED use may help to identify adolescents at risk for problem behaviors and bullying victimization, particularly among females.

Financial Support: The 2012 Prevention Needs Assessment Survey was conducted with the support of the Drug Free Communities Program (ONDCP).

Abstract - ID: 718

Author(s):

Gantt Galloway **(Presenter)**, 1961
Reshmi Pal, Friends Research Institute
Roy Gerona, San Francisco VA Medical Center

Title: Broad range of drugs detected in pooled urine at an electronic dance music event

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Club/Designer Drugs

Topic: Epidemiology

Aims: To assess the range of drugs used by participants at an electronic dance music event.

Methods: Pooled urine samples were obtained at an electronic dance music event held in Oakland, California. The event had approximately 450 attendees. Urine was sampled from a portable toilet outside the event (flush toilets were available inside the event). A 946 mL receptacle was fitted to collect urine from the urinal. Seven pooled samples were collected over the course of the event. Urine samples were analyzed by liquid chromatography-mass spectroscopy.

Results: Compounds identified paramethoxyamphetamine, paramethoxymethamphetamine, amphetamine, methylphenidate, 2,5-dimethoxyamphetamine, 3,4-methylenedioxydimethylamphetamine, butylone, ethylone, fledephrone, N-methyl-2-aminoindane, mitragynine, cocaine, codeine, hydrocodone, oxycodone, ketamine, dextromethorphan, and ibogaine.

Conclusions: Many different drugs may be used at electronic dance events. Emergency department personnel may need to consider a broad range of known psychedelics, stimulants, and opioids as well as compounds that may have poorly defined pharmacology.

Electronic dance music events present an opportunity to surveil for both established and emerging drugs of abuse.

Financial Support: none

Abstract - ID: 719

Author(s):

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Title: Assessment of the pharmacokinetic-pharmacodynamic relationship of the rate of drug onset and abuse liability with intranasally administered oxycodone and hydrocodone

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Opiates/Opioids

Topic: Other

Aims: Rate of drug onset is thought to influence abuse liability. This analysis systematically evaluated if any specific PK parameters representative of the rate of drug onset were correlated with subjective measures of drug liking and high visual analog scales (VAS).

Methods: Data were obtained from 2 previously completed studies with recreational opioid users investigating the PK and PD of intranasally administered abuse deterrent formulations of oxycodone (N=30) and hydrocodone (N=31). Hysteresis curves were constructed for individual subjects and treatments to assess the relationship between drug concentration and subjective VAS and pupil diameter. Non-compartmental analysis was used to calculate summary PK and PD parameters, which were analyzed across treatments for both oxycodone and hydrocodone studies. Pearson correlation coefficients were calculated for PK and PD summary parameters. A mixed effects model evaluated the correlation between concentration and subjective effects over time.

Results: Hysteresis curves did not suggest a clear relationship between drug concentration and subjective effects, nor for pupil diameter. Correlation coefficients revealed significant, but weak correlations between concentration and liking/high ($r < 0.5$) over time; correlations were stronger, though still limited for pupil diameter across treatments (~0.6). Correlations between time to peak (T_{max}), peak concentration/T_{max} or area under the concentration-time curve to T_{max} and peak ratings of drug liking or high for individual intranasal treatments were also weak ($r < 0.4$).

Conclusions: Our results find limited support for the use of a specific kinetic parameter related to rate of rise of drug concentration to predict intranasal subjective abuse liability.

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Abstract - ID: 720

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Title: A randomized, double-blind, placebo-controlled study of the selective kappa opioid receptor antagonist, cerc 501, in a human laboratory model of smoking behavior

Abstract Category: Original Research

Abstract Detail: Human

Drug Category: Nicotine/Tobacco

Topic: Treatment

Aims: Preclinical evidence suggests that antagonism of kappa-opioid receptors (KORs) may provide therapeutic benefit in the treatment of nicotine withdrawal by blocking aversive signaling cascades in the brain. The current study evaluated the effects of the selective KOR antagonist, CERC-501, on subjective measures of craving, withdrawal, and cigarette self-administration in humans.

Methods: Adult cigarette smokers (? 15 cigarettes/day) who were not seeking treatment for smoking were enrolled (N= 71) into this within-subject, crossover study. Two study periods examined CERC-501 (15 mg, p.o., daily) and placebo (PBO) with each administered for 7 consecutive days separated by a 7-10-day washout period; order of presentation was randomized. At dosing day 7, participants were admitted as inpatients for 24-hours prior to completing the McKee Smoking Lapse Test, along with various mood and craving measures.

Results: CERC-501 did not significantly affect latency to start smoking (CERC-501: 15.5 mins, PBO: 18.8 mins) after 18 hours of deprivation nor number of cigarettes smoked during the ad-lib smoking period (CERC-501: 3.3, PBO: 3.1). In addition, Minnesota Nicotine Withdrawal Scale total scores were lower than expected and did not significantly differ between CERC-501 and PBO. Craving scores (Tiffany Questionnaire of Smoking Urges) also did not significantly differ

Conclusions: This study did not find any signal for CERC-501, a selective kappa antagonist, to reduce subjective measures of nicotine withdrawal or to alter smoking behavior. These data are inconsistent with preclinical studies and do not support a potential role for CERC-501 in the treatment of tobacco use disorder.

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Abstract - ID: 721

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Title: Prescription drug monitoring programs: Of law enforcement or public health?

Abstract - ID: 722

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Title: Industry, government, and academia as a collaborative environment for development of a product for the treatment of substance use disorders