



Informatics Tools Supporting Clinical Research

i2b2, SHRINE, and TriNetX

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CCTS Forum

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Introduction to i2b2, SHRINE, and TriNetX

How to access clinical data with i2b2; build multisite collaborations using the Shared Health Research Informatics Network (SHRINE); and connect to clinical trial opportunities and collaborations through TriNetX

- i2b2
 - Feasibility Assessment / Preparatory to Research
 - Hypothesis exploration
 - Obtaining Limited Data Sets
 - Facilitating consultation requests
- SHRINE
 - Promoting Multi-Institutional collaborations
- TriNetX
 - Identifying industry study opportunities



Overview of the EHR, EDW, i2b2, SHRINE, and TriNetX

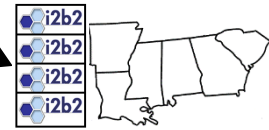
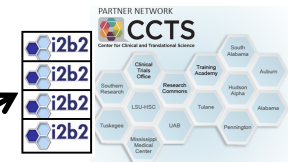
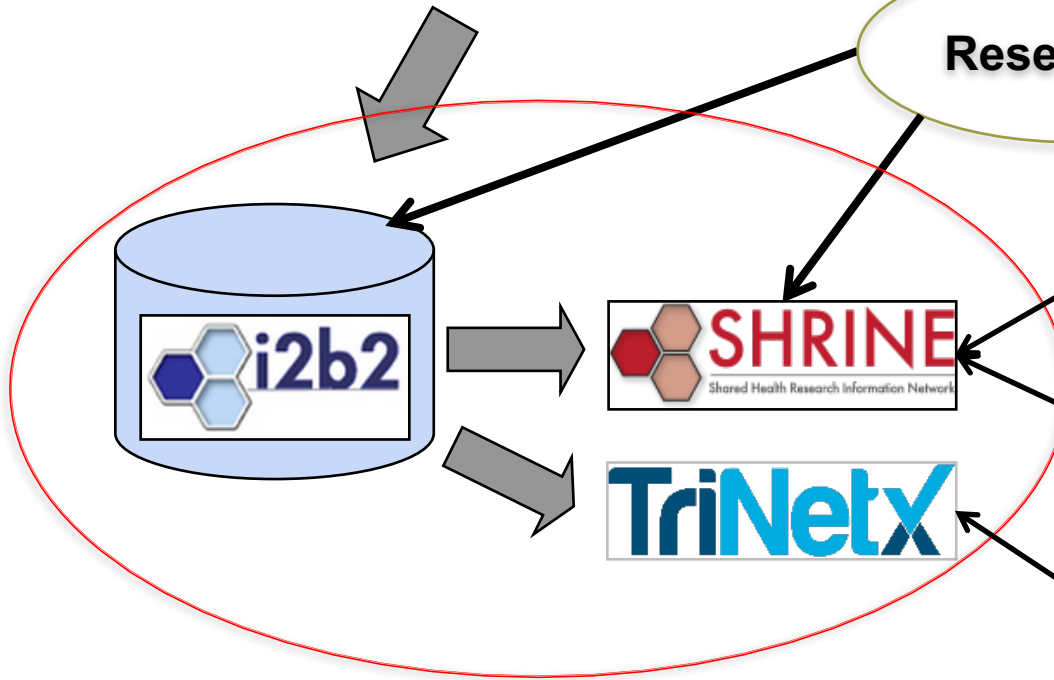


EXTRACT
and LOAD

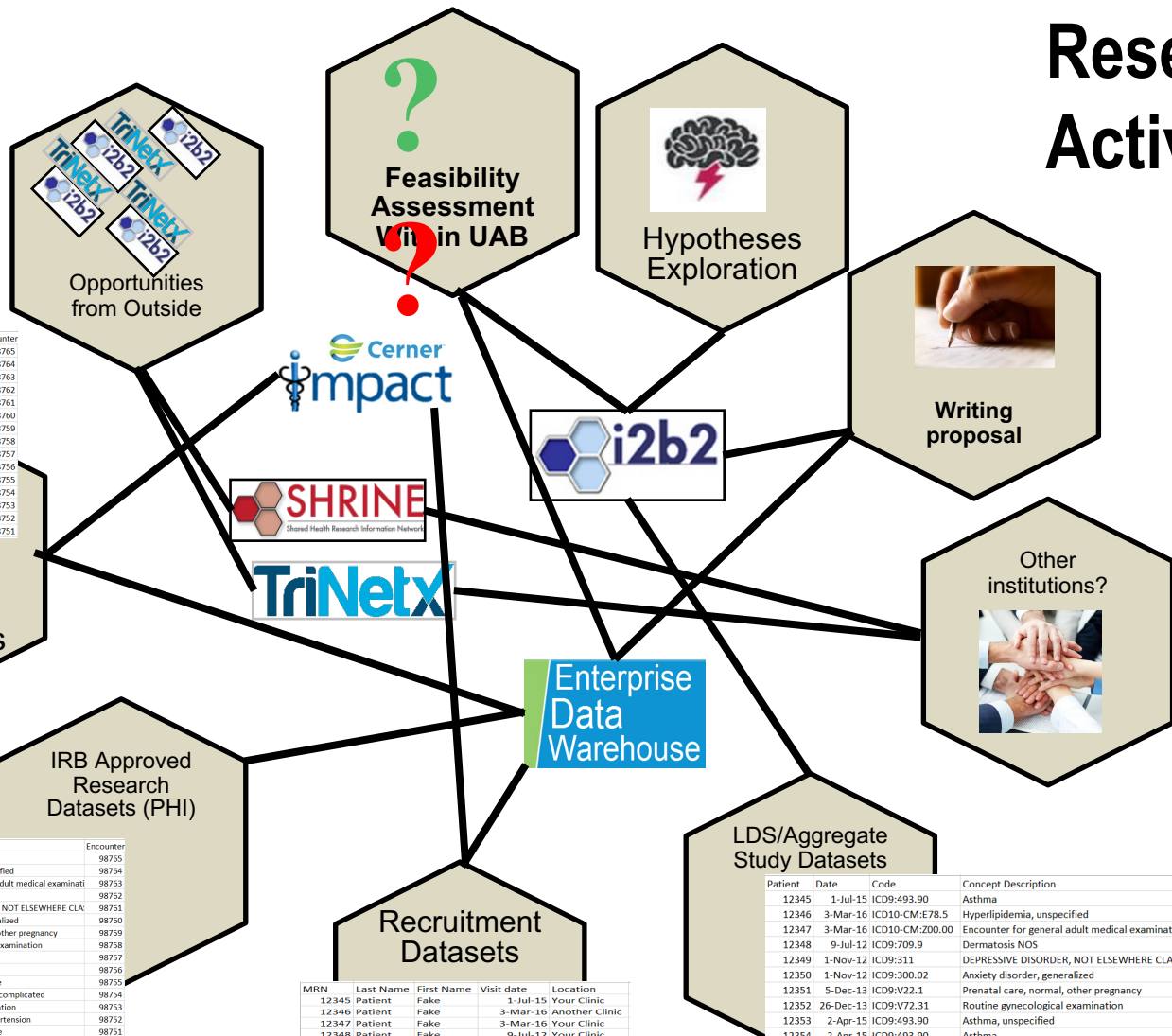
Enterprise
Data
Warehouse

EDW
Analysts

Researcher



Research Activities



Patient	Date	Code	Concept Description	Encounter
12345	1-Jul-15	ICD9:493.90	Asthma	98765
12346	3-Mar-16	ICD10-CM:E78.5	Hyperlipidemia, unspecified	98764
12347	3-Mar-16	ICD10-CM:Z00.00	Encounter for general adult medical examinati	98763
12348	9-Jul-12	ICD9:709.9	Dermatosis NOS	98762
12349	1-Nov-12	ICD9:311	DEPRESSIVE DISORDER, NOT ELSEWHERE CLA	98761
12350	1-Nov-12	ICD9:300.02	Anxiety disorder, generalized	98760
12351	5-Dec-13	ICD9:V22.1	Prenatal care, normal, other pregnancy	98759
12352	26-Dec-13	ICD9:V72.31	Routine gynecological examination	98758
12353	2-Apr-15	ICD9:493.90	Asthma, unspecified	98757
12354	2-Apr-15	ICD9:493.90	Asthma	98756
12355	19-Aug-13	ICD9:V58.69	High risk medication use	98755
12356	22-Jan-16	ICD10-CM:J45.909	Unspecified asthma, uncomplicated	98754
12357	22-Jan-16	ICD10-CM:Z23	Encounter for immunization	98753
12358	22-Jan-16	ICD10-CM:I10	Essential (primary) hypertension	98752
12359	22-Jan-16	ICD10-CM:R73.01	Impaired fasting glucose	98751

Additional Data for Participants

IRB Approved Research Datasets (PHI)

Patient	Date	Code	Concept Description	Encounter
12345	1-Jul-15	ICD9:493.90	Asthma	98765
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MRN	Last Name	First Name	Visit date	Location
12345	Patient	1-Jul-15	Your Clinic	
12346	Patient	3-Mar-16	Another Clinic	
12347	Patient	3-Mar-16	Your Clinic	
12348	Patient	9-Jul-12	Your Clinic	
12349	Patient	1-Nov-12	Your Clinic	
12350	Patient	1-Nov-12	Another Clinic	
12351	Patient	5-Dec-13	Your Clinic	
12352	Patient	26-Dec-13	Your Clinic	
12353	Patient	2-Apr-15	Your Clinic	
12354	Patient	2-Apr-15	Another Clinic	
12355	Patient	19-Aug-13	Your Clinic	
12356	Patient	22-Jan-16	Your Clinic	
12357	Patient	22-Jan-16	Your Clinic	
12358	Patient	22-Jan-16	Another Clinic	
12359	Patient	22-Jan-16	Your Clinic	

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i2b2 Self Service Query Builder

i2b2 Query/Analysis Tool Project: UAB LDS (Early Feb 2016) **Fresh Data Load starting end of May 2016** User: MATTHEW WYATT Find Patients | Analysis Tools | Help | Logout

Navigate Terms Find

Search by Names Search by Codes

Containing proton pump

Find Medications (Multum Ontology)

- proton pump inhibitors
 - dexlansoprazole - 3386
 - esomeprazole - 94153
 - lansoprazole - 7399
 - omeprazole - 65050
 - omeprazole-sodium bicarbonate - 1035
 - pantoprazole - 69107
 - rabeprazole - 1380

Query Tool

Query Name: Gastro--proton @10:10:46

Temporal Constraint: Treat all groups independently

Group 1			Group 2			Group 3								
Dates	Occurs > 0x	Exclude	Dates	Occurs > 0x	Exclude	Dates	Occurs > 0x	Exclude						
Treat Independently			Treat Independently			Treat Independently								
Gastro-esophageal reflux disease (ICD10:K21) - 37077			proton pump inhibitors - 181615											
one or more of these			AND			one or more of these			AND			drop a term on here		

Run Query Clear Print Query 2 Groups New Group

Show Query Status Graph Results

Number of patients

30170

For Query "Gastro--proton @10:10:46"

Number of patients

25776

For Query "Gastro--esomepr@10:12:10"



Complex Query by Value

Choose value of Medication Information (Test:MULTUM:d

Searches by Lab values can be constrained by the high/low flag set by the performing laboratory, or by the values themselves.

No Value
 By Value

Please select a value:

- 81 mg,= 1 tab(s),Tab - Chew,Oral (19.49%)
- 81 mg = 1 tab(s),Tab - Chew,Oral (12.95%)
- 325 mg,Tab,Oral (12.54%)
- 81 mg,= 1 tab(s),Tab - EC,Oral (7.27%)
- 81 mg = 1 tab(s),Tab - EC,Oral (6.07%)

Choose value of BMI Range (Test:BMI)

Searches by Lab values can be constrained by the high/low flag set by the performing laboratory, or by the values themselves.

No Value
 By Value

Please select operator:
LESS THAN (<)

Please enter a value:

Units = kg/m²

Choose value of RBC (Blood) (UABLABS:317212) (Test:UABLABS:317212)

Searches by Lab values can be constrained by the high/low flag set by the performing laboratory, or by the values themselves.

No Value
 By Value

Please select operator:
LESS THAN (<)

Please enter a value:

Units = 10⁶/cmm

Query Name: Your Query Name Goes Here
 Temporal Constraint: Treat all groups independently

Group 1

Date From: none Date To: none Excluded?: false Occurs X times: > 0 Relevance %: 100 Temporal Constraint: Treat Independently

Path	Concept/Term	Other Information
Diagnoses \Certain infectious and parasitic diseases (a00-b99) \Mycoses (b35-b49) \Dermatophytosis \Dermatophytic onychia	* Dermatophytic onychia (ICD10:B35.1)	

Group 2

Date From: none Date To: none Excluded?: false Occurs X times: > 0 Relevance %: 100 Temporal Constraint: Treat Independently

Path	Concept/Term	Other Information
Medications\Multum\analgesics\aspirin\	* aspirin	

Group 3

Date From: none Date To: none Excluded?: false Occurs X times: > 0 Relevance %: 100 Temporal Constraint: Treat Independently

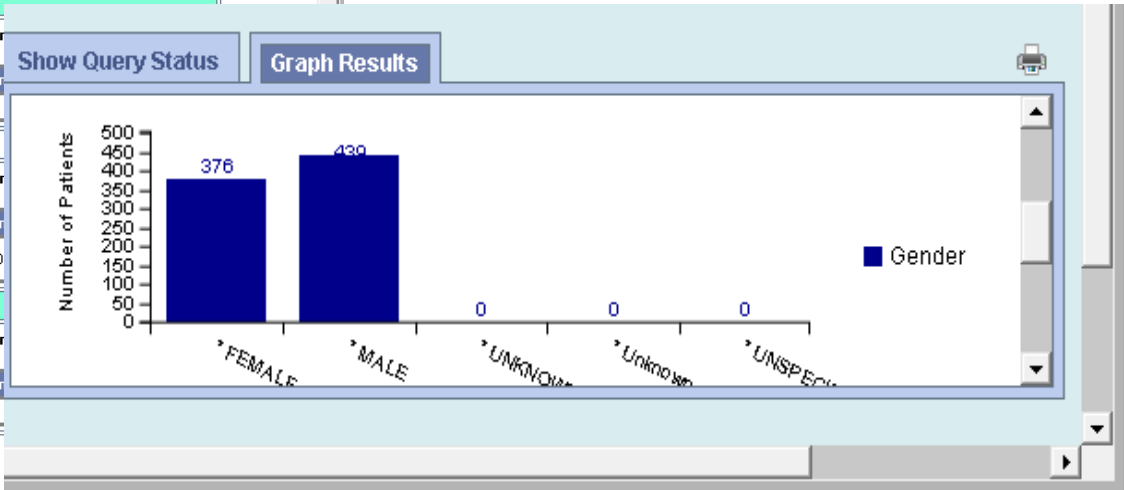
Path	Concept/Term	Other Information
Vital Signs \Blood Pressure Readings \Diastolic Blood Pressure - Sitting \	* Diastolic Blood Pressure - Sitting > 100 mmHg	GT: 100

Group 4

Date From: none Date To: none Excluded?: false Occurs X times: > 0 Relevance %: 100 Temporal Constraint: Treat Independently

Path	Concept/Term	Other Information
Demographics \Gender \MALE	* MALE	

Aggregate Results



Finished Query: "Your Query Name Goes Here"
 Compute Time: 52 secs

Number of patients for "Your Query Name Goes Here"
 patient_count: 9

Gender patient breakdown for "Your Query Name Goes Here"

- * FEMALE: 0
- * MALE: 9
- * UNKNOWN: 0
- * Unknown: 0
- * UNSPECIFIED: 0

Vital Status patient breakdown for "Your Query Name Goes Here"

- * Alive: 9
- * Deceased: 0

Race patient breakdown for "Your Query Name Goes Here"

- * American Indian or Alaska Native: 0
- * Asian: 0
- * Black or African American: 3
- * Decline/Refuse: 0
- * Hispanic or Latino: 0
- * Multiple: 0
- * Native Hawaiian/Other Pacific Islander: 0

Workplace: ciminoj

Query Editor: one or more of these AND one or more of these AND drop a term on here

Run Query Clear Print Query 2 Groups New Group

Show Query Status Graph Results

Number of patients: 107

For Query "Sickl-* Creat@15:29:33"

Previous Queries Find

- * Sickl-* Creat@15:29:33 [10-7-2016] [ciminoj]
- * Diabetes mell@16:14:59 [10-3-2016] [ciminoj]
- * Diabetes mell@16:11:31 [10-3-2016] [ciminoj]
- * sul-* min-* Glu@16:01:54 [10-3-2016] [ciminoj]
- * minox-* sulfo@12:04:31 [10-2-2016] [ciminoj]
- * Glucose Level@12:02:09 [10-2-2016] [ciminoj]



Downloading Detailed Data



--Select a Code Family--

--Select a Code Family--

- MEDS: Home and Discharge Medications
- MEDS: Inpatient Medications
- LABS: Lab Orders
- LABS: Lab Panels
- LABS: Lab Powerplans
- ALLERGIES: Allergies, including NKA
- VITALS: BMI and Waist Measurements
- VITALS: Blood Pressure Readings
- VITALS: Height and Weight Measurements
- VITALS: Other, Less Common Clinical Events
- DIAGS: Clinical/Encounter-Specific Diagnoses
- DIAGS: Long-Term Problems
- Immunizations
- Microbiology Tests
- Procedures
- DRGs
- Patient Data

Patient Data Download and Consultation Request

Self-Service Limited Data Set Download

- **Patient sets in the dropdown list below belong to you.** Only patient sets containing 500 or fewer distinct patients are available for download on this page. If your patient set is larger than 500 distinct patients, you should contact the i2b2 team for assistance.
- **IMPORTANT:** With each download, you acknowledge that you have read and understood the terms and conditions of receiving access to Limited Data Set (LDS) from the UAB i2b2 system. This agreement applies for as long as you retain the LDS.
- **NEED HELP?:** [Click here to email the i2b2 team at UAB](#)

Select a Fact Group for Download

--Select a Code Family-- I want patient counts by concept, not all details

Information Recorded with this Download

Displaying your most recently recorded project information; you may alter this information for each download request.

*Title of Research Project	*Description of the Research Project
<input type="text" value="carsons isisis"/>	<input type="text" value="dogs and cats"/>

List Blazer IDs of Others Who Will View/Use This Data (comma separated)

***Select One Data Set**

Only completed queries that return patient sets with 500 or fewer distinct patients are listed below. Most recent listed first.

--Select a Patient Set--

Detailed Data



	A	B	C	D	E	F	G	H	I
1	Patient Num	Encounter Number	Concept Code	Start Date	End Date	Text/Desc	Numeric	Units	
			ICD9:174.9	13-Feb-12	13-Feb-12	Breast cancer			
			SNMCT:4448450	6-Oct-12	6-Oct-12	Hypoglycemia			
			ICD9:174.9	6-Oct-12	6-Oct-12	Breast cancer			
			ICD9:441.7	26-Dec-14	26-Dec-14	Thoracoabdominal aneurysm, without mention of			
			ICD9:281.0	26-Dec-14	26-Dec-14	Pernicious anemia			
			ICD9:250.00	26-Dec-14	26-Dec-14	Type 2 diabetes mellitus without (mention of) com			
			ICD9:782.1	11-Jan-13	11-Jan-13	Rash.			
			VITALS:BMI	21-Sep-12	21-Sep-12	E	26.26	kg/m2	
			VITALS:BMI	27-Dec-14	27-Dec-14	E	26.34	kg/m2	
			UABLABS:31582	28-Dec-14	28-Dec-14	E	7	mEq/L	
			UABLABS:31606	13-Feb-12	13-Feb-12	E	22	mg/dL	
			UABLABS:31710	29-Jun-12	29-Jun-12	E	3.1	mg/dL	
			UABLABS:31606	26-Aug-12	26-Aug-12	E	48	mg/dL	
			UABLABS:31584	11-Jan-13	11-Jan-13	E	65	Units/L	
			UABLABS:31787	2-Sep-12	2-Sep-12	E	4.6	10^3/cmm	

ICD9DataDownload-1 - Notepad

```

File Edit Format View Help
#=#=
01|Distinct Patient Count|concept description|concept
04|Morbid obesity|SNMED:238136002
08|Disease due to Rhinovirus|SNMED:41546002
11|Mucositis due to antineoplastic therapy|ICD9:528.01
12|Current smoker|ICD9:305.1
16|Allergic rhinitis|ICD9:477.9
14|Acquired pancytopenia|SNMED:5876000
2|Night sweats|ICD9:780.8
19|Anemia|SNMED:271737000
25|CM (chronic myeloid Leukemia)|ICD9:205.10
1|Bundle branch block, right|ICD9:426.4
1|Atrial tachycardia|ICD9:427.89
1|Squamous Cell Carcinoma of Skin of other and unspecified parts of Face|ICD9:173.32
1|Hydrocephalus|SNMED:230745008
13|GIST - Gastrointestinal stromal tumor|SNMED:420120006
1|Ankle swelling|ICD9:719.07
1|Scleroderma..|ICD9:710.1
1|Uterine fibroid|ICD9:56669
2|Secondary hyperparathyroidism (of renal origin)|ICD9:588.81
3|Depression|ICD9:311
15|Anemia|ICD9:285.9
1|Leukemia, chronic monocytic|ICD9:206.10
10|Benign hypertension|SNMED:10725009
1|Pain syndrome, chronic|ICD9:338.4
1|Trophoblastic disease|SNMED:416402001
2|Past history of procedure|SNMED:416940007
1|Diabetic nephropathy|SNMED:127013003
1|Hyperglycemia|SNMED:80394007
1|Chronic mastoiditis|SNMED:80645004
3|Primary malignant neoplasm of small intestine|SNMED:94048009
1|Hypercalcemia|ICD9:275.42
1|Greater trochanteric bursitis|ICD9:726.5
16|Hyperlipidemia..|ICD9:272.4
3|Fever|ICD9:780.60
2|Change in bowel habits.|ICD9:787.99
1|Hand-Foot syndrome in sickle cell anemia|SNMED:1371104006
2|Hypokalemia|SNMED:4339004
2|CVA - Cerebrovascular accident|SNMED:230690007
2|Hearing loss|SNMED:15188001
1|Chronic gouty arthritis|ICD9:274.10
1|Gonorrhea NOS|ICD9:5709.9
1|Septic shock|ICD9:038.9
1|Medication monitoring|SNMED:395170001
2|Elevated CK|ICD9:790.5
1|Renal disease|SNMED:90708001
6|COPD|SNMED:13645005
1|Female stress incontinence|ICD9:625.6
1|Increased frequency of headaches|ICD9:784.0
1|History of peptic ulcer disease|ICD9:810626
6|Febrile neutropenia|SNMED:409089005
1|Nodule of scrotum|ICD9:608.4
6|Nausea|SNMED:422397007
1|Seronegative arthritis|SNMED:399112009
1|DM w/o complication type II|ICD9:250.00
1|Benign neoplasm of rectum|SNMED:90280000
1|Diverticulosis|SNMED:31113003
1|Multiple myeloma|ICD9:203.00
2|Bilateral hydronephrosis|ICD9:591
    
```

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What's in i2b2?

Row counts by Row Data Type

Fact Family	Total Fact Counts	Distinct Patients	Earliest Date
Allergies	1,646,780	818,638	7/30/2003
BMI and Waist Measurements	3,782,881	562,852	5/12/2008
Clinical Diagnoses	4,805,169	383,643	5/19/1995
Lab Orders	141,875,875	529,950	6/25/2009
Home/Discharge Medications	11,197,426	533,216	4/28/1998
Tumor/Cancer Data	8,008,157	123,917	12/31/1965
Long-Term Problems	2,976,735	432,530	11/22/1965
Procedures	526,184	136,227	2/17/2014
DRGs	134,461	48,752	1/14/2014
Blood Pressure Measurements	48,425,976	574,164	8/5/2003
Inpatient Medications	36,100,284	341,748	5/18/2008
Height/Weight Measurements	17,570,643	593,767	8/28/2003
Lab Panels	9,677,955	453,094	10/26/2009
Encounter Insurance	11,369,918	695,140	12/1/2003
Immunizations	203,480	101,336	7/26/2008
Microbiology Tests	992,190	171,723	1/26/2008
Less Common Clinical Events	296	75	6/29/2011
Lab Powerplans	1,880,573	297,420	5/18/2008

Fact Counts by Year

# Facts	Calendar Year
47,345,765	2016
51,534,937	2015
49,700,108	2014
47,958,801	2013
44,108,483	2012
37,569,899	2011
15,149,276	2010
856,823	2009
772,430	2008
384,785	2007
390,158	2006
403,529	2005
406,917	2004
349,931	2003



Example: Assessment

- Dana Golson, Nurse Research Manager, Nutrition Science
 - "It has been great for us , we are able to more effectively evaluate based on the feasibility query whether we can recruit for a study & be a viable site. "
 - Exceeded goal for recruitment in ongoing NovoNordisk study

Query Name: Diabete-HGB A1C@12:17:12

Temporal Constraint: Treat Independently

Group 1	Group 2	Group 3
Diabetes mellitus due to underlying condition (ICD10:E08) Drug or chemical induced diabetes mellitus (ICD10:E09) Type 2 diabetes mellitus (ICD10:E11) diabetes nos (ICD10:E11) Long term (current) use of insulin (ICD10:Z79.4)	HGB A1C (Blood) (UABLABS:753473) 6 - 10	

Number of patients: 22281
For Query "Diabete-HGB A1C@12:17:12"

Query Name: Mixed hyperlipi@07:41:25

Temporal Constraint: Treat Independently

Group 1	Group 2	Group 3
Mixed hyperlipidemia Mixed hyperlipidemia Chylomicron retention disease (ICD10:E78.3) Hyperchylomicronemia (ICD10:E78.3) Fredrickson's hyperlipoproteinemia, type I or V (ICD10:E78.3) Hyperlipi (ICD10:E78)		

Number of patients: 15
For Query "Mixed hyperlipi@07:41:25"



Example: Research

- Claudette Poole, MD, Pediatric Infectious Disease
- Used i2b2 to explore patient populations and then received more detailed data from an EDW Analyst
- Won first place for an oral abstract at the South Eastern Medical Scientist Symposium

TVAL_CHAR	START_DATE
Enterocolitis due to Clostridium difficile	10/23/2015 05:00:
Infectious gastroenteritis and colitis, unspecified	10/23/2015 05:00:
Air embolism (traumatic), initial encounter	12/16/2005 06:00:
Encounter for screening for malignant neoplasm of colon	03/22/2016 14:19:
MALIGNANT NEOPLASM OF CERVIX UTERI, UNSPECIFIED	09/18/2014 05:00:
Hb-SS disease without crisis	10/22/2013 05:00:
Parkinson disease	05/14/2013 00:00:
Benign hypertension	11/13/2013 06:00:
Benign hypertension	11/20/2013 17:19:

B	C	D	E	F	G	H	I	J	K	L
ORDERABLE_DISPLAY	TEST_TEXT	FORMATTED_MEDICAL	ADMIT_DT_TM	REASON_FOR_VISIT	AGE_IN_DAYS	LOCATION_NAME	EVENT_START_DT_TM	ORDER_DATE	CULTURE_START_DT_TM	BIRTH_DATE
CULTURE CSF & GS	No growth at 24 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	60	UAB HOSPITAL.RNIC	03/16/2013 17:17:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 48 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	60	UAB HOSPITAL.RNIC	03/16/2013 17:17:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No bacteria seen on direct gram stain.	000002786911	03/15/2013 21:59:00	PREMATURITY	63	UAB HOSPITAL.RNIC	03/19/2013 15:41:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 24 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	63	UAB HOSPITAL.RNIC	03/19/2013 15:41:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 24 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	61	UAB HOSPITAL.RNIC	03/17/2013 12:53:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 4 days.	000002786911	03/15/2013 21:59:00	PREMATURITY	62	UAB HOSPITAL.RNIC	03/18/2013 15:21:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 72 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	63	UAB HOSPITAL.RNIC	03/19/2013 15:41:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 72 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	64	UAB HOSPITAL.RNIC	03/20/2013 15:39:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00
CULTURE CSF & GS	No growth at 48 hours	000002786911	03/15/2013 21:59:00	PREMATURITY	59	UAB HOSPITAL.RNIC	03/16/2013 03:27:00	03/15/2013 22:21:00	03/16/2013 03:11:00	01/16/2013 00:00:00



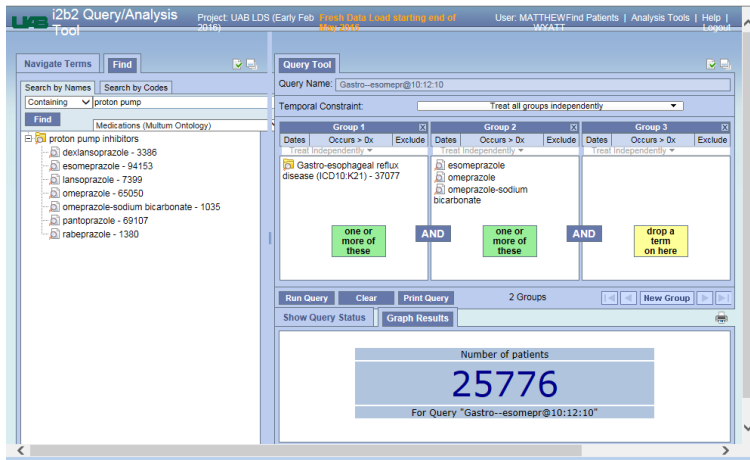
Example: Grant Preparation

- Carolyn Williams, Emergency Medicine
- Used for K24, K08, UH2/UH3 and Industry sponsored (Urticaria Phase II, multi-center)

Patient	Date	Code	Concept Description	Encounter
12345	1-Jul-15	ICD9:493.90	Asthma	98765
12346	3-Mar-16	ICD10-CM:E78.5	Hyperlipidemia, unspecified	98764
12347	3-Mar-16	ICD10-CM:Z00.00	Encounter for general adult medical examination	98763
12348	9-Jul-12	ICD9:709.9	Dermatosis NOS	98762
12349	1-Nov-12	ICD9:311	DEPRESSIVE DISORDER, NOT ELSEWHERE CLASSIFIED	98761
12350	1-Nov-12	ICD9:300.02	Anxiety disorder, generalized	98760
12351	5-Dec-13	ICD9:V22.1	Prenatal care, normal, other pregnancy	98759
12352	26-Dec-13	ICD9:V72.31	Routine gynecological examination	98758
12353	2-Apr-15	ICD9:493.90	Asthma, unspecified	98757
12354	2-Apr-15	ICD9:493.90	Asthma	98756
12355	19-Aug-13	ICD9:V58.69	High risk medication use	98755
12356	22-Jan-16	ICD10-CM:J45.909	Unspecified asthma, uncomplicated	98754
12357	22-Jan-16	ICD10-CM:Z23	Encounter for immunization	98753
12358	22-Jan-16	ICD10-CM:I10	Essential (primary) hypertension	98752
12359	22-Jan-16	ICD10-CM:R73.01	Impaired fasting glucose	98751

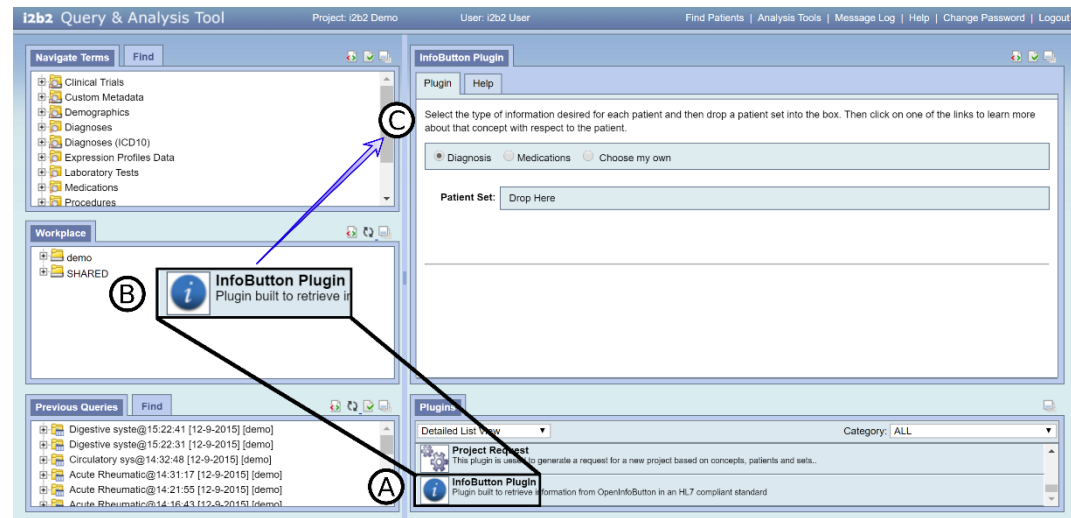
Estimates of ED Patients at UAB Hospital, Birmingham, AL
 ICD9 conversions from www.icd10data.com

Condition	ICD9	ICD10	No. of ED Patients 1/1/2015-12/31/2015
Urticaria	708.0 urticaria* 708.0 allergic urticaria 708.1 idiopathic urticaria 708.2 urticaria from cold/heat 708.3 dermatographic urticaria 708.4 vibratory urticaria 708.5 cholinergic urticarial 708.8 urticaria nec 708.9 urticaria nos	L50.0 Allergic urticaria L50.1 Idiopathic urticaria L50.2 Urticaria due to cold and heat L50.3 Dermatographic urticaria L50.4 Vibratory urticaria L50.5 Cholinergic urticaria L50.6 Contact urticaria L50.8 Other urticaria L50.9 Urticaria, unspecified	74
Hives (Listed as urticarial)	N/A	N/A	
Angioedema (Listed under "angioneurotic edema")	995.1 angioneurotic edema 277.6 defic circul enzyme nec	T78.3XXA Angioneurotic edema, initial encounter D84.1 Defects in the complement system	17
Allergic reaction (Better cross-lists to "anaphylaxis")	995.3 allergy, unspecified	T78.40XA Allergy, unspecified, initial encounter	47
Anaphylaxis	995.0 other anaphylactic react 999.4 anaphylactic shock-serum# 999.41 anaphyl d/t adm bld/prod 999.42 anaphyl react d/t vaccin 999.49 anaph react d/t qt serum 995.60 anaphylct react food nos 995.61 anaphylct react peanuts 995.62 anaphylct react crustacns 995.63 anaphylct react frts veg 995.64 anaphyl react tr nts seed 995.65 anaphylct reaction fish 995.66 anaphylct react food addy 995.67 anaphylct react milk prod 995.68 anaphylct reaction eggs 995.69 anaphyl react oth sp food	T78.2XXA Anaphylactic shock, unspecified, initial encounter T80.51XA Anaphylactic reaction due to administration of blood and blood products, initial encounter T80.52XA Anaphylactic reaction due to vaccination, initial encounter T78.00XA Anaphylactic reaction due to unspecified food, initial encounter T78.01XA Anaphylactic reaction due to peanuts, initial encounter T78.02XA Anaphylactic reaction due to shellfish (crustaceans), initial encounter T78.04XA Anaphylactic reaction due to fruits and vegetables, initial encounter T78.05XA Anaphylactic reaction due to tree nuts and seeds, initial encounter T78.03XA Anaphylactic reaction due to other fish, initial encounter T78.06XA Anaphylactic reaction due to food additives, initial encounter T78.07XA Anaphylactic reaction due to milk and dairy products, initial encounter T78.08XA Anaphylactic reaction due to eggs, initial encounter T78.09XA Anaphylactic reaction due to other food products, initial encounter	2
Drug Allergy	995.27 drug allergy nec	T50.995A Adverse effect of other drugs, medicaments and biological substances, initial encounter	9



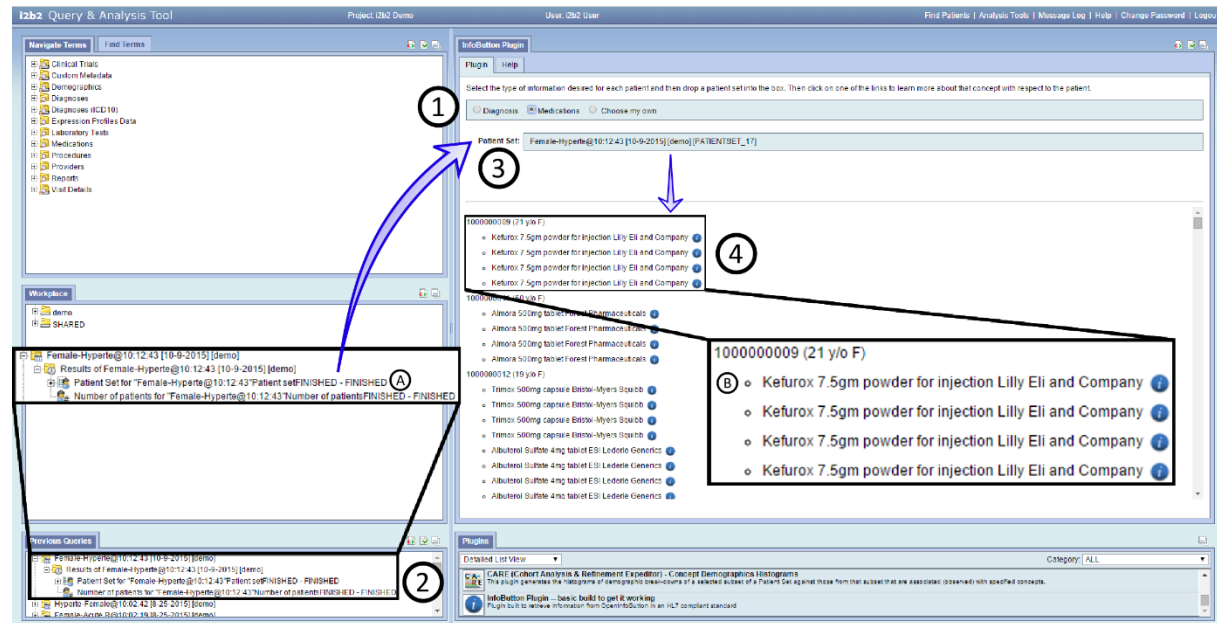


Example: Software Development



• Tim Kennell, MD/Ph.D
Program,

- Used i2b2 as a software development environment and built an InfoButton plug-in
- Presented at the American College of Medical Informatics





i2b2 Innovations / Extensions at UAB

- Data Download Plugin
- Integration with the Learning Management System
- IRB Exemption for Self Service access to patient level detailed data (HIPAA LDS)
- Incremental loading process from the Enterprise Data Warehouse
- i3b3



How to get more information

<https://www.uab.edu/ccts/researchcommons/research-data-requests>

<https://www.uab.edu/ccts/research-commons/informatics/i2b2>

Or Google “i2b2 UAB”

Query Tool

Query Name: Gastro--proton @10:10:46

Temporal Constraint: Treat all groups independently

Group 1	Group 2	Group 3												
Dates	Occurs > Dx	Exclude	Dates	Occurs > Dx	Exclude	Dates	Occurs > Dx	Exclude						
Treat independently			Treat independently			Treat independently								
Gastro-esophageal reflux disease (ICD10:K21) - 37077			proton pump inhibitors - 181615											
one or more of these			AND			one or more of these			AND			drop a term on here		

Run Query Clear Print Query 2 Groups New Group

Show Query Status Graph Results

Number of patients

30170

For Query "Gastro--proton @10:10:46"

RESEARCH COMMONS
Center for Clinical and Translational Science

Research Data Requests

Clinical Data Access and Requests: CCTS Informatics provides the infrastructure to utilize clinical data generated within UAB Medicine to support all types of clinical, biomedical, and translational research.

Self-Service Access to Study Enrollment Feasibility via i2b2

i2b2

i2b2 (Informatics for Integrating Biology and the Bedside) is an NIH-funded National Center for Biomedical Computing based at Partners HealthCare System. i2b2 was developed as a scalable informatics framework designed for translational research. i2b2 was designed primarily for cohort identification, allowing users to perform an enterprise-wide search on a de-identified repository of health information to determine the existence of a set of patients meeting certain inclusion or exclusion criteria.

i2b2 allows researchers to determine feasibility of a study by identifying whether or not a sizable amount of patients exist with their study-specific criteria.

Access to clinical data through i2b2 involves several easy steps to set up access and then authorized users can access the system as desired to obtain summary data sets (useful for finding aggregate population characteristics or for estimating the number of patients at UAB who might be eligible as subjects for a planned clinical study) and detailed data sets (useful for enrolling subjects in a study or to explore research questions using retrospective data).

User Support Materials (PDF download): [i2b2_manual.pdf](#) / [i2b2_FAQ.pdf](#)

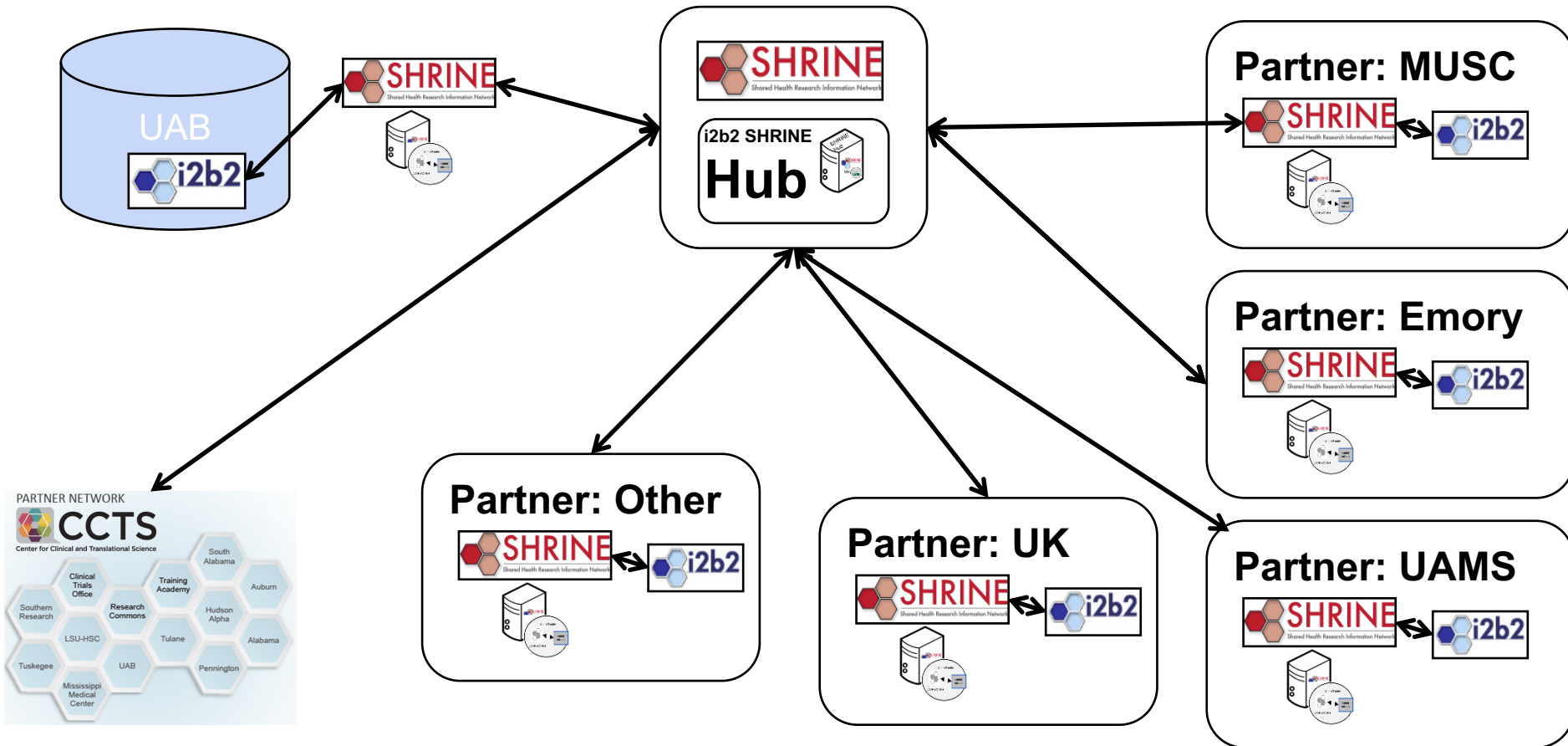
How to Set-Up Access:

- 1) Complete the Access Request form here (direct URL: <https://i2b2-uab.hs.uab.edu>)**
 - For Non-Faculty, the request process will also include a requirement for supervisor approval. Follow the instructions in the request process for emailing supervisor approval to the i2b2 team.
- 2) Learning Management System:**
 - Log on to the UAB Learning Management System
 - Search the catalog for "i2b2" or "limited data sets" and take the "course" entitled "Acknowledgement of Restrictions on the Use of Limited Data Sets", enroll, read and acknowledge the "LDS Terms and Condition".
 - This must be completed once a year.
 - Wait until the next day for completion information to reach i2b2 (records are updated nightly)
 - HIPAA and IRB - Human Subjects Protection training are also required
- 3) Log-on to i2b2**



i2b2 - SHRINE

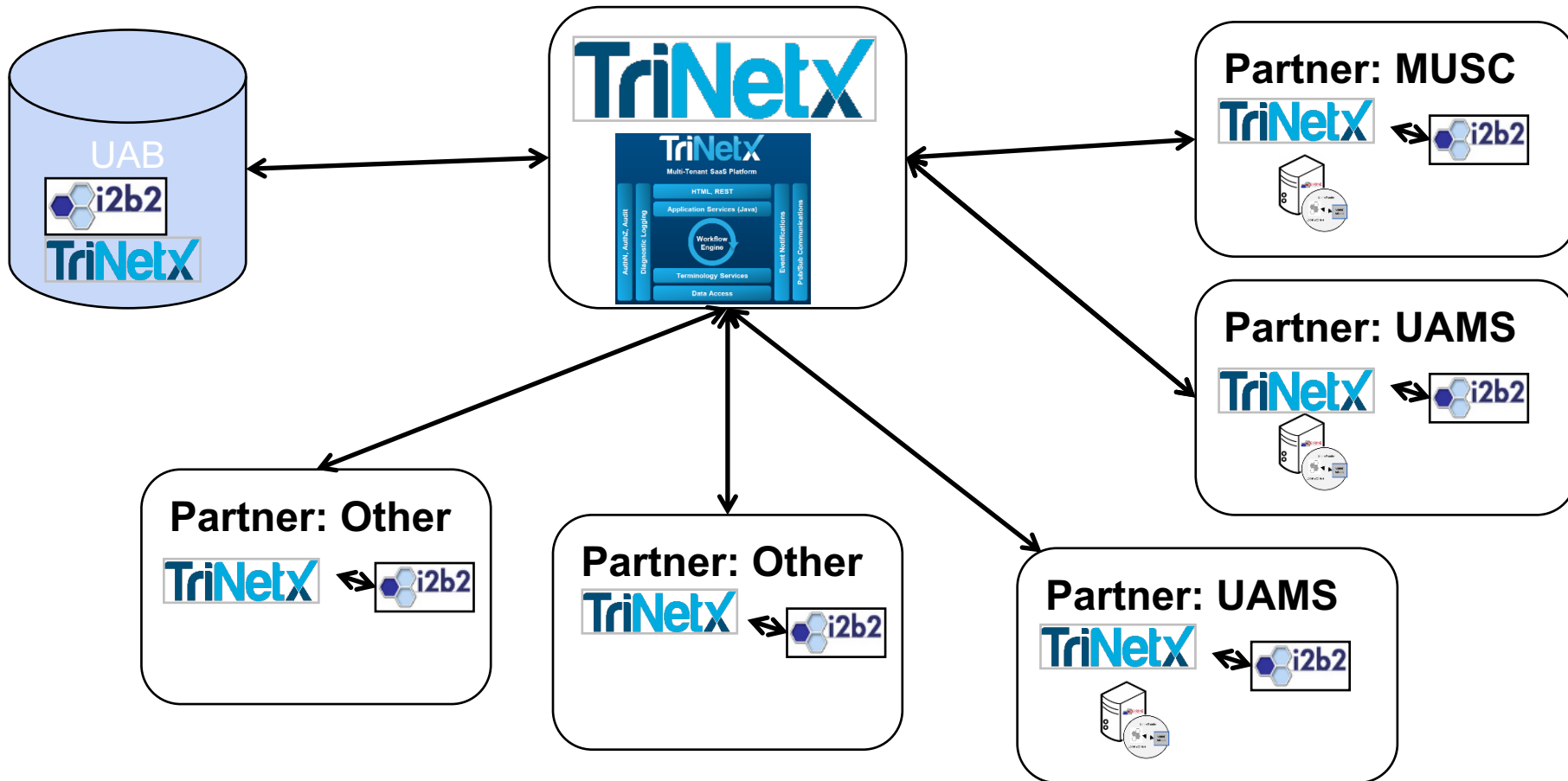
(Shared Health Research Informatics Network)





The TriNetX Network

Multi-Institutional Collaboration



Upcoming i2b2 Introductory Classes

Thursday January 5th

Tuesday January 17th

(Registration Required)



Questions?

<http://www.uab.edu/ccts/research-commons/informatics/i2b2>

<https://www.uab.edu/ccts/researchcommons/research-data-requests>

i2b2support@uabmc.edu

Matt Wyatt: mwyatt@uabmc.edu







More on the TriNetX Network

Manfred Stapff, MD, PhD
Chief Medical Officer
TriNetX



 You have enrolled successfully in a course **Acknowledgement of Restrictions on the Use of Limited Data Sets** Created by HealthSystem

[Profile](#) 



Acknowledgement of Restrictions on the Use of Limited Data Sets



STATUS: Not Yet Started EST. TIME: 15m

[Learning Activities](#) [Overview](#)

Learning Activities *in this Course*

Read Terms and Conditions of Limited Data Set (LDS) [View](#)

COURSE ATTACHMENT STATUS: Not Yet Started

Attestation [Locked](#)

TEST STATUS: Not Yet Started

Description

This course is an acknowledgement and attestation that users have read and understood the terms and conditions of receiving access to Limited Data Set (LDS) from the UAB i2b2 system.

Course Version: 1

Options

[Un-Enroll from Course](#)

Support

For assistance, please contact Learning System Support at 205.996.4444 or email learningsystem@uab.edu

Acknowledgement of Restrictions on the Use of Limited Data Sets

As a condition of receipt of a Limited Data Set (LDS) from the UAB i2b2 system, you agree to the following terms and conditions:

1. The research is supported by and approved by your superiors.
2. You acknowledge and accept that UAB is not permitted to release to you the key to the code that links information to individual research subjects.
3. You are the individual responsible for the use of these data and any subsequent publications. You will follow the appropriate human subjects research, data security and privacy protections and will maintain the confidentiality of these data in compliance with all applicable UAB policies and procedures as the data sets may contain Protected Health Information (PHI).
4. Use and disclosure of an LDS:
 - a. As the Recipient, you agree that you will provide a full title and explanation of your research pertaining to the use of the LDS, as requested in the form provided at the time of data access.
 - b. You will only give access to the LDS to other individuals who are within UAB and have completed Human Subjects Research and HIPAA training; you will provide the names of these other individuals on request.
 - c. You agree to apprise all individuals that have access to the LDS of the terms and conditions of data use.
 - d. You shall use appropriate safeguards to protect the LDS from misuse or inappropriate disclosure and to prevent any use or disclosure of the LDS other than as provided by law or regulation.
 - e. You shall not attempt to identify individuals to whom the data pertain or attempt to contact such individuals.
 - f. That you are making use of previously collected ("on the shelf") data only and you shall not attempt to carry out subsequent data queries for the purposes of collecting data ("updates") about individuals whose data are in the LDS.
5. You will use the data only for the research use described and will maintain the LDS as per UAB policy.
6. You shall report to the UAB Privacy Office any unauthorized use or disclosure for the PII of which you become aware. You will take reasonable steps to any further use or disclosure. To contact the UAB Privacy Office, call (205) 996-5051 or e-mail ssearson@uabmc.edu.
7. You agree to these terms of use for as long as you retain the LDS, unless otherwise terminated by applicable law or regulation.

This Acknowledgement applies to the LDS resulting from the i2b2 query and shall continue as long as I retain the LDS, unless otherwise terminated by applicable law or regulation. I may terminate this Acknowledgement by returning or destroying the LDS and providing a written notice to the i2b2 administration at: Director of Research Commons, UAB CCTS, 111 PCAM, 1720 2nd Avenue South, Birmingham, AL 35294-0007. Should I commit a material breach of this Acknowledgement, which is not cured within thirty (30) days after I receive a notice of such a breach from i2b2, then i2b2 will discontinue disclosure of LDS and will report the breach to the UAB Privacy Office by phone at (205) 996-5051 or e-mail ssearson@uabmc.edu.



TEST

Attestation

STATUS: In Progress QUESTIONS: 1

Question 1 *of 1*

By clicking Yes below, I acknowledge/attest that I have read and understand the terms, conditions, and restrictions on the Use of Limited Data Sets.

Yes

No

Complete Test