Joint Annual Congress 2019

6th - 8th March | Harrogate Convention Centre

Abstract Book

Contents

	Page
Medawar Medal presentations	1
Calne Williams presentations	9
Oral presentations	16
Moderated posters	52
Posters	101

M1

Rapid full HLA sequencing of deceased organ donors using the Oxford Nanopore Technologies (ONT) MinION

Tom Nieto[1,2], Jo Stockton[1], Elizabeth Wroe[3], David Briggs[4], Andrew Beggs[1,2], Nicholas Inston[2]

[1]University of Birmingham, Birmingham, United Kingdom. [2]University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom. [3]NHSBT, Filton, United Kingdom. [4]NHSBT, Birmingham, United Kingdom

Introduction: Safe deceased donor transplantation requires rapid and accurate donor HLA typing. Current methodologies are characterised by inadequate fidelity, a 1% error rate and in most cases the full HLA type is not resolved (HLA-DQA, DPA and DPB often excluded). HLA sequencing is the only practical way to overcome these limitations, but the turn-around time for sequencing has been measured in days, until now. We have developed a sequencing method which can be completed within 9 hours using theONT MinION.

Methods: DNA from 11 previous, consecutive cadaveric organ donors was sent blinded to the research laboratory for MinION sequencing. HLA-A-B-C-DRB (1,3,4,5)-DQA-DQB-DPA-DPB genes were amplified by PCR. Custom primers and standard ONT library preparation and barcoding kits were used. All samples achieved greater than 1500x coverage when barcoded onto a 7 sample multiplex and sequenced on a MinION flowcell. The results were compared to those of the original referral testing and from retesting in the NHSBT laboratory by NGS (Illumina-MiSeq).

Results: The ONT MinION was able to provide three field resolution for each HLA locus and equivalent results to the original and MiSeq results for all 11 samples. All samples could be accurately identified by the blinded laboratory team by their HLA type. Further optimisation will reduce the time taken from DNA extraction to full results to below 8 hours.

Discussion: We have made a significant advance in being able to provide full, error-free HLA typing at the highest resolution within a time-scale appropriate for deceased organ allocation. Multiplex analysis in the flow cell will allow double testing, as a second PCR preparation from the same donor can be sequenced, a potential QC requirement. The accuracy and coverage of our method could allow both safe, universal virtual crossmatching, and allocation based on epitope matching. This system has the potential for point-of-care testing.

M2

"Viability testing and transplantation of marginal livers" - the clinical outcomes of the VITTAL trial

Richard W Laing[1,2], Hynek Mergental[2,1], Amanda Kirkham[3], M Thamara P R Perera[2], Yuri L Boteon[2,1], Joesph Attard[2,1], Darren Barton[3], Manpreet Wilkhu[3], Stuart Curbishley[1], Desley A Neil[1,4], Stefan G Hübscher[1,4], Lorraine Wallace[1], Paolo Muiesan[2], John J Isaac[2], Keith J Roberts[2], Manuel Abradelo[2], Hentie Cilliers[2], John Isaac[2], Julian Bion[5], Peter J Friend[6,7], Christina Yap[3], Simon C Afford[1], Darius F Mirza[2,1]

[1]Biomedical Research Centre, University of Birmingham and University Hospitals Birmingham NHS Foundation Trust, National Institute for Health Research (NIHR), Birmingham, United Kingdom. [2]Liver Unit, Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust (UHBFT), Birmingham, United Kingdom. [3]Cancer Research UK Clinical Trials Unit, University of Birmingham, D3B team, Birmingham, United Kingdom. [4]Department of Cellular Pathology, Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust (UHBFT, Birmingham, United Kingdom. [5]Department of Intensive Care Medicine, Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust (UHBFT), Birmingham, United Kingdom. [6]University of Oxford, United Kingdom, Nuffield Department of Surgical Sciences, Oxford, United Kingdom. [7]OrganOx Ltd., Oxford, United Kingdom

Introduction: Assessment of livers prior to transplantation is mostly subjective and last year, 599 livers from potential solid organ donors were not used for transplantation. Utilisation also varies widely between centres. The aim of the VITTAL trial was to objectively assess donor liver viability and achieve successful transplantation of discarded livers using normothermic machine perfusion (NMP).

Methods: This prospective, non-randomised, open label, single-arm adaptive phase II trial included livers discarded by all UK centres that met one or more specific high-risk criteria. These included donor risk index ≥2.0, biopsy-proven macrosteatosis ≥30%, transaminases ≥1000IU/mL, or warm ischaemic time ≥30mins in livers donated after circulatory death (DCD). The viability criteria were based on the clearance of perfusate lactate to levels ≤2.5mmol/L within 4 hours of commencing NMP, bile production, glucose metabolism, pH and physiological flow rates. Livers deemed viable were transplanted to adult first-graft recipients without portal vein thrombosis or cardiovascular comorbidities. The co-primary endpoints were liver salvage rate and recipient 90-day survival.

Results: Thirty-one discarded livers met inclusion criteria and were a suitable match for potential consented recipients. Seventeen donors after brainstem death and 14 donors following circulatory death were enrolled and perfused. Of these, 22 (71%) livers were transplanted after a median total preservation time of 18 hours, with 100% patient and graft 90-day survival. Seven (32%) patients developed early allograft dysfunction, and six (27%) patients suffered from Clavien-Dindo complications grade ³3, including four (18%) who required dialysis. During the median follow up of 297 days, 4 (18%) patients developed biliary strictures requiring subsequent re-transplantation. Matched-control comparisons at 180 days showed no differences between patient or graft survival, complication rates or hospital stay.

Conclusion: Viability testing with NMP is feasible, and the criteria enabled the objective assessment and successful transplantation of 71% of perfused discarded livers, with 100% early graft survival.

M3

Novel delivery of cell therapy in normothermic machine perfusion to reduce ischaemia reperfusion injury in kidney transplantation

Emily Thompson[1,2], Lucy Bates[3,2], Ibrahim Ibrahim[3], Avinash Sewpaul[1], Ben Stenberg[1], Andrew McNeill[1], Tom Girdlestone[3], Anthony Ting[4], Andrew Fisher[2,3], Sarah Hosgood[5], Michael Nicholson[5], Simi Ali[3,2], Neil Sheerin[3,1], Colin Wilson[1,2]

[1]Freeman Hospital, Institute of Transplantation, Newcastle upon Tyne, United Kingdom. [2]NIHR Blood and Transplant Research Unit in Organ Donation and Transplantation, Newcastle upon Tyne, United Kingdom. [3]Institute of Cellular Medicine, Newcastle University, Newcastle Upon Tyne, United Kingdom. [4]Athersys Inc., Cleveland, Ohio, USA. [5]Department of Surgery, Addenbrooke's Hospital, Cambridge, United Kingdom

Introduction: Kidney transplant is the gold-standard treatment for the rising number of patients with renal failure. However, the shortage in donor organs has led to increased reliance on marginal kidneys. Normothermic machine perfusion (NMP) prior to transplantation provides a platform for direct delivery of cellular therapeutics to revive, optimise and restore function prior to transplantation. Multipotent Adult Progenitor Cells (MAPCs) are a type of adult, bone-marrow derived, mesenchymal stem cell that possess potent immunomodulatory properties in vitro which could prove beneficial in minimising ischaemia reperfusion injury (IRI) during NMP.

Methods: Pairs of human kidneys (deemed unsuitable for transplant) from the same donor were simultaneously perfused for 7 hours (n=10). Following 1 hour of perfusion $50x10^6$ MAPCs were delivered as a bolus into the kidney's arterial cannula. Physiological recordings were taken at 30 minute intervals. Serial samples of perfusate, urine and tissue biopsies were taken for cytokine profiling and biomarker analysis.

Results: MAPC treated kidneys demonstrated improved urine output, $p<0.01$, decreased expression of tubular injury biomarker NGAL $p<0.01$, improved microvascular perfusion on contrast enhanced ultrasound (cortex $p<0.05$, medulla $p<0.01$), downregulation of endothelial activator IL-1β ($p<0.05$) and upregulation of anti-inflammatory, pro-tolerogenic molecules IL-10 ($p<0.05$) & Indolamine-2, 3-dioxygenase ($p<0.05$). Immunofluorescence confocal microscopy co-localisation studies revealed fluorescent-labelled MAPCs were resident within the kidney parenchyma via diapedesis (figure 1). A mouse model of intraperitoneal chemotaxis demonstrated decreased neutrophil recruitment when stimulated with MAPC perfusate ($p<0.01$). An endothelial cell model demonstrated the MAPC perfusate protected endothelial integrity and decreased vascular permeability by increasing S1PR1 gene ($p<0.05$) and protein expression ($p<0.0001$) in HMEC-1 cells.

Conclusion: Kidneys treated with MAPCs during NMP demonstrate improvement in clinically relevant parameters and biomarkers associated with IRI. The anti-inflammatory MAPC perfusate secretome reduced neutrophil chemotaxis and protected the endothelium. This novel method of cell therapy delivery provides an exciting opportunity to recondition organs prior to clinical transplantation.

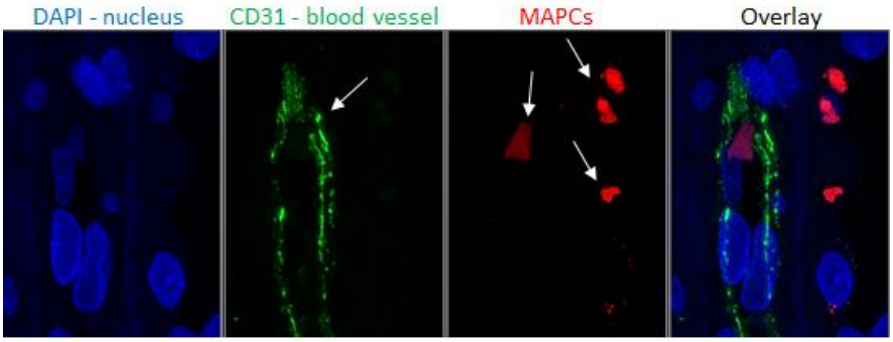


Figure 1: MAPC tracking in kidney NMP. Immunofluorescent confocal microscopy of kidney sections after 6 hours of MAPC therapy. 63x magnification of blood vessel from wedge biopsy.

M4

Donor insulin therapy predicts better graft survival in pancreas transplantation

Iestyn Shapey[1,2], Angela Summers[2], Hussein Khambalia[2], Catherine Fullwood[3], Neil Hanley[1], Titus Augustine[2,1], Martin Rutter[1,4], David van Dellen[2,1]

[1]University of Manchester, Manchester, United Kingdom. [2]Department of Transplantation, Manchester University NHS Foundation Trust, Manchester, United Kingdom. [3]Department of Statistics, Manchester University NHS Foundation Trust, Manchester, United Kingdom. [4]Manchester Diabetes Centre, Manchester University NHS Foundation Trust, Manchester, United Kingdom

Introduction: Organ donors frequently develop hyperglycaemia in intensive care, which is managed with insulin. In islet and solid pancreas transplantation (PT) we reported that Donor Insulin Use (DIU) predicts worse beta cell function. Here, we aimed to: a) determine relationships between DIU and graft failure in PT; and b) describe donor phenotypes related to DIU predicting optimal outcomes.

Methods: In data from the UK PT programme, regression models determined: a) associations between DIU and graft failure; and, b) the relationship between several donor phenotypes and graft failure, relative to an optimal donor phenotype. Net Reclassification Improvement assessed the added value of DIU as a predictor of graft failure.

Results: In 2168 PTs (mean [SD] age: 42 [8] years; BMI: 23.5 [3.4]) kg/m^2), 1112 (51%) donors were insulin-treated. DIU was associated with a lower risk of graft loss (hazard ratio, 95% CI: 0.72 [0.53-0.96], p=0.026) at 3 months post-transplantation. Other significant predictors of graft loss included older donor age (1.02, 1.01-1.03, p40 years, BMI >25 kg/m2 and not receiving insulin (failure rate 24/152 [16%], OR (95% CI): 3.2 (1.8-5.8), p=

Conclusion: Contrary to prior data on beta cell function, DIU predicts better graft survival in PT recipients. If validated, use of DIU to classify donor phenotypes could improve organ selection and allocation processes leading to better outcomes.

M5

Exploring the structural and functional effects of normothermic machine perfusion and de-fatting interventions on human steatotic livers

Carlo Ceresa[1], David Nasralla[1], Thomas Cornfield[2], Anne Clark[2], Philippa Hook[2], Liam Young[3], James Barnes[1], Visesh Sankaran[1], Annemarie Weissenbacher[1], Quin Wills[4], Fabio Sanna[4], Constantin Coussios[5], Leanne Hodson[2], Peter Friend[1]

[1]Nuffield Department of Surgical Sciences, University of Oxford, Oxford, United Kingdom. [2]Oxford Centre for Diabetes, Endocrinology and Metabolism, University of Oxford, Oxford, United Kingdom. [3]Oxford Centre for Clinical Magnetic Resonance Research, University of Oxford, Oxford, United Kingdom. [4]Novo Nordisk Research Centre Oxford, Oxford, United Kingdom. [5]Oxford Institute of Biomedical Engineering, University of Oxford, Oxford, United Kingdom

Introduction: Steatotic livers derive poor outcomes when transplanted and many are therefore discarded. With the global obesity epidemic, an increasing proportion of steatotic livers in the donor pool is inevitable and salvaging them for transplantation is of great importance. The aim of this study is to explore the effects of normothermic machine perfusion (NMP) and de-fatting adjuncts on steatotic livers, thereby providing an insight into how these grafts could be enhanced to enable their successful transplantation.

Methods: Eighteen discarded steatotic human livers were perfused on a NMP circuit for 48h. Livers were divided into 3 groups: NMP alone (group 1, n=6), NMP + lipid apheresis filtration (group 2, n=6) and NMP + lipid apheresis filtration + de-fatting agents (group 3, n=6). In order to explore any intervention-based effects on liver structure and function, regular perfusate sampling was performed for biochemical analysis of lipid metabolites and biopsies were obtained for lipid quantification. Fatty acids synthesised via *de novo* lipogenesis (DNL) were quantified in tissue via gas chromatography and mass spectrometry.

Results: Donor demographics and pre-perfusion steatosis levels were similar between groups (p=0.84). Lipid apheresis filtration was effective in significantly reducing circulating perfusate triglycerides in groups 2 (2899µmol/L) and 3 (2691µmol/L) compared to group 1 (6071µmol/L) (p=0.03). The addition of de-fatting agents in group 3, significantly increased fatty acid β-oxidation compared to groups 1 (p=0.04) and 2 (p=0.009). A 45% decrease in the tissue triglyceride level was observed in group 3, compared to a 16% increase in group 1 (p=0.04). The reduction of liver fat observed in group 3 was associated with a decrease in DNL fatty acid synthesis in these livers (7.14µg/mg) compared to groups 1 (18.80µg/mg) (p=0.18) and 2 (26.76µg/mg) (p=0.03).

Discussion: We demonstrate the ability to manipulate hepatic lipid metabolism and structure with *ex-situ* interventions. This may result in the successful transplantation of these high-risk grafts.

M6

The kidney fast-track offering scheme: 12-month recipient outcomes at a single UK centre

Sam Reilly, John Black, Rosemary Johns, Mohamed Morsy, Tahir Doughman, Anna Rizzello, Atul Bagul

Department of Renal Transplant, Leicester General Hospital, University Hospitals of Leicester, Leicestershire, United Kingdom

Aims: The UK Kidney Fast-Track Scheme (KFTS) was devised in 2012. The primary aim was to maximise utilisation of organs from deceased donors at risk of discard, whilst simultaneously minimising ischaemic times. Such organs were often declined by several UK-centres via the Standard National Kidney Allocation Scheme (NKAS), based on less favourable donor criteria. KFTS was implemented at our centre in 2015. This retrospective study highlights 12-month primary outcomes of recipients transplanted via a KFTS offer.

Methods: 33 recipients were identified as receiving a renal transplant via the KFTS during the period of October 2015 – November 2018. Donor forms were used to obtain donor criteria. Electronic records were used to assess recipient data and subsequent outcomes.

Results: Outcomes are summarised below. Means (+/- SD) are used unless otherwise specified.

RECIPIENT BACKGROUND / OUTCOMES

Age (years)	60.5 (+/- 13)
Sex (M:F)	2:1
BMI	26.6 (+/- 5)
Diabetes	39.4%
Hypertension	84.8%
Primary Non-Function (PNF)	0%
Delayed Graft Function (DGF)	42.4%
Episode of Rejection	0%
Creatinine 7 days (µmol/l)	516 (+/- 292)
Creatinine 1 month (µmol/l)	189 (+/- 130)
Creatinine 3 months (µmol/l)	159 (+/- 79)
Creatinine 9 months (µmol/l)	172 (+/- 115)
Creatinine 12 months (µmol/l)	155 (+/- 85)
Mortality	3%
12-Month Graft Survival	94%

Discussion: Mean recipient age was 60.5 (21-76). Average BMI was 26.6. Mean recipient creatinine at 1, 3 and 9 months post-transplant was 189, 159 and 172 respectively. Creatinine was 155µmol/l at 12-months. DGF was observed in 42.4%. There were no episodes of rejection. 2 recipients required dialysis at 12-months due to graft failure. 1 patient required ITU immediately post-op secondary to sepsis. 1 recipient underwent an emergency laparotomy for upper GI bleeding. 1 mortality due to overwhelming urosepsis (terminal creatinine 210). 12-month graft survival was 94%. Early outcomes suggest that the KFTS is a valuable organ source, with certain outcomes comparable to NKAS results.

M7

Transcriptional analysis reveals the molecular pathways activated during ex vivo perfusion and provides a global assessment of interventions in human kidney, lung and liver

John Ferdinand[1], Sarah Hosgood[1], Morvern Morrison[2], Anders Andreasson[3], Tom Moore[1], Chris Ward[1], Tom Castro[1], Andrew Butler[1], Chris Watson*[1], Andrew Fisher*[3], Mike Nicholson*[1], Menna Clatworthy*[1]

[1]University of Cambridge, Cambridge, United Kingdom. [2]Newcastle University, Newcastle, United Kingdom. [3]University of Newcastle, Newcastle, United Kingdom

Introduction: *Ex vivo* normothermic machine perfusion (NMP) is increasingly used as a tool to assess and re-condition organs prior to transplantation. The molecular events occurring during NMP and whether these can be altered by interventions applied during perfusion is unknown. Furthermore, how these processes differ between organs that are deemed transplantable compared with those that are discarded has yet to be determined.

Methods: To address these questions, we utilized RNA sequencing to profile the expression of around 20,000 genes in human kidney, liver and lung, prior to and following NMP as follows:

Kidneys: N=10 pairs, N=5 cold storage (CS) or NMP and N=5 pairs underwent NMP +/- a cytokine adsorber in the circuit.

Lungs: N=10, N=6 deemed transplantable, N=4 discarded.

Livers: N=10, N=5 undergoing NMP alone, N=5 undergoing NMP+cell filter in the circuit.

Results: In kidneys, no genes were significantly differentially expressed during 2 hours of CS, but gene set enrichment analysis (GSEA) revealed reduced oxidative phosphorylation (OXPHOS) and inflammatory genes. In contrast, following 2 hours of NMP >1300 genes were differentially expressed, upregulated pathways included 'TNFA mediated NFkB activation'. The addition of a cytokine adsorber to the NMP circuit had no effect on kidney blood flow or urine output, but reduced the induction of inflammatory genes. In lungs, 371 genes were differentially expressed during perfusion, including candidate biomarkers of outcome currently undergoing validation. GSEA showed the induction of several immunological pathways in discarded lungs, and negative enrichment of OXPHOS genes. A comparison across thoracic and abdominal organs revealed commonality in the molecular pathways induced during NMP.

Conclusions: Overall, our analysis provides the first comprehensive transcriptional assessment of the effect of NMP across a range of human organs. Importantly, we show that global transcriptomics may provide a valuable tool for assessing the effects of future interventions that could be extrapolated across organs.

M8

The effect of isolated pancreas or kidney allograft failure on cardiovascular events following simultaneous pancreas and kidney transplantation in the United Kingdom

Petros Yiannoullou[1,2], Angela Summers[1,2], Catherine Fullwood[1,2], Iestyn Shapey[1,2], Josephine Naish[2], Christopher Miller[2,1], Titus Augustine[1,2], Martin Rutter[1,2], David van Dellen[1,2]

[1]Manchester University NHS Foundation Trust, Manchester, United Kingdom. [2]University of Manchester, Manchester, United Kingdom

Introduction: Simultaneous pancreas and kidney (SPK) transplantation improves survival and may modify cardiovascular risk in people with type 1 diabetes mellitus. However, the relative contribution of the component allografts to reductions in cardiovascular risk is unknown. We aimed to determine the risk of major adverse cardiovascular events (MACE) following isolated allograft failure in SPK transplant recipients.

Methods: We assessed the frequency of MACE (fatal cardiovascular disease, non-fatal myocardial infarction and stroke) following isolated allograft failure in SPK recipients between 2001-2015 using data from the United Kingdom transplant registry and national register of deaths. Cox regression models using a time-based definition for allograft failure determined relationships with MACE.

Results: 1699 SPK recipients were included (mean [SD] age: 41·6 [8·3] years; 59% male), of which: 1238 (73%) had dual functioning allografts (fKP); 280 (17%) had isolated pancreas allograft failure (IPF); and 130 (8%) had isolated kidney allograft failure (IKF). The median time to allograft failure was 113 days for IPF, and 1357 days for IKF. Patients with isolated allograft failure had a higher rate of MACE than those with dual functioning allografts (IPF: 2.4 per 100 person-years; IKF: 6.1 per 100 person-years; fKP: 1.3 per 100 person-years. Using fKP patients as a reference, hazard ratios [95% CI] for MACE were: 1.77 [1.05-2.98] for IPF and 5.85 [3.34-10.26] for IKF after adjusting for potential confounders.

Discussion: Both the pancreas and renal allografts contribute to reductions in cardiovascular risk in SPK recipients. The incremental benefit of a functioning pancreas indicates that pancreas transplantation should be offered to all eligible patients either simultaneously or following kidney transplantation. The large adverse effect of IKF indicates that increased efforts to optimise and preserve renal function in SPK recipients are mandated. In addition, intensive cardiovascular monitoring and risk modification following isolated allograft failure is necessary to reduce subsequent risk.

CW1

The impact of transarterial chemoembolisation on complications and survival after liver transplantation

David Wallace[1, 2], Kate Walker[1], Susan Charman[1], Abid Suddle[2], Alex Gimson[3], Ian Rowe[4], Chris Callaghan[5], Thomas Cowling[1], Jan van der Meulen[1], Nigel Heaton[2]

[1]Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, London, United Kingdom. [2]Institute of Liver Studies, King's College Hospital NHS Foundation Trust, London, United Kingdom. [3]The Liver Unit, Addenbrooke's Hospital, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom. [4]Liver Unit, St James' Hospital and University of Leeds, Leeds, UK / Leeds Institute for Data Analytics, University of Leeds, Leeds, United Kingdom. [5]Department of Transplantation, Renal Unit, Guy's Hospital, London, United Kingdom

Introduction: The impact of transarterial chemoembolisation (TACE) on early and late post-transplantation outcomes has never been identified in a representative cohort of recipients with hepatocellular carcinoma (HCC). We linked the UK Standard National Liver Transplant registry to a hospital administrative dataset and assessed the impact of TACE on post-operative complications and mortality following liver transplantation.

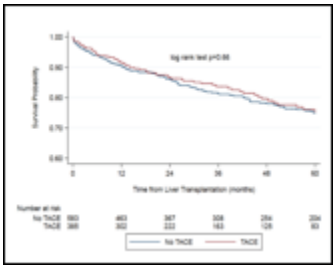
Methods: We identified a population-based cohort of HCC recipients of a liver transplant (aged ≥ 16 years) between 2006 and 2016. We stratified our cohort according to HCC recipients who had received TACE on the transplant waitlist and used Cox regression to compare mortality and estimate hazard ratios (HR), adjusted for relevant donor and recipient characteristics.

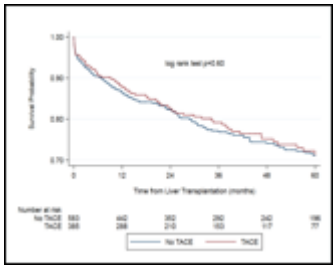
Results: 385 TACE and 583 non-TACE recipients were included. 5-year post-transplant survival was 75.2% (95%CI: 68.8% to 80.5%) in patients who received TACE and 75.0% (95%CI: 70.5% to 78.8%) in those who did not. With adjustment for donor and recipient characteristics, no significant differences in mortality (HR 0.96, 95%CI: 0.67-1.38, p=0.82) or graft survival were identified (HR: 1.01, 95%CI: 0.73-1.40, p=0.96). Also, the impact of TACE on mortality did not differ according to the number of TACE treatments (≥2 TACE treatments HR: 0.97, 95%CI: 0.61-1.55, p=0.90), the time-period after transplantation (p for interaction = 0.29) or the use of circulatory death donors (p for interaction = 0.97). The incidence of hepatic artery thrombosis was lower in those who received TACE (1.3% vs 2.5%, respectively, p=0.09)

Discussion: The use of TACE on HCC patients on the liver transplant waitlist does not increase the risk of early post-operative complications or graft failure nor does it improve long-term patient survival or rates of tumour recurrence.

Figure 1: Five-year patient and graft survival stratified by TACE status 2006-2016 (n=968).

a) Patient survival **b) Graft survival**





CW2

Perfusate hyaluronic acid as a marker of liver viability during normothermic perfusion

David Nasralla[1], Srikanth Reddy[1], Jens Brockmann[2], Carlo Ceresa[1], Constantin Coussios[3], Peter Friend[1]
[1]Nuffield Department of Surgical Sciences, Oxford Transplant Centre, Oxford, United Kingdom. [2]University Hospitals Münster, Münster, Germany. [3]Department of Biomedical Engineering, University of Oxford, Oxford, United Kingdom

Background: Hyaluronic acid (HA) is a marker of hepatic artery fibrosis and, in the perfusate of cold stored livers, reflects organ quality. By preserving the liver in a functioning state, normothermic machine perfusion (NMP) may enable viability testing prior to implantation. However, potential viability markers are still lacking. A porcine liver transplantation model was used to explore the potential of HA as a marker of viability during NMP.

Methods: Porcine livers from heart beating donors (HBD; n=7), and DCD donors with either 40 minutes warm ischaemia (DCD40; n=6) or 60 minutes warm ischaemia (DCD60; n=4) were retrieved and subject to 20 hours NMP, following which they were transplanted. Graft and animal survival were recorded. Parameters measured during normothermic perfusion were compared to identify those which most strongly predicted post-transplant viability.

Results: One animal died in the HBD and DCD40 groups compared with no survivors in the DCD60 group (p=0.048). The HBD and DCD40 groups showed comparable outcomes of all perfusate parameters. In contrast, the DCD60 livers showed: poorer bile production (HBD 12.7±1ml/hour vs DCD40 9.8±1ml/hour vs DCD60 2.7±1ml/hour; p=0.01), worse base excess (HBD -4.6±1mEq/L vs DCD40 -6.6±1mEq/L vs DCD60 -12±1mEq/L; p=0.01), higher perfusate transaminase levels (HBD 38±4iu/L vs DCD40 88±13iu/L vs DCD60 222±74iu/L; p=0.01), higher portal pressures (HBD 1.2±0.4mm vs DCD40 3.6±1mm vs DCD60 11.7±1mm; p=0.03) and significant haemorrhage and necrosis on histology. However, the greatest discriminator in predicting organ viability was perfusate hyaluronic acid (HBD 47ng/ml vs DCD40 128ng/ml vs DCD60 6078ng/ml; p=0.001).

Conclusions: Multiple NMP parameters show an association with liver quality but that which is most predictive of viability is hyaluronic acid. If translated into clinical practice these findings could be important to enable the assessment of marginal organs during NMP to guide utilisation.

CW3

The impact of pre-transplantation performance status on hospital resource use following liver transplantation

David Wallace[1], Thomas Cowling[1], Jan van der Meulen[1], Nigel Heaton[2], William Bernal[2]

[1]Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, London, United Kingdom. [2]Institute of Liver Studies, King's College Hospital NHS Foundation Trust, London, United Kingdom

Introduction: The impact of frailty and compromised performance status (PS) on hospital resource use following liver transplantation (LT) has had limited characterisation. In this study, we linked the United Kingdom LT registry to a national administrative dataset and examined the impact of Pre-LT PS on hospital resource use.

Methods: 7940 patients with cirrhotic CLD who received a first LT between 1995-2016 were studied. Pre-LT PS was assessed using a 5-point scale (modified Eastern Cooperative Oncology Group (ECOG) score). We compared the prevalence of post-operative complications according to ECOG status and used linear regression techniques to examine the association between PS and length of hospital stay (LOS) in the initial transplantation admission and at 1, 2 and 3 years' post-transplantation (excluding initial admission).

Results: Recipients with increasingly impaired PS had an increased risk of renal failure, post-operative haemorrhage, biliary tract leak, CMV infection and sepsis ($P<0.05$). Compared to those able to carry out normal activity (ECOG PS1), recipients with ECOG PS5 had increased LOS during the initial post-LT admission (adj mean: 25.6 days 95%CI: 18.5, 32.6, $p<0.01$) but no statistically significant increased LOS at 1,2 or 3-years following LT ($p>0.05$). ECOG PS5 recipients also required longer post-operative ventilation (adj mean: 2.1 days 95%CI: 0.6,3.7) and had significantly longer ITU LOS (adj mean: 3.2 95%CI:1.3, 5.1).In contrast, patients with ECOG PS3 and 4 had no increased LOS after initial LT but longer LOS in the 3-years following LT (PS3; adj mean 9.8 days 95%CI:1.3,18.4 and PS4; adj mean 12.3 days 95%CI:2.8,21.8).

Discussion: LT recipient PS assessed using a simple measure was independently predictive of post-LT hospital resource use. Overall, poorer PS at the time of LT was associated with increased post-LT complications and prolonged ITU and Hospital LOS admission, with increased hospitalisation seen up to 3-years following surgery.

CW4

Sixteen months of discarded donor livers in the UK - an analysis of donor demographics and factors contributing to organ salvage

Richard Laing[1, 2], Hynek Mergental[1, 2], Yuri Boteon[1, 2], Joseph Attard[1, 2], Amanda Kirkham[3], M Thamara P R Perera[2], Lorraine Wallace[1], Stuart Curbishley[1], Darren Barton[3], Manpreet Wilkhu[3], Desley A Neil[4], Stefan G Hübscher[4], Paolo Muiesan[2], John J Isaac[2], Keith J Roberts[2], Manuel Abradelo[2], Hentie Cilliers[2], John Isaac[2], Julian Bion[5], Peter Friend[6, 7], Christina Yap[3], Simon C Afford[1], Darius F Mirza[1, 2]

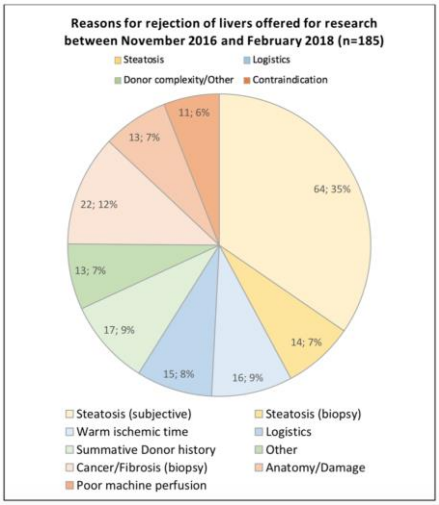
[1]NIHR Birmingham Biomedical Research Centre, University Hospitals Birmingham NHS Foundation Trust and University of Birmingham, Birmingham, United Kingdom. [2]Liver Unit, Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust (UHBFT), Birmingham, United Kingdom. [3]Cancer Research UK Clinical Trials Unit, University of Birmingham, D3B team, Birmingham, United Kingdom. [4]Department of Cellular Pathology, Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust (UHBFT), Birmingham, United Kingdom. [5]Department of Intensive Care Medicine, Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust (UHBFT), Birmingham, United Kingdom. [6]University of Oxford, United Kingdom, Nuffield Department of Surgical Sciences, Oxford, United Kingdom. [7]OrganOx Ltd., Oxford, United Kingdom

Introduction: Last year in the UK, 975 livers from 1574 potential solid organ donors were used for transplantation: 599 (38%) were therefore not considered suitable for use. Over a 16-month period, research liver offers were analysed and their suitability for inclusion in the VITTAL trial for viability testing was assessed.

Methods: Livers declined by all UK transplant centres and with specific consent from the donors next of kin were considered for research. Exclusion and inclusion criteria were evaluated and then if suitable, livers were matched with an appropriate recipient – consented in advance.

Results: Between November 2016 and February 2018, 185 livers were offered for research purposes and considered for inclusion in the VITTAL trial. Livers were discarded for multiple reasons. Contraindications for use included cancer or fibrosis on biopsy (12%), incompatible anatomy or damage (7%) and previous poor performance during machine perfusion (6%). Thirty-one (17%) were discarded for logistical reasons, mainly prolonged cold and warm ischemic times. The most common reason for discard was graft steatosis (42%) however most were subjectively assessed with only 7% undergoing a biopsy. Of the 185 liver offers, 59 (32%) met trial exclusion criteria and 126 (68%) were considered for inclusion. Of the 95 subsequently excluded, 25 (14%) did not meet the marginal criteria for inclusion, 21 (11%) were offered whilst a perfusion was already in progress and there was no suitable size/group matched recipient in 41 (22%) cases. Despite not reaching significance, the 9 livers (29%) that were not transplanted following normothermic machine perfusion (NMP) had been exposed to over 100 more minutes of cold ischemia (550min [360-804] vs 435min [324-890] p=0.268).

Conclusion: One hundred and twenty-eight (68%) discarded procured donor livers had the potential to undergo viability testing using NMP. Minimising cold ischemia is an important factor that might further improve organ salvage rates during NMP.



CW5

The impact of performance status at the time of transplantation on outcomes following liver transplantation: a national cohort study in the United Kingdom and Ireland

David Wallace[1, 2], Mark McPhail[2], Sarah Brown[2], Varuna Aluvihare[2], Abid Suddle[2], Georg Auzinger[2], Michael Heneghan[2], Julia Wendon[2], Nigel Heaton[2], Jan van der Meulen[2], William Bernal[3]

[1]Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, London, United Kingdom. [2]Institute of Liver Studies, King's College Hospital NHS Foundation Trust, London, United Kingdom. [3]Institute of Liver Studies, King's College Hospital NHS Foundation Trust, London, United Kingdom

Introduction In the setting of liver transplantation (LT) the impact of frailty and compromised performance status (PS) on post-transplant outcomes are not well characterised in patients with chronic liver disease (CLD). In a national cohort of patients with CLD we examined the association of pre-LT PS on post-LT patient survival.

Methods: 7285 patients with cirrhotic CLD who received a first LT between 1997 and 2016 were studied. Pre-LT PS was assessed using a 5-point scale (modified Eastern Cooperative Oncology Group (ECOG) score). We used stratified cox-regression methods to estimate hazard ratios (HR) that compared post-transplantation mortality for ECOG status in three post-transplantation time-periods (epochs): 0 to 90 days, 90 days to 1-year and 1 year to 5-years, and across different eras of transplantation (1995 to 2005 and 2006 to 2016).

Results: 5-year post-LT patient survival was 84.6% in patients able to carry out normal activity without restriction (ECOG PS1) decreasing to 71.0% in those completely reliant on nursing and medical care (ECOG PS5; p <0.001). With adjustment for donor and recipient characteristics, the impact of ECOG PS5 on mortality was significantly poorer in the first 90-days (HR: 2.14 95%CI: 1.43-3.20), but not significantly worse thereafter (90 days to 1-year: HR 1.59, 0.84-3.01; 1-year to 5-years: HR 0.82, 0.46-1.47). Over era, survival improved for patients in all ECOG status (PS1: 0.65, 0.31-1.37; PS2: 0.54, 0.41-0.70, PS3: 0.57, 0.48-0.68, PS4: 0.67, 0.50-0.90 and PS5 0.51, 0.30-0.89), however the effect of era did not different between ECOG status (p for interaction 0.81).

Conclusions: LT recipient PS assessed using a simple measure is independently predictive of post-transplant mortality with strongest association in those with greatest compromise. In these patients, its impact is most marked in the first 3-months after surgery. Over time, mortality has decreased by at least one third for patients in each ECOG category.

CW6

Dual hypothermic liver perfusion using a modified Hosgood/Nicholson circuit to recondition high-risk liver grafts prior to transplant

Rodrigo Figueiredo[1], Avinash Sewpaul[1], Lucy Bates[1,2], Ibrahim Ibrahim[2], Emily Thompson[2], David Talbot[1], Gourab Sen[1], Jeremy French[1], Derek Manas[1], Steve White[1], Colin Wilson[1,2]

[1]Institute of Transplantation, Newcastle upon Tyne, United Kingdom. [2]Newcastle University, Newcastle upon Tyne, United Kingdom

Introduction: Livers for transplantation are increasingly being referred from "marginal" deceased donors including donors after circulatory death (DCD), overweight and elderly donors. These organs are invariably associated with increased reperfusion injury, post-transplant morbidity and graft loss. Early experience with hypothermic perfusion has been promising in both America and Europe.

Methods: We adapted the Hosgood/Nicholson perfusion circuit to dual perfuse livers with oxygenated UW solution prior to implantation after a period of static cold storage. Inclusion criteria for perfusion were either DCD livers or DBD livers declined by at least 1 other centre due to adverse donor factors.

Results: 16 livers were perfused and 10 livers transplanted after 2 to 3 hours of perfusion. Of the 10 transplanted livers, 7 were DCD. The median UK Donor Liver Index (DLI) was 1.71(+/-0.38). All D-HOPE liver recipients are alive with a median followup of 26 months (18-33). There has been 1 re-transplant in HOPE group, performed 11 months after transplant due to rejection. To date there have been no episodes of clinically-significant ischaemic cholangiopathy (IC) in any of the 10 HOPE patients. However, 2 patients have developed anastomotic strictures requiring ERCP and stenting. 33% of the DCD recipients in our comparator historical cohort (n= 9) developed clinically-significant IC requiring intervention (2 retransplants and 1 further death due to IC) compared to none of the HOPE transplanted livers to date (non-significant, p=0.15). The cost of consumables for each perfusion was approximately £700 (excluding perfusate).

Discussion: We have safely implemented D-HOPE perfusion with excellent clinical outcomes in "high-risk" liver transplants. There have been no incidences of clinically significant IC after at least 1 year follow up. The Hosgood/Nicholson perfusion circuit can cost-effectively perfuse livers for transplantation.

CW7

Technique of venous outflow reconstruction and incidence of hepatic venous outflow obstruction (HVOO) following liver transplantation – ten year experience from a single centre

Noel Cassar, Prabath Kumarasinghe, Shirin Khorsandi, Michail Papoulas, Miriam Cortes-Cerisuelo, Wayel Jassem, Hector Vilca-Melendez, Parthi Srinivasan, Andreas Prachalias, Abid Suddle, Nigel Heaton, Krish Menon

King's College Hospital, London, United Kingdom

Introduction: Hepatic venous outflow obstruction (HVOO) after liver transplantation (LT) is a recognised complication with resultant graft dysfunction that could necessitate revisional surgery or re-transplantation. The aim of this study was to see whether the technique of venous reconstruction correlates with the occurrence of HVOO following LT.

Methods: Consecutive adult patients who underwent whole deceased LT over a ten year period (2008-2017) were recruited into the study. Redo liver transplants were excluded. The techniques of venous reconstruction were: Type A - Piggyback (Two vein extension or Three veins); Type B – Caval replacement; Type C – Side to side cavo-cavostomy. Data were retrospectively reviewed and screened for occurrence of HVOO. HVOO was defined as radiological evidence of outflow obstruction by CT scan, confirmed by cavography and pressure studies showing a hepatic venous gradient of 12mmHg or more post LT.

Results: During the study period, 1,677 consecutive patients underwent LT. 157 patients who underwent redo transplantation were excluded. 1,369 patients received whole grafts and were recruited into the study. The techniques used were as follows: Type A, n= 1005; Type B, n=208; Type C, n=156. 54 patients (4%) had large volume ascites. 14 patients (1%) had confirmed HVOO, with 13 patients having Type A reconstruction, none having Type B and 1 having Type C reconstruction. This was statistically significant at $p<0.005$ (Chi ^{2}, Monte Carlo analysis). The mean hepatic pressure gradient was 19mmHg (range 10 – 39mmHg). Three patients were treated medically, 4 had radiological dilatation/stenting, 6 had operative correction and 1 patient had re-transplantation.

Conclusion: There was a significant difference between the various outflow reconstruction techniques and the presence of HVOO. Our results seem to favour caval replacement and side to side cavostomy as the technique of choice.

O01

Recipient BMI –an unnecessary barrier to access pancreas transplant?

Ruth Owen[1], Emily Thompson[1], Ibrahim Ibrahim[1], Lucy Bates[1], Derek Manas[2], Steve White[2], Colin Wilson[1, 2]

[1]NIHR Blood and Transplant Research Unit in Organ Donation and Transplantation, Newcastle University, Newcastle Upon Tyne, United Kingdom. [2]Institute of Transplantation, Freeman Hospital, Newcastle Upon Tyne, United Kingdom

Background: In many centres, a recipient Body Mass Index (BMI) greater than 30kg/m^2 is considered a contraindication for pancreas transplantation. In the UK 26% of the population have a BMI>30 meaning many patients could find themselves excluded from this curative treatment option. This study aims to investigate the impact of recipient BMI on graft outcomes after pancreas transplantation.

Methods: Retrospective data on all UK solid organ pancreas transplants with data pertaining to BMI from 1994-2016 were obtained from the NHSBT UK Transplant Registry, n=1452. Graft survival analysis was conducted using Kaplan-Meier plots and a Cox regression model.

Results: The mean recipient BMI was 24.8kg/m^2 (±2.4). There were 507 overweight (BMI 25-29.9) and 146 obese (>30) recipients receiving pancreas transplants. Multivariate analysis revealed increasing recipient BMI had a significant impact on graft survival (p=0.03, HR 1.04, 95%CI 1.00, 1.08). Univariate analysis was conducted to further delineate the specific values at which recipient BMI correlated with poorer survival. No statistically significant difference was seen between specific overweight BMI categories compared with normal (18.5-24.9kg/m^2). The data was stratified further using modified BMI categories. Recipients with a BMI between 29-30.9 had a significant reduction in graft survival (n=135, p<0.01). Unexpectedly, recipients with a BMI between 31-32.9 (n=58) had an improvement in graft survival, this trend was not significant. Conversely, recipients with a BMI of 33-34.9 (n=17) or BMI of >35 (n=8) demonstrated a non-significant trend towards worse graft survival.

Discussion: The optimal BMI for transplantation is the “healthy” BMI. Above this there is no specific cut-off value of BMI that precludes pancreas transplantation. This is likely due to selection bias inherent in this retrospective cohort and the small numbers in the truly obese cohorts. Nevertheless, when determining a patient’s suitability for a pancreas transplant, if all other factors are favourable, this analysis suggests obese recipients could be considered.

O02

Normothermic regional perfusion of kidneys: a single non-retrieval centre experience

Robert Pearson, Colin Geddes, Marc Clancy, John Asher

Queen Elizabeth University Hospital, Glasgow, United Kingdom

Introduction: With the aim of safely expanding the pool of usable donors from circulatory death (DCD) there is increasing interest in normothermic regional (NRP) perfusion to assess and improve liver viability. NRP may also improve outcomes in kidney transplantation, however, a recent UK study raised potential concerns regarding early graft loss[1]. We present our single centre experience of outcomes in imported kidneys following NRP.

Methods: Data obtained from a prospectively maintained regional renal database between December 2012 and September 2018. Kidneys were retrieved and NRP performed by a single NORS centre then transferred to our transplant unit. Primary endpoints were incidence and duration of delayed graft function (DGF) and estimated glomerular filtration rate (eGFR).

Results: 817 kidneys were transplanted, 229 (28.3%) from DCD donors, 29 of which had NRP. Median donor age was lower for NRP (49.0 vs 50.0) and cold ischaemic time shorter (09:18 vs 11:04). The DGF rate was lower for NRP vs DCD (14.8% vs 35.0%, p=0.048) with reduced duration of DGF (p=0.017). Multivariate analysis demonstrated transplant type to be a statistically significant independent predictor of eGFR in at 7 and 14 days. Early transplant function in NRP kidneys was comparable to DBD. The eGFR was higher up to 3 years post-transplant but not statistically significant when controlled for confounding factors. There were no graft losses within 30 days in the NRP group. One year graft loss rate was 3.4% for NRP and 6.0% for standard DCD.

Discussion: NRP reduces rates of DGF and improved early renal function, reducing the impact of ischaemia-reperfusion injury in DCD transplantation. This may be important in improving early outcomes of D3 and D4 kidneys with the new kidney matching scheme, a benefit not achieved with isolated normothermic perfusion of the liver[2].

References: 1. Oniscu G *AJT* 14:2846-2854 (2014). 2. Nasralla D *Nature* 557:50-56 (2018)

O03

Modulation of the IL-33/ST2 axis in regulatory T cell therapy

Kento Kawai, Fadi Issa, Joanna Hester, Kathryn Wood

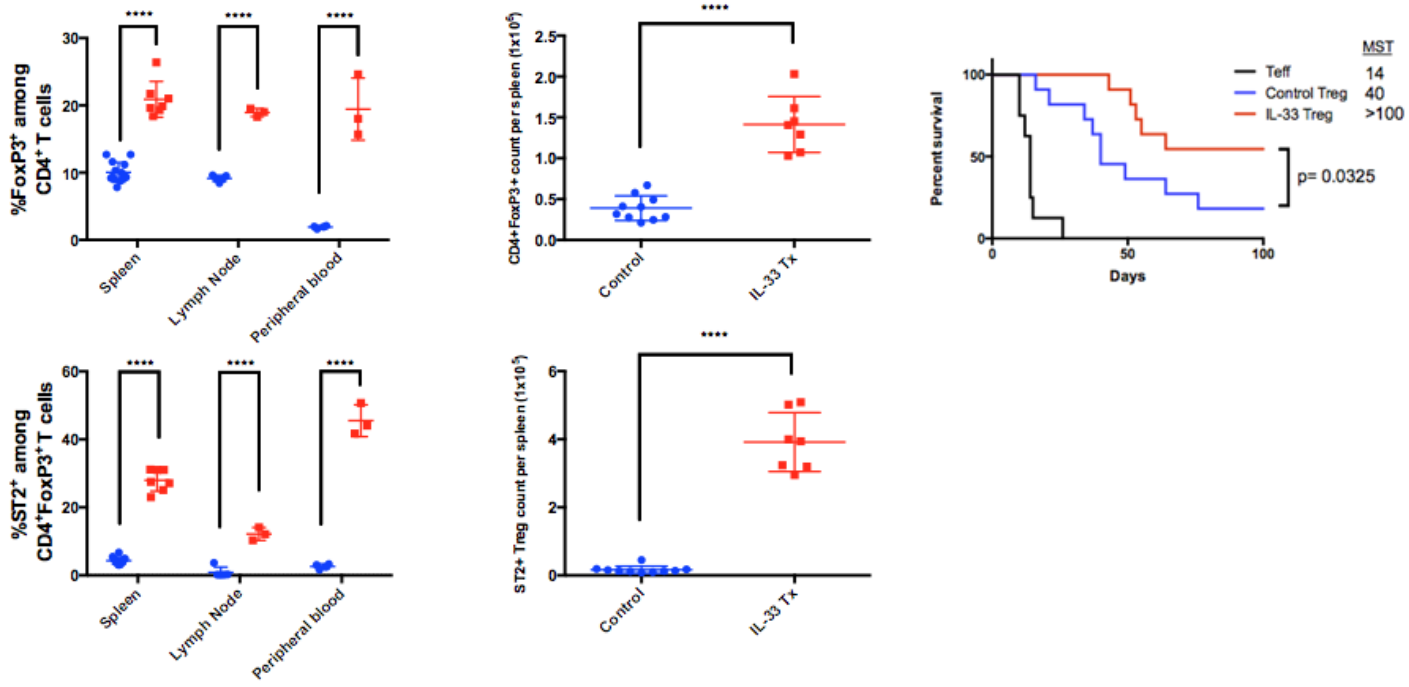
University of Oxford, Oxford, United Kingdom

Background: Regulatory T cells (Tregs) are crucial mediators of immune homeostasis, with the ability to modulate alloreactive T cell responses and control transplant rejection. Previous work has demonstrated that the modulation of the interleukin-33 (IL-33)/ST2 axis expands a highly suppressive subpopulation of Tregs. Here we present novel data that demonstrate the ability of exogenous IL-33 administration to expand mouse Tregs in vivo that can promote the survival of MHC-mismatched skin grafts.

Materials/methods: Groups of mice received either saline or recombinant IL-33 (1ug/d for 6 days). CD4+FoxP3+ Tregs from control or IL-33-treated mice were then flow sorted and adoptively transferred together with effector T cells (Teffs) into syngeneic immunodeficient mice (n=8 for Teff, n= 11 naive Treg, n=11 for IL-33-Treg). Mice were then transplanted with an allogeneic skin graft where survival was monitored until allograft rejection and their organs were harvested for phenotypic analysis.

Results: Recombinant IL-33 administration resulted in the expansion of CD4+FoxP3+ Treg populations by up to 10-fold in vivo ($p<0.0001$). Although IL-33-Tregs did not demonstrate greater suppressive potency than control Tregs against Teffs in vitro, mice treated with flow-sorted Tregs from these IL-33-treated mice demonstrated an enhanced ability to modulate Teff responses and suppress allograft rejection ($p= 0.0325$). While mice treated with Teff rejected their allografts as expected with a median survival time (MST) of 14 days, naive and IL-33-Treg administration resulted in enhanced survival of 40 days and >100 days, respectively.

Conclusion: Administration of IL-33 in vivo can significantly expand Tregs, which demonstrate an enhanced ability to prolong allogeneic skin grafts in vivo. Future studies will seek to elucidate the mechanisms underlying this enhanced activity, which may be linked to better migration or survival in vivo. These data highlight an important pathway for the modulation of Treg therapy which may be incorporated into future therapeutic regimens.



O04

The RituxiCAN-C4 trial: failure of regulatory B cells to repopulate after Rituximab associates with lack of efficacy in renal transplant patients with CAMR

Anthony Dorling[1], Kin Yee Shiu[2], Laura McLaughlin[1], Dominic Stringer[1], Olivia Shaw[3], Paul Brookes[4], Hannah Burton[1], Hannah Wilkinson[1], Harriet Douthwaite[1], Tjir-Li Tsui[1], Adam Mclean[4], Rachel Hilton[3], Sian Griffin[5], Colin Geddes[6], Simon Ball[7], Richard Baker[8], Candice Roufosse[4], Catherine Horsfield[3]

[1]King's College London, London, United Kingdom. [2]Royal Free Hospital, London, United Kingdom. [3]Guy's & St Thomas' NHS Foundation Trust, London, United Kingdom. [4]Imperial College Healthcare NHS Foundation Trust, London, United Kingdom. [5]University Hospital of Wales, Cardiff, United Kingdom. [6]Queen Elizabeth University Hospital, Glasgow, United Kingdom. [7]Univeristy Hospital, Birmingham, United Kingdom. [8]St James University Hospital, Leeds, United Kingdom

Introduction: Immune-mediated late failure of kidney allografts is a significant problem, usually presenting as progressive dysfunction with histological features of chronic antibody-mediated rejection (CAMR).

Methods: RituxiCAN-C4 was an open-labelled phase IV RCT running in 13 UK centres from 2007-2017, to assess efficacy of Rituximab in stabilising graft function after failure of optimised oral immunosuppression.

Results: Of 59 patients meeting eligibility criteria who underwent optimisation, 23 consented to randomisation, 11 to no additional treatment (control), and 12 to Rituximab. In the pre-specified second (per protocol) interim analysis of the 9 who received Rituximab vs. 11 controls, there was no significant difference in the primary endpoint (short-term stability of function), so recruitment was halted in 2015. Follow-up ended in 2017. The median reduction in circulating B cells post Rituximab was 98.2% (IQR 3.8%), with no significant recovery in numbers over 3 years. Analysis of remaining B cells showed normalisation of the proportions of different subpopulations, except for transitional cells expressing higher levels of CD24 and CD38, which remained disproportionately low compared to controls. ELISPOT analysis of indirect alloresponses to donor proteins in all 59 patients confirmed that B dependent CD4+ IFNγ production associated with greater decline in eGFR. Optimisation of immunosuppression that resulted in conversion to non-responsiveness or to anti-donor responses regulated by CD19+ or CD25+ cells was associated with slower decline in eGFR. Regulation by CD19+ cells associated with higher proportions of the same transitional B cells that failed to repopulate in Rituximab-treated patients, none of whom showed this pattern of ELISPOT responsiveness.

Discussion: We conclude that Rituximab is not efficacious in patients with CAMR. Our exploratory analysis, which confirms the importance of B cells, indirect alloresponses and their association with eGFR decline, also reaffirms the functional heterogeneity of B cells and suggests deletion of potential regulatory populations as an explanation for lack of efficacy.

O05

Living kidney donor knowledge of provided information and informed consent– a prospective Dutch nationwide inventory study

Emerentia Spoon[1], Kirsten Kortram[1], Sohal Ismail[1], Daan Nieboer[1], Frank d'Ancona[2], Maarten Christiaans[3], Ruth Dam[4], Sijbrand Hofker[5], Arjan Hoksbergen[6], Karlijn Van der Pant[7], Raechel Toorop[8], jacqueline Van de Wetering[1], Jan IJzermans[9], Frank Dor[1,10]

[1]Erasmus MC, Rotterdam, Netherlands. [2]UMC Radboud, Nijmegen, Netherlands. [3]MUMC, Maastricht, Netherlands. [4]LUMC, Leiden, Netherlands. [5]UMCG, Groningen, Netherlands. [6]VUMC, Amsterdam, Netherlands. [7]AMC, Amsterdam, Netherlands. [8]UMCU, Utrecht, Netherlands. [9]Erasmus MC, Rotterdam, Netherlands. [10]Imperial College Renal and Transplant Unit, Hammersmith Hospital, London, United Kingdom

Introduction: Informed consent is mandatory for every operation, but may be even more important for living kidney donors. Informed consent procedures for live donor nephrectomy vary per center, even between healthcare professionals. By understanding what information potential donors need, a uniform surgical informed consent procedure for live donor nephrectomy can be created.

Methods: in this prospective, multicenter national study, donor knowledge of the procedure and postoperative course was evaluated by pop quizzes. All potential donors seen for the first time in live donor clinic (Cohort A) completed a pop-quiz about the details of the donation procedure prior to receiving any information. A second group of donors completed the same pop-quiz on the day of admission for donor nephrectomy (Cohort B). The primary endpoint was donor knowledge. Secondary endpoints were donor satisfaction, and details on current informed consent practices in the different transplant centers.

Results: A total of 656 pop-quizzes were completed; 417 in Cohort A and 239 in Cohort B. Average donor knowledge score was 7.0/25 (±3.9, range 0-18) in Cohort A and 10.5/25 (±2.8, range 0-17.5) in Cohort B. Donors generally scored best on duration of admission and convalescence, and worst on long-term complications. The average overall knowledge score and feeling of preparation for surgery were significantly higher in Cohort B than Cohort A ($p<0.0001$). Cohort B patients also scored significantly higher on the individual item scores with the exception of long-term complications. Qualitative analysis of individual comments showed discrepancies between donor satisfaction and actual pop quiz scores.

Discussion: This study demonstrates that live kidney donors have significantly higher overall knowledge scores after receiving information during the work up process, but is overall low. Long-term complications need attention. Standardization of the informed consent procedure will further improve donor knowledge and satisfaction, and will aid the development of personalized living donor education.

O06

Donor management as window of opportunity: understanding serum marker changes with duration of brain death

Katarzyna D Bera[1], M Letizia Lo Faro[2], Sergei Maslau[2], Joel Tabak-Sznajder[3], Rutger J Ploeg[4]

[1]OUCAGS, Oxford, United Kingdom. [2]Nuffield Department of Surgical Sciences, Oxford, United Kingdom. [3]University of Exeter, Exeter, United Kingdom. [4]Nuffield Department of Surgical Sciences, Oxford, United Kingdom

Introduction: Donation after brain death remains an important source of transplanted organs. Devastating cerebral injury is believed to create a hostile environment, however studies suggest that prolonged duration of brain death is not necessarily associated with adverse outcomes in abdominal surgery (Boffa 2017), might reduce rate of acute rejection (Martinez-Mier 2016) and delayed graft function (Nijboer 2011). Critical care units across the UK use a standardised 'donor bundle' to optimise physiological parameters, and some evidence showed cytoprotective protein expression with prolonged brain death. A systematic study analysing the pro- and anti-inflammatory changes is thus needed to shed light onto the processes that follow diagnosis of brain death. We need to understand whether we should rush to retrieve organs or wait for the balance to turn towards an environment of repair? This study set out to understand the serum changes reflecting cerebral injury and inflammatory mediators from admission to procurement.

Methods: 27 donors with severe intracranial haemorrhage leading to brain death with samples collected by the Quality in Organ Donation (QUOD) biobank were selected. Serum IL-6, TNF-alpha, Complement C5a and Neuron specific Enolase (NSE) and Glial Fibrilliary Acidic Protein (GFAP) were measured in duplicates using DuoSet Elisa and GraphPad Prism (v7) and R Studio were used for data analysis.

Results: GFAP, IL-6 and C5a peak at time of brain death whilst NSE and TNF-alpha are highest at admission with no further peak. Serum GFAP, C5a and IL-6 show a further rise after 20 hours of brain death duration.

Discussion: This is the first study that systematically compares levels of relevant cytokines and markers of cerebral injury over duration of brain death. Our results do not support a hypothesis of progressively hostile environment. Further work will focus on characterising the balance of pro- and anti-inflammatory mediators and studying a potential correlation with organ-specific outcomes to identify potential treatment targets.

O07

How has 'Montgomery' changed the way we document risks on consent forms for deceased donor kidney transplantation? A single-centre study

A.M. Hussein, C.J. Callaghan

Department of Nephrology and Transplantation, Guy's Hospital, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

Introduction: The 2015 Montgomery case altered the medico-legal basis of how material risks should be defined during the consent process. This audit reviewed kidney transplant consent forms in order to establish which risks are documented, and whether the Montgomery ruling affected the complexity of the risk discussion at the time of transplant in a specific recipient group.

Methods: A database of patients aged 50+ who received a deceased donor single kidney transplant in our centre in 2014 (pre-Montgomery, n=58) and 2017 (post-Montgomery, n=70) was obtained. Randomly selected hand-written consent forms were reviewed to see if documented risk discussions at the time of transplant covered 20 perceived 'gold standard' risks (n=25 for each year). Risks were categorized as: class I ('core' risks - must be covered, e.g. PNF); class II ('important' risks - should be covered, e.g. vascular injury); and class III ('peripheral' risks - might be covered, e.g. non-proceeding transplant).

Results: In 2014, 4% of forms were signed by consultant surgeons versus 8% in 2017 (p=0.55). 24% of forms documented all class I risks in 2014 versus 12% of forms in 2017 (p=0.27). In 2014, the median (IQR) number of class I risks documented was 9 (7-11) compared with 10 (8-11) in 2017 (p=0.37); class II risks documented in 2014 was 1 (0-2) compared with 1 (1-2) in 2017 (p=0.31), and class III risks documented in 2014 was 1 (0-1), compared with 1 (0-2) in 2017 (p=0.19). Overall, an average 53% of the 20 'gold standard' risks were documented in 2014 versus 60% in 2017 (p=0.62). No consent form documented all 20 'gold standard' risks.

Discussion: There were a variety of risks documented by clinicians at transplantation in our unit; these have not changed significantly since Montgomery. These data support a process to improve the definition and documentation of acceptable consent risk discussions.

O08

A review of the impact of the Specialist Requester role on deceased donor consent rates

Susanna Madden[1], Ascanio Tridente[2], Sue Duncalf[3], Alex Manara[4], Rebecca Curtis[1], Chloe Brown[1], Dale Gardiner[1]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]St Helens and Knowsley Teaching Hospitals NHS Trust , St Helens, United Kingdom. [3]NHS Blood and Transplant, Liverpool, United Kingdom. [4]Southmead Hospital, Bristol, United Kingdom

Introduction: The Specialist Requester (SR) role was introduced in four Organ Donation Services Teams (ODST) throughout the autumn of 2016. Two of the four, North West and Yorkshire, took part in a 9-month pilot scheme in 2015. The aim of the introduction of the new role was to enhance donor family experience, with the potential to increase consent rates and positively impact on 24-hour working patterns. This report assesses the impact of the SR role on consent rates.

Methods: Data have been obtained from the Potential Donor Audit (PDA) for all ODST from 1 January 2017 to 30 June 2018. Multivariable logistic regression was used to determine the effect of the SR role on family consent having accounted for other known explanatory variables.

Results: The SR unadjusted consent rate was similar to the Specialist Nurse in Organ Donation (SNOD) rate, 70% compared to 71%. SR consent rates within the four teams ranged from 60% in London to 78% in the North West.

Table 1 Risk-adjusted analysis of the effect of Specialist Requester presence on family consent, 1 January 2017 to 30 June 2018

Factor (overall p-value)	Family approaches (N=4340)	Consent obtained (N=3061)	Odds ratio	95% CI	p-value
Individuals present for formal approach (0.02)					
SNOD	3249	2303	1		
Specialist Requester (London/Midlands)	491	307	1.01	0.8 – 1.3	0.713
Specialist Requester (N West/Yorkshire)	600	451	1.37	1.1 – 1.7	0.006

Adjusting for known potential confounding factors (patient's wishes, ethnicity, donor type), and allowing for national differences (including opt-out legislation), an approach made by a SR in one of the pilot teams was 37% more likely to result in consent (Odds Ratio 1.37, 95% Confidence Interval 1.1 - 1.7, p=0.006) when compared with that of a SNOD. The presence of an SR in one of the non-pilot teams was similar to a SNOD (Odds Ratio 1.01, 95% Confidence Interval 0.8 - 1.3, p=0.7).

Discussion: An increased consent rate was one of the anticipated benefits of the introduction of the SR role. For teams with well-established SR roles and experience of the pilot scheme, we found evidence of a statistically significant improvement in the consent rate, when the approach was made by the SR, compared to the traditional SNOD role.

O09

"They make it all sound so easy". Pre-emptive living donor kidney transplantation, illness perceptions and treatment knowledge

Jonathan Harrold, Jenny Moses, Catherine O'Leary

Cardiff and Vale UHB, Cardiff, United Kingdom

Introduction: This study explored perceptions of pre-emptive living donor kidney transplantation (PELDKT) in a pre-treatment population. Its aim was firstly to examine relationships between perceptions of illness, knowledge of transplantation and preferences for renal replacement therapy (RRT). Secondly, the study aimed to use qualitative methods to elucidate how people with chronic kidney disease evaluate RRT choices, given Wales has newly adopted presumed consent legislation.

Method: A sequential explanatory design included a survey of 31 people with stage 3b-5 chronic kidney disease, followed by semi-structured interviews with a homogenous sub-sample of 8 participants. The survey included the Brief Illness Perceptions Questionnaire, a living donor transplant knowledge questionnaire, and questions on RRT preferences. Audio-recorded interviews explored experiences of considering PELDKT. Questionnaire data were analysed via descriptive and inferential statistics; interview data were transcribed and analysed using Interpretative Phenomenological Analysis.

Results: The survey facilitated statistical comparison between respondents who would or would not consider PELDKT. Openness to consider PELDKT was associated with significantly higher treatment knowledge and illness perceptions of identity, concern, emotion and treatment control. Four master themes emerged from the IPA (*My Kidney and I, Co-constructing Decisions, A Kidney Shared as a Problem Solved? and Navigating the Unknown*). A desire for enhanced self-management information to delay illness progression was found.

Conclusions: Findings facilitate understanding of the potential psychological challenges and tasks facing people with CKD in pre-RRT. This understanding, along with the psychological theories applied, could help nephrology and transplant teams support patients and their families.

O10

Intentional HIV-positive liver transplant saves child's life - the legal context

Bonnie Venter[1], Magda Slabbert[2]

[1]University of Witwatersrand, Johannesburg, South Africa. [2]University of South Africa, Pretoria, South Africa

In 2018, it was announced that a multi-disciplinary team from the Transplant Unit at Wits Donald Gordon Medical Centre (South Africa) had performed a ground-breaking surgery by transplanting a HIV-positive liver to a HIV-negative child to save the child from an imminent death. The aim of this paper is to analyse the South African legislative framework which regulates the process when a HIV-positive living donor organ is transplanted to a HIV-negative recipient. Furthermore, the paper places focus on the legal position when the organ recipient involved is a minor and how the best interests-principle of the child should be interpreted in this setting. The authors assert that the correct legal course was followed when the transplantation was performed. The authors acknowledge and commend the team on their medical advancement. However, the paper concludes that this form of transplantation should not become a standard practice but that emphasis should rather be placed on amending current organ donation and transplantation legislation to ensure the availability of donor organs for transplantation purposes.

O11

Current practice and complications in live renal donor nephrectomy in the UK; analysis of the NHSBT database

Sidney Parker[1], Kenneth MacKenzie[1], Caroline Wroe[2], Naeem Soomro[1], David Rix[1], Alistair Rogers[1]

[1]Freeman Hospital, Newcastle, United Kingdom. [2]South Tees Hospitals, Middlesbrough, United Kingdom

Introduction: Providing potential living renal donors with accurate information regarding donor nephrectomy and the post-operative outcomes, is vital to allow adequate counselling and guide patient expectations. There remains heterogeneity in how donor nephrectomy is performed in the UK, with minimally invasive techniques predominant. Our aim was to assess current UK practice and identify outcomes.

Methods: A successful application to the NHSBT Donor Nephrectomy database led to analysis of 5256 patients who had procedures in a five-year period between 1st January 2011-31st December 2015. Complications were categorized using Clavien-Dindo classification.

Results: There was no statistical difference in the numbers of donor nephrectomies performed per year over the time period. Table 1 describes the cohort demographics which was similar in each group. Minimally invasive surgery predominated (laparoscopic intraperitoneal 69.1%, extraperitoneal 24.1%, combined open 6.8%) with a trend to an increased laparoscopic extraperitoneal approach (183/year in 2011 to 327/year in 2015) over intraperitoneal (733/year to 661/year). 74% of open procedures were performed in one centre. Reasons for open approaches in other centres was lacking. The overall complication rates were low, with open nephrectomy the lowest (Table 2). Complication rate per centre varied from 0.35-12.5%. The mean length of stay was lower in laparoscopic than open nephrectomy (3.68days vs 4.55days, p<0.001). There were 5 reported deaths in the follow up data.

Discussion: Analysis of the NHSBT database suggests patients undergoing donor nephrectomy in UK transplant units have very low complication and re-operation rates. When compared to other studies this may suggest some underreporting and accurate data collection is a challenging problem. There was no data on 28 day re-admission rates and laparoscopic approaches were not defined as Hand Assisted or Total. Further work is required to corroborate this data in quantifying outcomes and risks of donor nephrectomy, to enable consenting using current data, rather than historic series.

Table 1- Demographics			
Method	**Open**	**Laparoscopic**	**Laparoscopic**
Approach		**Intraperitoneal**	**Extraperitoneal**
Numbers performed	355	3601	1254
Age- mean, (range)	46 (18-77)	47, (18-85)	48, (19-81)
Male:Female	168:187	1732:1869	589:665
BMI- mean, (range)	27 (17.6-52)	26.4, (16-61.5)	26.7 (14.4-39.76)
Creatinine - mean, (range)	104 (58-176)	106, (46-202)	105, (50-191)

Table 2	**Overall complication (Clavien-Dindo)**		**Re-operation rate**	**Commonest causes for re-operation**	**Length of stay (mean)**
	1-2 N (%)	3-4 N (%)	N (%)		
Lap intraperitoneal N=3601	317 (8.8%)	106 (2.9%)	42 (1.2%)	Unknown n=16 (38.1%) Haematoma n=5 (12%) Haemorrhage n=3 (7%)	3.74
Lap extaperitoneal N=1254	95 (7.6%)	27 (2.2%)	13 (1%)	Unknown n=4 (44.4%) Bowel obstruction n=2 (2.2%) Haemorrhage n=2 (2.2%)	3.5 Extra vs Intra lap P=0.0016
Open N=355	9 (2.5%)	2 (0.56%)	1 (0.28%)	Haemorrhage from aorta n=1 (100%)	4.55

O12

Changing demographics in UK living kidney donors 2006-2017-what does this mean for lifetime donor risk?

Caroline Wroe[1], Pippa Bailey[2], Matthew Robb[3], Aisling Courtney[4], Alistair Rogers[5]

[1]South Tees Hospitals NHS Foundation Trust, Middlesbrough, United Kingdom. [2]University of Bristol, Bristol, United Kingdom. [3]NHS Blood and Transplant, London, United Kingdom. [4]Regional Nephrology and Transplant Unit, Belfast City Hospital, Belfast, United Kingdom. [5]Transplant Institute, Freeman Hospital, Newcastle, United Kingdom

Introduction: Living Kidney donation (LKD) accounts for a third of UK renal transplant activity. Population cohort studies have shown lifetime donor risk is modified by age, sex, obesity, co-morbidity and relationship to the recipient. Most UK transplant units will extrapolate US donor cohorts to predict UK donor risks; however the difference between donors in the UK and US, and the change in UK donors over time has not been established.

Methods: Data on LKD as reported to NHSBT from January 2006- December 2017 were assessed by age, sex, ethnicity, BMI, co-morbidity and relationship to recipient.

Results: Between January 2006 and December 2017 11,652 LKDs were reported to NHSBT.

Age:	The proportion of donors >65 years increased from 3.9-10.4% ($p < 0.001$) The mean age of donors increased from 45.8 to 48.7 years ($p<0.001$)
Sex:	A greater proportion of donors were women (53.4%), but this proportion did not change significantly over time.
BMI:	At donation 17.4% of donors were obese (BMI>30kg/m2). This proportion did not change over time.
BP:	The proportion of donors with a diagnosis of hypertension did not significantly change over the study period (mean 2.8%)
Relationship:	The proportion of non-related non-partner donations increased (p-value for linear trend=0.002).
Ethnicity:	No difference in the proportion of donors from non-white ethnic groups was observed over the 11 year period (mean 12.9%)

Discussion: The mean age of living kidney donors has increased in the UK, and a greater proportion were >65 years of age when compared to US donors. This change in donor profile has implications for both recipient and donor outcomes. Age differences between US and UK donor population may limit the generalisability of US donor risk data to a UK population. Despite rising need for organs from the BAME population there has been no increase in the ethnic diversity of living kidney donors.

O13

Unspecified (altruistic) kidney donors take significantly longer to donate than specified donors – results from the BOUnD study

Hannah Maple[1], Peter Gogalniceanu[1], Marriam Ghaffar[1], Lisa Burnapp[1,2], Heather Draper[3], Paul Gibbs[4], Joseph Chilcot[5], Sam Norton[5], Nizam Mamode[1]

[1]Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. [2]NHS Blood and Transplant, Bristol, United Kingdom. [3]University of Warwick, Coventry, United Kingdom. [4]Queen Alexandra Hospital, Portsmouth, United Kingdom. [5]King's College London, London, United Kingdom

Introduction: Unspecified kidney donation (UKD) remains a relatively new practice within the field of transplantation. An aim of the BOUnD (Barriers and Outcomes in Unspecified Donation) study is to determine whether there are significant differences in the pathway to UKD versus specified (directed) kidney donation (SKD). An analysis of the time it took for donors to proceed was performed, and differences between high volume (HV) and low volume (LV) UKD centres were assessed.

Methods: All participants were referred by their local living donor team and recruited into the study. Time of referral was used as a surrogate marker for the start of donor workup and therefore anyone referred after this point was excluded. Five centres were classed as 'high volume' as collectively they contributed to over 50% of unspecified donations according to 2017-18 NHSBT data.

Results: 74 participants were included. There was no significant difference in the proportion of UKDs or SKDs donating or withdrawing (p=0.292). The average time to withdrawal was not significantly different (SKD 137d vs. UKD 132d; p=0.565). Unspecified donors took significantly longer to donate (4 months longer) (SKD 189d vs. UKD 310d; p=0.013). There was a statistically significant association between time to donation and being part of the UK living kidney sharing scheme (UKLKSS), however the numbers were too small to establish definite causality. There was no statistically significant association between centre volume and time to donation or withdrawal (Donation: HV 213d vs LV 216d; p=0.917; Withdrawal: HV 133d vs LV 117d; p=0.749).

Conclusions: Unspecified donors take significantly longer to donate than their specified donor counterparts. This is likely to be, at least in part, related to the higher number of unspecified donors taking part in the UKLKSS, but might reflect attitudes to UKDs. Centre volume does not appear to have an impact on time to donation.

O14

Outcomes of declined kidneys subsequently transplanted elsewhere: a national registry analysis

Maria Ibrahim[1,2], Jennifer Mehew[1], Kate Martin[1], Sophie Hughes[1], Chris Callaghan[2]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]Guy's and St Thomas' NHS Trust, London, United Kingdom

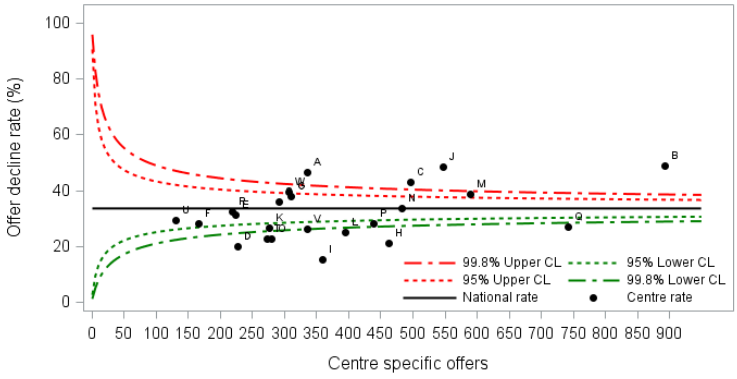
Introduction: The outcomes of deceased donor kidneys initially declined for transplantation are poorly characterised. This UK registry-based study analysed 1) outcomes of kidneys declined for donor- or organ-related reasons (DORR) that went on to be transplanted; 2) outcomes of those patients that had been offered a kidney that was declined for DORR and then was transplanted into someone else.

Methods: Named-patient single kidney-only offers made to adult patients from all donation after brain-death (DBD) donors that resulted in single kidney-only transplants between 01//01/10 and 31/12/16 were included. Outcomes of these organs were stratified by eGFR at one year. Funnel plots and univariate survival analyses were conducted using SAS.

Results: 3434 kidneys declined for DORR which resulted in single kidney-only transplants were examined. 'Donor unsuitable - past medical history' was the most common reason for offer decline (46%). DORR decline rates across UK centres ranged from 17% to 54% with significant outliers (Figure 1). The percentage of declined DORR kidneys transplanted elsewhere that had eGFR >30 mL/min/1.73 m^2 at one year did not significantly vary between centres. One year after the DORR offer decline, 40% of patients for whom the organ was declined remained on the list and 4% had been removed or died. Those who subsequently received a deceased donor kidney had no significant difference in 12-month death-censored graft survival compared with those who were transplanted with the declined kidney (Figure 2).

Discussion: There is significant variation between centres in rates of DORR offer decline; a high proportion of patients for whom a kidney was declined remained on the waiting list one year later, or worse. If transplanted, these patients appeared to have no better early outcomes than the patient who eventually received the kidney. A better understanding of the outcomes of kidneys declined for DORR may reduce variation in offer decline rates.

Figure 1 **NKAS kidney offer decline rates that resulted in adult single kidney only transplants from DBD donors, 1 January 2010 and 31 December 2016**



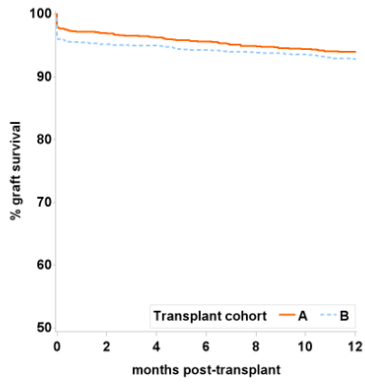


Figure 2. 12month death censored graft survival of **cohort A** (recipients

O15

Renal masses in deceased donor kidneys: potential to expand the donor pool through improved organ utilisation

Pinky Kotecha[1], Rhana Hassan Zakri[2], Jonathon Olsburgh[2], Chris Callaghan[2]

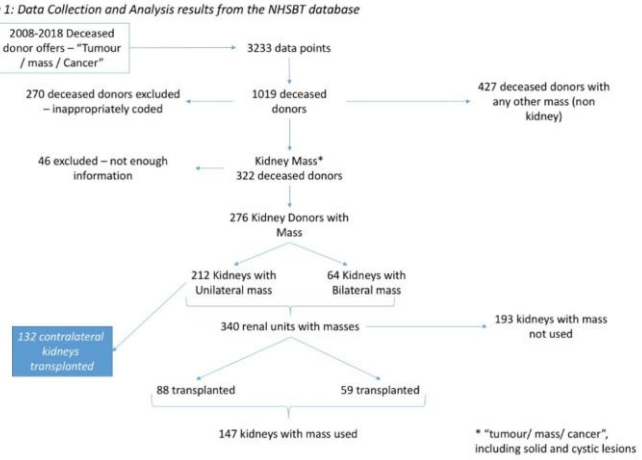
[1]King's College London, London, United Kingdom. [2]Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

Introduction: Increasing deceased donor age may lead to greater incidental renal masses detected at retrieval. Small renal masses ≤4cm have very low metastatic potential and 20% are benign. We aim to report the incidence of renal masses in potential deceased donors, along with utilisation of affected and unaffected paired kidneys for transplantation.

Methods: Retrospective 10 year national data (2008 – 2018), provided by NHS Blood & Transplant, was searched using key-words 'mass', 'tumour', or 'cancer' in deceased donor solid organ offers. For additional donor information, the electronic offering system (EOS) was consulted. Those inappropriately coded or with insufficient data were excluded. We categorised renal mass size into small (≤4cm), medium (5-7cm), or large (≥8cm), due to inconsistently recorded information.

Results: 12,121 deceased donor offers took place during the study period. The key-word search extracted 3233 matches in 1019 solid organ deceased donor offers. 427 offers related to 'mass', 'tumour', or 'cancer' in other solid organs and 318 offers were excluded due to inappropriate coding or lack of information. 276 potential donor offers had a kidney mass identified (63 bilateral kidney masses; 212 unilateral). This equates to 340 kidneys with a mass and 213 unaffected paired kidneys offered for transplantation (Figure 1).

Figure 1: Data Collection and Analysis results from the NHSBT database



Of 340 kidneys with a mass offered for transplantation, 147 (43%) were transplanted (size range: 0.1-10cm.) No kidney with a large solid mass was transplanted. Of the 213 contralateral unaffected kidneys from donors with a unilateral mass, 133 (62.4%) were transplanted (Table 1).

Table 1: Comparative features of masses within donor kidneys

Cystic Lesion
49%
(86/147 transplanted) (82/193 not transplanted)

Single 43/86			Multiple 34/86			Unrecorded 9/86		
	T	NT		T	NT		T	NT
Small	35	13	Small	21	15	Small	6	5
Medium	3	3	Medium	0	4	Medium	0	3
Large	3	6	Large	3	7	Large	1	4
Unknown	2	2	Unknown	10	12	Unknown	2	8
	43	**24**		**34**	**38**		**9**	**20**

Solid Lesion
(Including benign, malignant and nodule)
20%
(25/147 transplanted) (42/193 not transplanted)

	T	NT
Small	16	20
Medium	2	6
Large	0	4
Unknown	7	12
	25	**42**

Mixed Lesion
(Including solid/cystic)
4%
(2/147 transplanted) (10/193 not transplanted)

	T	NT
Small	1	6
Medium	0	1
Large	1	3
Unknown	0	0
	2	**10**

Scarred Lesion
4%
(7/147 transplanted) (6/193 not transplanted)

	T	NT
Small	3	1
Medium	1	0
Large	0	1
Unknown	3	4
	7	**6**

Unknown nature of lesion
24%
(27/147 transplanted) (53/193 not transplanted)

	T	NT
Small	11	6
Medium	2	3
Large	1	3
Unknown	13	41
	27	**53**

T = transplanted, NT = not transplanted

Discussion: A large proportion of deceased donor kidneys with masses were discarded. The recording of lesions at retrieval is insufficient to help retrospective analysis, with potential underutilisation of precious organs. We await further data on oncological and functional outcomes and look to develop a national pathway to optimise appropriate organ allocation for transplantation.

O16

Dual adult kidney transplantation in the UK: an updated national registry analysis

Maria Ibrahim[1,2], Chris Callaghan[2], Lisa Mumford[1], Dominic Summers[3], Niaz Ahmed[4]

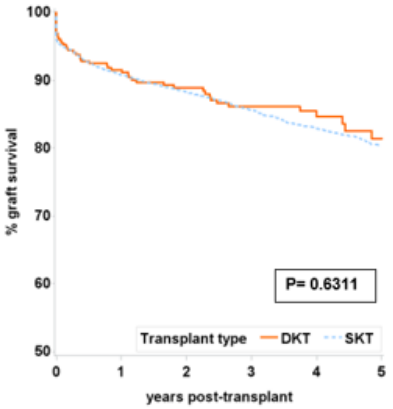
[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]Guy's and St Thomas' NHS Trust, London, United Kingdom. [3]Addenbrooke's Hospital, Cambridge, United Kingdom. [4]Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom

Introduction: Dual adult kidney transplantation (DAKT) may have a role in increasing the utilisation of kidneys from older donors. Low patient numbers hampered previous national analyses and no current national guidelines exist. This study aims to 1) define DAKT practice in the UK and 2) compare outcomes of DAKTs to single kidney transplants (SKTs) from older donors.

Methods: Data were analysed from the UK transplant registry from 01/01/2005 to 31/12/2017. DAKTs were defined as 2 kidneys transplanted from deceased donors over the age of 5 years, and en bloc and multivisceral organs were excluded. Univariate and multivariable analyses were used, and graft and patient outcomes were considered.

Results: 450 DAKTs were performed over the study period, with 20,061 SKTs. DAKTs reached a peak of 71/annum in 2013 followed by a decline to 40/annum in 2017. DAKT median donor age was 71 (IQR 64-75) years, and median UK Kidney Donor Risk Index was 2.04 compared with 1.17 for SKTs. DAKTs had lower 5-year death-censored graft survival (DCGS) than SKTs (80.6% vs 85.9%; p=0.017), however no statistical difference was observed when a Cox proportional hazards model adjusted for known risk factors was fitted (hazard ratio 1.05, 95% confidence limits 0.80-1.37, p=0.78). When transplants from donors aged >60 years were considered, 5-year DCGS were similar between DAKTs and SKTs (Figure 1). Median 12-month eGFR was 45 mL/min for DAKTs compared with 38 mL/min for SKTs aged 60+ (p

Discussion: Recipients of dual and single kidney transplants from donors aged over 60 years have similar kidney transplant survival and function. DAKT may allow the use of donor kidneys that would otherwise have been discarded. The appropriate selection of kidneys from older deceased donors remains uncertain and a major challenge for the transplant community.



Transplant type	Frequency	Graft survival	Lower confidence interval	Upper confidence interval	%
DKT	359	81.4	75.1	86.3	7
SKT	5154	80.4	79	81.8	93

Figure 1: Kaplan Meier survival curve demonstrating 5-year death-censored graft survival between single and dual kidney transplants from donors over the age of 60

O17

Not all lungs are dirty: positive sputum culture in a candidate with Pulmonary Fibrosis (PF) should not always deny the option of single lung transplant (SLT)

Muhammad Mohamed Mydin, Audrey Perry, Jason Trevis, Nicholas Chilvers, Julie Samuel, Kate Gould, Gareth Parry, Omer Senbaklavaci, Stephen Clark, John Dark

Freeman Hospital, Newcastle upon Tyne, United Kingdom

Purpose: Many PF patients without pulmonary hypertension (PH) are listed for BLT because of positive cultures, however, SLT may be a viable option. Our aim is to determine if more patients with PF could be listed for SLT, from a review of cultures at explant and post-transplant pulmonary infections, in patients that underwent BLT on the basis of positive cultures.

Methods: We identified patients who underwent BLT or SLT for PF over a 10-year period (2006-2016). We studied pre-op sputum cultures, bronchoalveolar lavages (BAL) of the recipient lung performed at explant and BALs up to 12 months post-transplant.

Results: 53 patients underwent BLT; a control group of 56 underwent SLT in the same period. The BLT group was divided into those with positive (Group A, n=23) and negative pre-op sputum (Group B, n=30). In Group A, 13/23 patients (56.5%) were listed for BLT only - of these 10 were listed for BLT for positive microbiology. 8/10 had no growth at explant BAL. Overall, 21/23 patients (91.3%) had no growth at explant. The percentage of positive BALs up to 12 months post-transplant was 33%. In Group B, 20/30 patients (66.7%) were listed for either procedure. All the patients (100%) had no growth at the explant BAL. The percentage of positive BALs in Group B was 37.3%. In the control group (SLT), 26/56 patients (46.4%) had no growth. Only 9/56 patients (16.1%) had positive sputum pre-op - all had no growth at explant. Overall, only 3/56 patients (5.3%) grew organisms at explant.

Conclusion: The majority of patients who had BLT on the basis of positive microbiology had no growth at explant. Additionally, they had a similar rate of post-operative positive BALs out to 12 months. From this analysis, more patients will benefit from being listed for either procedure, a step which may reduce both waiting times and mortality.

O18

Changes in islet composition after short duration human pancreas transplantation

Richard Dumbill[1], Hannah Laurenson-Schafer[2], James Barnes[3], Edward Sharples[3], Shruti Mittal[3], Peter Friend[3], Anne Clark[4]

[1]Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom. [2]Oxford University Medical School, Oxford, United Kingdom. [3]Nuffield Department of Surgical Sciences, Oxford, United Kingdom. [4]Oxford Centre for Diabetes, Endocrinology and Metabolism, Oxford, United Kingdom

Introduction: Pancreas transplantation is a successful treatment for Type 1 diabetes resulting in insulin independence. However, the condition of the islets in the transplanted organ is largely unknown. The aim was to examine quantitative cellular and pathological changes (including islet amyloidosis and changes in cellular proportions) in islets from grafts removed after relatively short transplant periods (up to 139 days) as a result of different clinical pathologies.

Methods: Explanted pancreatic specimens (n=18), which had been transplanted for 1-139 days were examined (25-35 islets per pancreas). Histological sections immunolabelled for insulin, glucagon and stained for islet amyloid (thioflavin S) were examined by quantitative morphometry for changes in fractional beta and alpha cell proportions of islet area. Cold ischemic time was recorded (mean 669 minutes, range 444-890).

Results: No patients were receiving anti-diabetic therapy. There was no significant relationship between median islet area and time in situ. Fractional insulin area significantly decreased with time from transplant ($p=0.01$; $\beta=-0.007$, predicted beta cell area at transplant=48.96%, predicted beta cell area at 100 days = 37.46%). Fractional glucagon area did not significantly change with time. Cold ischemic time significantly influenced fractional glucagon proportion ($p=0.04$, $\beta= 0.001$), but not insulin proportion. Islet amyloid was present in one explant (donor age 34; transplant duration 31 days).

Discussion: Reduced beta cell proportion with increasing transplant duration suggests that either the underlying reason for explantation (vascular complications or pancreatitis) and/or the transplantation scenario (organ retrieval, surgical transplantation and immunosuppression therapy) can affect islets in situ. These changes did not result in diabetes suggesting that this degree of islet pathology in an otherwise healthy pancreas are not aetiological features for hyperglycaemia over this time frame. Additionally, cold ischemic time has a direct effect on the composition of the islet, suggesting a possible pathological mechanism for graft failure.

O19

Outcomes of portal vein extension grafts in pancreas transplantation: a single-centre analysis

Sai Rithin Punjala, Benedict Phillips, Nikolaos Karydis, Francis Calder, Chris Callaghan

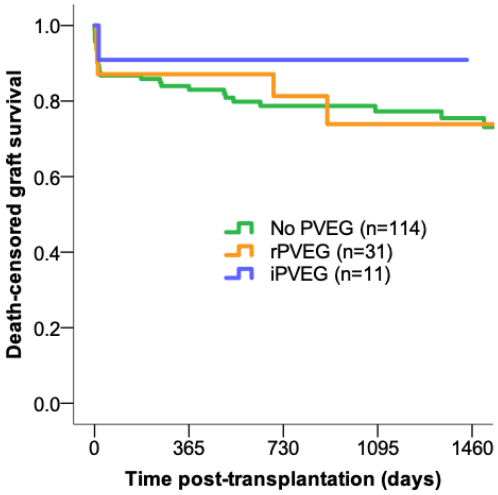
Department of Nephrology and Transplantation, Guy's and St.Thomas' NHS Foundation Trust, London, United Kingdom

Introduction: Surgical dogma suggests that portal vein extension grafts (PVEGs) in pancreas transplantation should be strenuously avoided, though the evidence-base is lacking. In our unit, at least one surgeon routinely uses a PVEG, while all surgeons will use a PVEG for major technical issues where a transplant could not otherwise be performed. A single-centre retrospective analysis of outcomes was performed to determine if PVEGs were associated with worse outcomes.

Methods: All pancreases transplanted between 1.1.13-31.5.18 were included. PVEGs were retrospectively coded as routine (rPVEG) or 'indicated' (iPVEG). Outcome measures included pancreas PNF, DGF, pancreas death-censored graft survival (DCGS; graft pancreatectomy or return to insulin), and presence of graft thrombosis (combined clinical and radiological, arterial and venous). Standard univariate statistical analyses were applied.

Results: 156 pancreas transplants were performed (151 SPK), with 52 from DCD donors (33%). PVEG use was common (42 patients (27%)); 31 (74%) were rPVEG and 11 (26%) were iPVEG. There were no significant differences in donor or recipient baseline variables between PVEG and non-PVEG groups, but median pancreas CIT and mean anastomosis times were longer in the PVEG group (730 vs 641 mins, p=0.002; 44 vs 38 mins, p=0.03). There were no significant differences in rates of pancreas PNF (0% vs 2.6%, p=0.29), DGF (2.4% vs 1.8%, p=0.80), or graft thromboses (9.5% vs 7.9%, p=0.74) between the PVEG and non-PVEG groups, respectively. There were no venous thromboses leading to pancreas graft loss in the PVEG group; 5 occurred in the non-PVEG group (p=0.32). There were no statistically significant differences in DCGS between the PVEG and non-PVEG groups (p=0.59) or between non-PVEG, iPVEG and rPVEG groups (p=0.726, see figure).

Conclusion: The presence of a PVEG makes no clinically relevant difference in graft outcomes after pancreas transplantation in our unit.



O20

Spinal cord ischaemia in pancreas transplantation: the UK experience

Benedict Phillips[1], Georgios Papadakis[2], Rachel Bell[3], Chris Callaghan[1], Murat Akyol[2], Christopher Watson[4], Martin Drage[1]

[1]Department of Nephrology and Transplantation, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. [2]Department of Transplantation, Royal Infirmary of Edinburgh, Little France, Edinburgh, United Kingdom, Edinburgh, United Kingdom. [3]Department of Vascular Surgery, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. [4]Department of Surgery, University of Cambridge, Addenbrooke's Hospital, Cambridge, United Kingdom

Introduction: Spinal cord ischaemia (SCI) is a rare but devastating condition that can occur in the peri-operative period resulting in paraplegia. Although diabetes mellitus is a risk factor for SCI in other types of major surgery, SCI is not widely recognised in pancreas transplantation (PT). The aim of this study was to quantify the risk of SCI in pancreatic transplantation.

Methods: All UK pancreas transplant units were surveyed in May 2017 for cases of SCI following PT.

Results: Since 2002, there have been five SCI cases following PT in the UK. SCI affected PT recipients with a median (IQR) age of 41(12) years. No aortic clamping occurred in any recipient. During or after surgery, all patients experienced episodes of hypotension (systolic blood pressure ≤100mmHg) prior to the onset of neurological symptoms. Three patients had significant peri-operative haemorrhage (>500mL). All patients were given prophylactic dose anticoagulation (unfractionated or low molecular weight heparin). Additionally, two patients received an IV infusion of epoprostenol during pancreatic reperfusion, which may have contributed to systemic hypotension, and three had epidural anaesthesia. Loss of lower limb sensation within 24 hours of surgery was the primary symptom. MRI was reportedly normal in one case, but showed SCI affecting between T1-T9 in three cases (missing MRI n=1). Epidural anaesthesia appeared to delay the diagnosis of SCI on one occasion. The mainstay of early treatment for SCI for all cases was blood pressure control. All patients suffered significant neurological defects following SCI, with only one patient making full neurological recovery one year post-transplantation.

Conclusions: Since 2002, the UK has transplanted pancreatic grafts into 2633 recipients. Based on the findings of this study, there is approximately a 1:500 risk of SCI in PT. Hypotension appears to be a risk factor. All patients undergoing assessment for PT should be informed of the risk of SCI.

O21

Is it safe to offer a simultaneous pancreas-kidney (SPK) transplant to those who decline blood products? A single-centre blood transfusion audit

Rebecca Gare, Martin Drage, Nicos Kessaris, Nikolaos Karydis, Chris Callaghan

Department of Nephrology and Transplantation, Guy's Hospital, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

Introduction: A patient who refuses blood products for religious reasons was assessed at our unit for an SPK transplant. An audit of our usage of packed red blood cells (pRBCs) after SPK transplantation was therefore undertaken to assess our practice and inform the patient.

Methods: All patients who received an SPK transplant between 1.1.16-31.12.17 were included. Retrospective transfusion data up to 31 days post-operatively and Electronic Patient Records were reviewed up to August 2018.

Results: 44 patients (mean (SD) age 42 (8.5) years) received an SPK transplant and 34 (78%) received ≥1 unit of pRBCs within one month post-transplant. The majority of patients were transfused within the first 48 hours. The median (IQR) number of units given was 2.5 (4). Mean (SD) starting Hb was 110 (13.2) g/L; 15/22 patients with starting Hb <110 received a median of 3 units of pRBCs, while those with starting Hb >110 g/L received a median of 4 units (19/20 recipients). 30 patients received DBD donor grafts with mean (SD) estimated blood loss (EBL) of 855 (634) mL, and had an average of 5 units transfused. 14 patients received DCD donor grafts with mean (SD) EBL 1200 (843) mL and an average of 4 units transfused. Even though there was more blood loss following DCD SPK, this was not statistically significant (p=0.22). Of those patients that had a starting Hb of ≤110 g/L one had double graft failure and one had pancreas graft failure alone. Of those who had a starting Hb of ≥110 g/L, two had double graft failure whilst two had pancreas graft failure. Patient survival was 100%.

Discussion: Patients undergoing SPK transplantation commonly receive pRBCs within a month of surgery. A detailed, evidence-based risk discussion is required with all patients prior to SPK.

O22

Computational assessment of T-cell and B-cell allorecognition to predict donor HLA immunogenicity

Hannah Charlotte Copley, Madhivanan Elango, Vasilis Kosmoliaptsis

University of Cambridge, Cambridge, United Kingdom

Introduction: Donor-specific alloantibody (DSA) development after solid-organ transplantation is a major cause of graft loss. We have previously shown that recipient B-cell allorecognition of donor HLA can be assessed by quantification of electrostatic potential differences at the tertiary level between donor and recipient HLA (electrostatic mismatch score, EMS3D). Humoral alloresponses require CD4+ T-cell help through recognition of donor HLA-derived peptides presented by recipient HLA class-II. We used *in silico* prediction of CD4+ T-cell epitopes to assess the risk of DSA development in a unique HLA sensitisation model.

Methods: We examined DSA alloresponses in 179 female patients (HLA-typed at two-field resolution) undergoing standardised subcutaneous lymphocyte injection, purified from their partner, as treatment for infertility (lymphocyte immunotherapy). DSA were detected using Luminex single-antigen-beads. Binding of high affinity (<50nM) donor HLA-derived 15-mer peptides to recipient HLA-DR/DQ/DP was assessed using a neural network approach (NetMHCIIpan).

Results: Donor T-cell epitopes ranged (mean, SD) from 0-10 (1.53, 1.94) for HLA class-I and from 0-28 (3.15, 4.92) for HLA class-II mismatches. Increasing T-cell epitope number was associated with higher risk of DSA development (HLA Class-I: OR 1.08 per peptide increase, 95%CI: 1.00-1.17, p=0.05; Class-II: OR 1.21 per peptide increase, 95%CI: 1.16-1.28, p<0.01). Prediction of HLA class-II DSA (the most clinically significant alloresponse in transplantation) conformed best to the model with ROC area-under-curve (AUC) of 0.73 which was similar to the predictive ability of the EMS3D model. Notably, simple combination of the T-cell epitope score with the EMS3D score (the two scores were not correlated) improved prediction of HLA class-II DSA development (AUC 0.8).

Discussion: Assessment of recipient T-cell help for development of humoral alloimmunity may help predict the immunogenic potential of donor HLA. Further investigation of a combined B-cell and T-cell model of humoral alloreactivity is needed to fully assess the utility of this approach to quantify HLA immunogenicity.

O23

How Nanopore sequencing is changing HLA typing for renal transplants in low income countries

Tom Nieto[1,2], Jo Stockton[3], David Briggs[4], Andrew Beggs[3,2], Nicholas Inston[2]

[1]University of Birmingham, Birmigham, United Kingdom. [2]University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom. [3]University of Birmingham, Birmingham, United Kingdom. [4]NHSBT, Birmingham, United Kingdom

Introduction: A barrier to transplantation in low/middle income countries (LMIC) is the prohibitive cost and logistical challenges of tissue typing. Often this is performed out of country. The Oxford Nanopore Technologies (ONT) MinION, is a portable USB powered genetic sequencing device, which can be taken to LMIC to improve tissue typing in renal transplantation, in essence it could be developed as a "tissue typing laboratory in a suitcase".

Methods: The aim of the study is to adapt and evaluate miniaturised, portable and robust equipment to perform highly accurate HLA typing. DNA is extracted from blood using the Claremont Bio PureLyse kit. This is used in conjunction with the ONT library preparation and multiplexing kit on a miniaturised thermal cycler (miniPCR). Sequencing data is uploaded to a cloud-based server to generate a tissue type and returned to the referring centre. The complete workflow will be validated in conjunction with units already linked to the Transplant Links Community.

Results: A proof of concept study with 11 organ donor patients has demonstrated robust and accurate three field HLA typing is possible using portable equipment with the MinION. The workflow is easily replicable with basic laboratory training and no specialised lab techniques are required. All instruments can operate on battery or USB power making the system highly portable. Lyophilised PCR reagents and ONT flowcells can be stored at room temperature, aiding the robustness of the assay.

Discussion: The project goal is to bring affordable, robust, near-patient tissue typing into clinical practice worldwide. It would be possible to tissue type multiple potential live kidney donors in one clinic and provide results on the same day, with counselling and consent performed in the same attendance. Near patient tissue typing could also overcome logistical barriers to cadaveric programmes such as a lack of tissue typing laboratories or large geographical distances.

O24

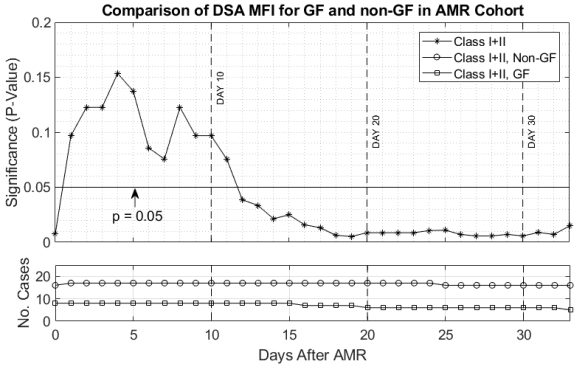
HLA antibody testing between days 20-30 after an acute AMR episode following antibody incompatible kidney transplantation identifies recipients at highest risk of early graft failure

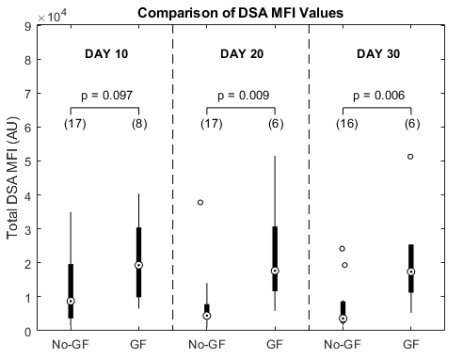
Mason Phillpott[1], Sunil Daga[2], Chris Imray[3], Nithya Krishnan[3], Simon Fletcher[3], Mark Leeson[1], Rob Higgins[3], Dave Lowe[4], Daniel Mitchell[1], David Briggs[5], Natasha Khovanova[1]

[1]University of Warwick, Coventry, United Kingdom. [2]Leeds Teaching Hospital NHS Trust, Leeds, United Kingdom. [3]University Hospitals Coventry and Warwickshire, Coventry, United Kingdom. [4]Royal Liverpool Hospital, Liverpool, United Kingdom. [5]NHS Blood and Transplant, Birmingham, United Kingdom

Introduction: Data from the UK AiT registry indicates that the characteristics of donor HLA specific antibodies (DSAs) following HLA-incompatible (HLAi) kidney transplantation determines long term graft survival. In this work we explored the significance of HLA DSA monitoring during the month following early AMR in the higher risk group of HLAi cases (presence of both class I & II DSAs).

Methods: DSA MFI levels were monitored daily for the first several months after transplantation in a cohort of 90 patients following HLAi transplantation. 50 patients who had an early AMR (within one month post-transplantation), and had both class I & II DSAs, were analysed for association with graft failure (GF). All episodes of AMR resolved and were treated similarly (course of methyl prednisolone and ATG). Cumulative DSA MFI levels were compared for each post-AMR day in the GF (14 cases) and non-GFs (36 cases) groups using Wilcoxon rank sum test.





Results: The p-values for MFI differences for each day of AMR are shown in the left-hand figure. This shows a notable period of significant difference ($p<0.05$) over days 12-33 between the total MFI levels within the groups of GF and non-GF. The graph on the right shows the distributions of MFI levels in GF and non-GF groups at selected days: days 20 and 30 show non-overlapping clusters within the groups of interest. The median DSA levels in GF group exceed the DSA levels in non-GF group by more than 13,000 MFI AU.

Discussion: This analysis shows that for patients with both class I and class II DSA who develop early AMR, testing between 20-30 days after the rejection event is of significant prognostic value. High levels of DSA at post AMR day 20 in particular identifies those at greatest risk of early graft failure and who might benefit from therapeutic intervention.

O25

Overcoming barriers to pre-emptive transplant education

Jen Lumsdaine[1], Julie Glen [2], Linda White[3], Gabriel Oniscu[1], Colin Geddes[2]

[1]Edinburgh Transplant Centre, Edinburgh, United Kingdom. [2]Queen Elizabeth University Hospital, Glasgow, United Kingdom. [3]Organ Donation Policy Team, Scottish Government, Edinburgh, United Kingdom

Introduction: The development of transplant services has resulted in many renal nursing teams caring for patients approaching end stage renal failure (ESRF) separately from the transplant teams. Lack of information sharing may have prevented maximal opportunity of early transplant education from these nurses who build influential relationships with patients and families. We introduced a link nurse programme for nurses caring for patients approaching ESRF to improve transplant knowledge and communication.

Methods: We established a link nurse network between eight referring units and two transplant centres. Regular meetings were held and views sought on barriers to discussing living donor transplantation with patients and their support networks. The two main areas identified were lack of nurse knowledge about the transplant process and uncertainty about transplant suitability with concern about inappropriately raising expectations. To explore the second issue, a survey was used to assess current documentation of transplant status in electronic patient records.

Results: We identified 809 patients attending renal services in our region age <80 years with most recent eGFR <15mL/min/1.73m^2 who were not already on renal replacement therapy. Of these, 209 (26%) were documented not suitable for transplant, 113 (14%) on hold/deferred; 248 (31%) referred but not on transplant list and 107 (13%) on list, leaving 16% without a documented plan. Living donation discussion was reported in 168 cases (21%). Variation between renal units was evident in all sections.

Discussion: The survey confirmed that there is considerable variation in electronic documentation of transplant planning for patients approaching ESRF. There is no mandate to record transplant planning data in electronic records which likely introduced recording bias. Work is now underway to agree common methods of data recording. We anticipate that comparing meaningful national data relating to transplant education and planning will be an important driver to maximising transplant opportunities.

O26

Barriers to kidney transplantation in children – a prospective national study

Matko Marlais[1,2,3], Ramnath Balasubramanian[1,3], Mordi Muorah[4], Carol Inward[5], Graham Smith[6], Ben Reynolds[7], Pallavi Yadav[8], Henry Morgan[9], Mohan Shenoy[10], Yincent Tse[11], Farida Hussain[12], Sarah Grylls[13], Manish Sinha[3], Stephen Marks[1,2]

[1]Great Ormond Street Hospital for Children NHS Foundation Trust, London, United Kingdom. [2]UCL Great Ormond Street Institute of Child Health, London, United Kingdom. [3]Evelina London Children's Hospital, London, United Kingdom. [4]Birmingham Children's Hospital, Birmingham, United Kingdom. [5]Bristol Royal Hospital for Children, Bristol, United Kingdom. [6]Children's Hospital for Wales, Cardiff, United Kingdom. [7]Royal Hospital for Children, Glasgow, United Kingdom. [8]Leeds Children's Hospital, Leeds, United Kingdom. [9]Alder Hey Children's Hospital, Liverpool, United Kingdom. [10]Royal Manchester Children's Hospital, Manchester, United Kingdom. [11]Great North Children's Hospital, Newcastle, United Kingdom. [12]Nottingham Children's Hospital, Nottingham, United Kingdom. [13]Southampton Children's Hospital, Southampton, United Kingdom

Introduction: Pre-emptive living donor renal transplantation is the gold standard treatment for children with end-stage kidney disease (ESKD). Despite this, many children spend years on dialysis before proceeding to transplantation. The aim of this study was to investigate access to paediatric renal transplantation and barriers within the process.

Methods: This was a prospective multi-centre observational study, paediatric nephrology centres in the United Kingdom (UK) were asked to provide data on all children (aged <18 years) with ESKD (defined as estimated glomerular filtration rate ≤15mls/min/1.73m^2). In those where transplantation was not planned or delayed, barriers to transplantation and estimated timescales were documented.

Results: 308 children with ESKD were included in this study from 12 out of 13 paediatric nephrology centres in the UK. 180 (58%) children were on dialysis, 37 (12%) were transplanted and 91 (29%) children had ESKD but were currently pre-dialysis. 139 (45%) were currently being worked up for a living donor transplant, 82 (27%) children were listed for a deceased donor transplant. The mean estimated time to transplant in those with active plans was 13.6 months. 226 (73%) children were not being planned for a pre-emptive transplant or were already on dialysis. The commonest reasons for children not having a pre-emptive transplant were that the child presented in ESKD (31%), lack of a suitable donor (27%) or being too young for transplant at the time of needing renal replacement therapy (24%). The commonest cited factors preventing transplantation from occurring in children were disease factors (36%), donor availability (27%) and size of the child (20%).

Discussion: Many barriers to renal transplantation in children are potentially modifiable through local or national intervention, such as donor availability and patient psycho-social factors. A further study is planned to assess these modifiable barriers to transplant in detail to determine how best to ameliorate them.

O27

Health literacy in living kidney donors

Sam Thompson[1], Stephen O'Neill[2], Dominic Taylor[3], Jen Lumsdaine[2], Gabriel Oniscu[1,2]

[1]College of Medicine and Veterinary Medicine, University of Edinburgh, Edinburgh, United Kingdom. [2]Edinburgh Transplant Centre, Edinburgh, United Kingdom. [3]Richard Bright Renal Service, North Bristol NHS Trust, Bristol, United Kingdom

Introduction: Living donor kidney transplantation (LDKT) is the gold standard treatment for patients with advanced kidney disease. Limited health literacy (LHL) is known to be a major factor in preventing patients from engaging in the treatment process, and contributing to major healthcare decisions. Currently there are no studies investigating correlations between health literacy and living kidney donation. This cross-sectional study sought to investigate these correlations in a single centre with increasing referrals for living donation.

Method: We surveyed patients who underwent a nephrectomy, attended outpatient clinic for donor follow-up, or were undergoing work-up for donation between 1st of January 2018 to the 31st October 2018. Data on health literacy, demographic and socioeconomic status were collected using a questionnaire and patient notes. LHL was defined as a >2 in the Single Item Literacy Screener (SILS). Health literacy was also assessed using the Brief Health Literacy Screener (BHLS), which graded health literacy on a scale of three to fifteen. Univariate analyses were performed to assess which variables significantly correlated with donors' health literacy.

Results: Of 236 eligible donors, 136 (58%) participated in the study. Using the SILS, LHL prevalence was 1.5%. This did not significantly vary with stage of donation (undergoing work-up or post-donation), donor relationship to recipient, donor demographic, or socioeconomic status. Subgroup analysis also showed the prevalence of LHL after LDKT has remained constant, regardless of the length of time since donation. Univariate analysis of BHLS scores suggested that only Asian ethnicity (n=2) was associated with a slightly lower degree of health literacy compared with Caucasian donors (p=0.029).

Discussion: Living donors have very low rates of LHL, especially when compared to other estimates of LHL in kidney transplant recipients, and the wider Scottish population. This low prevalence of LHL was found to be true of all kidney donors, regardless of demographic or socioeconomic status.

O28

Characterisation of preformed autoantibodies in renal transplant recipients with early acute rejection

Raymond Fernando[1,2], Thomas Hanna[1], Katie Butler[1,3], Henry Stephens[1,2,3], Ciara Magee[1,3], Mark Harber[3,1], Reza Motallebzadeh[1,4,3]

[1]Dept of Nephrology & Transplantation, Royal Free Hospital, London, United Kingdom. [2]Anthony Nolan Research Institute, London, United Kingdom. [3]Department of Renal Medicine, UCL, London, United Kingdom. [4]Division of Surgery and Interventional Sciences & Institute of Immunity and Transplantation, UCL, London, United Kingdom

Introduction: Although donor-specific HLA antibodies (DSAs) have been established as a primary cause of long-term graft failure, there is compelling evidence that antibodies directed against non-HLA antigens contribute to rejection. There have however been conflicting reports regarding the role of pre-transplant non-HLA antibodies in mediating early acute rejection. The aim of our study was to detect and characterise non-HLA antibodies in patients with early kidney allograft rejection using a solid-phase autoantigen multiplex-bead assay.

Methods: We carried out screening of pre-transplant crossmatch serum samples using the One Lambda LABScreen Autoantibody Luminex assay that detects antibodies against 39 non-HLA targets. The fluorescent signal for each bead was measured using LABScan 100TM Flow Cytometry and analyzed by HLA-FusionTM software. The fluorescent value of the autoantigen coated beads were derived by subtracting the sample specific fluorescent value of negative control beads.

Results: 61 patients who developed early rejection (ER, <14days from transplantation) were identified from our database, and compared with a control group (n=69) of non-early rejecting (control) recipients with an aetiology of primary kidney disease that was not immune mediated. 32 patients had a diagnosis of mixed cellular/antibody-mediated rejection in the ER group, of which 12 had positive, albeit low level, preformed anti-HLA DSA. Overall, there were 6 autoantibodies in the assay that had significantly higher MFIs in the ER versus the control group; alpha-enolase (ENO1), aurora kinase-A interacting protein (ARUKA), chromatin assembly factor 1 subunit B (CHAFB), peptidylprolyl isomerase A (PPIA), prelamin-A/C (LMNA) and lamin-B1 (LMNB) (see fig 1). Within the ENO1 group, levels were significantly higher in non-sensitised ER patients compared to ER recipients that had anti-HLA DSA at time of transplantation.

Discussion: Anti alpha-enolase antibodies were consistently raised in non-sensitised patients with early acute rejection. ENO1 is expressed on endothelial cells and can thus be a target for early non-HLA antibody-mediated rejection.

O29

Remote ischaemic conditioning dampens acute inflammation in kidney transplantation

Honglei Huang[1,2], Nicoline Krogstrup[3], Adam Thorne[1,2], Thomas Surik[1], Henrik Birn[3], Marco Eijken[3], Bjarne Møller[4], Rikke Nørregaard[5], Rutger Ploeg[1], Benedikt Kessler[2], Bente Jespersen[3]

[1]Nuffield Department of Surgical Sciences, University of Oxford, Oxford, United Kingdom. [2]Target Discovery Institute Mass Spectrometry Laboratory, University of Oxford, Oxford, United Kingdom. [3] Department of Renal Medicine, Aarhus University Hospital, Aarhus, Denmark. [4]Department of Clinical Immunology, Aarhus University Hospital, Aarhus, Denmark. [5] Department of Clinical Medicine, Aarhus University Hospital, Aarhus, Denmark

Introduction: Remote ischaemic conditioning (rIC) is a therapeutic strategy to protect organs from high-risk donors against ischaemia/reperfusion injury. To date, this was observed in animal experiments, while a first recent RCT (CONTEXT) did not show improvement in clinical outcomes. The question is whether rIC induces molecular changes in recipient plasma and kidneys at all. We have analysed plasma/tissue samples of the CONTEXT trial to identify any differences in molecular profiles.

Methods: The CONTEXT trial evaluated effects of rIC, induced by episodes of obstruction of arterial flow using a tourniquet (5x5min) prior to reperfusion in kidney transplantation versus controls. DBD kidneys were randomised into rIC and non-rIC recipient groups in a paired design. Our identifier cohorts consisted of six recipients per group using LC-MS/MS unbiased proteomics approach to measure protein alteration between rIC and non-rIC at various time points (Figure 1).

Results: In kidneys, 44 proteins were differentially expressed with at least a two-fold change in abundance between rIC and non-rIC groups. Up-regulated proteins (NDUFS2, NDUFA6, MAOA, MAOB) in rIC can be assigned to respiratory electron transport chain pathways, indicating increased oxidative phosphorylation. In plasma, antioxidant proteins including PRDX2 and HPR, were upregulated transiently at 90min and 1 day after transplantation. Markedly, acute phase response proteins (SAA1, SAA2, CRP) were up-regulated after 1 day and 6 days in rIC and non-rIC groups. However, the number of differentially expressed proteins and magnitude of increase was higher in non-rIC versus rIC (Table1).

Discussion: Preliminary analysis suggests an increased energy metabolism in tissue 6 days after transplantation. Plasma proteomics reveals a transient effect of rIC on protein expression between rIC and non-rIC. rIC may reduce an acute phase inflammatory response 1 day and 6days after transplantation. We are currently validating these results in all samples from 220 recipients included in CONTEXT using bespoke ELISAs.

Figure 1. Experiment design and work flow of proteome study

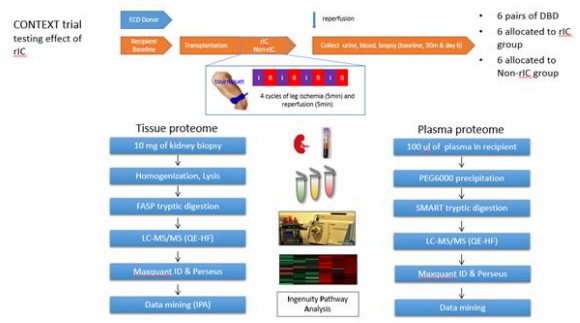
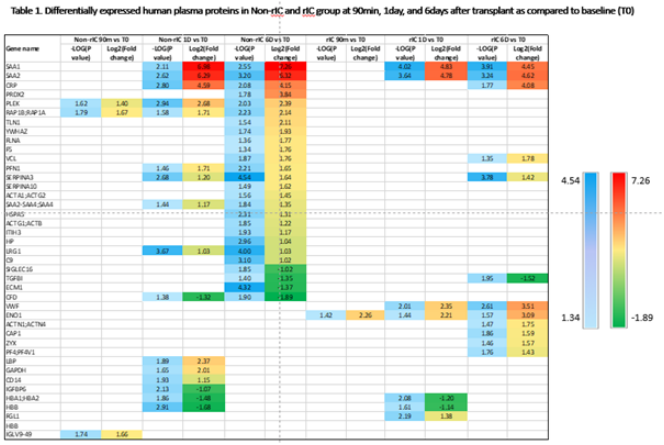


Table 1. Differentially expressed human plasma proteins in Non-rIC and rIC group at 90min, 1day, and 6days after transplant as compared to baseline (T0)



O30

MicroRNA-375 provides an objective measure of pancreas quality in organ donors

Iestyn Shapey[1,2], Angela Summers[2], James O'Sullivan[3], Petros Yiannoullou[1,2], John Casey[4], Shareen Forbes[5], Neil Hanley[1], Miranda Rosenthal[6], Paul Johnson[7], Pratik Choudhary[8], James Bushnell[9], James Shaw[10], Titus Augustine[2], Martin Rutter[11], David van Dellen[2,1]

[1]University of Manchester, Manchester, United Kingdom. [2]Department of Transplantation, Manchester University NHS Foundation Trust, Manchester, United Kingdom. [3]Manchester Centre for Genomic Medicine, Manchester, United Kingdom. [4]Royal Infirmary of Edinburgh, Edinburgh, United Kingdom. [5]University of Edinburgh, Edinburgh, United Kingdom. [6]Royal Free Hospital, London, United Kingdom. [7]University of Oxford, Oxford, United Kingdom. [8]King's College London, London, United Kingdom. [9]Southmead Hospital, Bristol, United Kingdom. [10]Newcastle University, Newcastle, United Kingdom. [11]Manchester Diabetes Centre, Manchester University NHS Foundation Trust, Manchester, United Kingdom

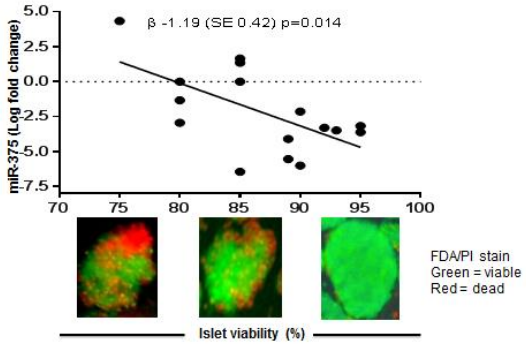
Introduction: Donor pancreatic beta cells are at high risk from apoptosis. Objective methods for assessing the quality of donor pancreases for transplantation are limited. We hypothesized that microRNA (miR)-375, a marker of beta-cell death in islet transplant recipients, could be used as a circulating cell-free biomarker of beta cell death in organ donors.

Methods: Plasma samples from 100 donor after brain death pancreas donors were collected by the Quality in Organ Donation Biobank: a) at the time of consent; and b) at aortic cross clamp during organ retrieval. We used linear regression to relate miR-375 levels to donor glucose, c-peptide and levels of biomarkers of beta-cell apoptosis (all n=100), and to islet viability in 17 donor pancreases from which islets were isolated for transplantation.

Results: Median (IQR) donor age was 35 (25-49) years and BMI 24 (22-26) kg/m^2. Circulating cell-free miR-375 levels were related to lower islet viability (figure 1) and higher peak donor blood glucose (linear regression β [se]: -4.01 [0.16], p=0.047), but not C-peptide (-0.87 [2.6x10^{-7}], p=0.435). MiR-375 was strongly related to miR regulators of beta-cell death (miRs: 34-a: 0.73 [0.12]; 200b: 1.42 [0.21] and 200c: 0.89 [0.21]; all p<0.001). Markers of apoptosis, measured at the time of consent, were positively related to miR-375 during the donation period (Granzyme B, 7.65 [2.22], p=0.001; TNF-related apoptosis-inducing ligand, 2.96 [1.24], p=0.019). Persistently high levels of IL-6 throughout the donation period were associated with greater expression of miR-375 (1.46 [0.63], p=0.023). MiR-375 levels were independent of any clinical variables, including donor age and BMI.

Discussion: Circulating cell-free microRNA-375 could have clinical utility in the objective assessment of the quality of pancreases for transplantation. It might also be a useful outcome measure in intervention studies aiming to reduce beta-cell apoptosis in donor pancreases. Research is required to determine whether such interventions could improve transplant outcomes.

Figure 1: Linear regression islet viability relating miR-375



O31

Donor-derived cell-free DNA as a biomarker in pediatric solid organ transplantation; validation of a new assay

Evgenia Preka[1], Drew Ellershaw[2], Natalie Chandler[2], Helena Ahlfors[2], Helen Spencer[3], Matthew J Fenton[3], Stephen D Marks[1,4]

[1]Department of Paediatric Nephrology, Great Ormond Street Hospital for Children NHS Foundation Trust, London, United Kingdom. [2]North East Thames Regional Genetics Service, Great Ormond Street Hospital for Children NHS Foundation Trust, London, United Kingdom. [3]Cardiothoracic Unit, Great Ormond Street Hospital for Children NHS Foundation Trust, London, United Kingdom. [4]UCL Great Ormond Street Institute of Child Health, London, United Kingdom

Introduction: Circulating cell free DNA (cfDNA) has increasing potential applications, particularly as a noninvasive biomarker for monitoring health of solid organ allograft transplants. Elevated levels of donor-derived cell free DNA (ddcfDNA) have been correlated with solid organ rejection, but complex methodology limits clinical implementation of this promising biomarker.

Methods: Blood from paediatric recipients of solid organ transplants (heart, kidney, lung) was taken at various time points and cfDNA was extracted from plasma. A multiplex PCR assay consisting of a panel of 41 highly heterogeneous single nucleotide polymorphic markers (SNPs), HLA exon 3 and Y-markers was designed and validated by using genomic DNA (gDNA) samples. This assay was used to test the recipient cfDNA samples to look for evidence of the donor's genotype. For the initial samples, donor genotype was determined by a biopsy of the donated organ. After this, a statistical model using R was developed to perform donor genotype-free analysis.

Results: From the five gDNA spike-ins analysed, seven informative SNPs were identified. When the known genotype donor fractions were calculated and compared to the donor fractions calculated using the R statistical analysis method, the results were comparable. In total, 137 transplant patients (80 heart, 42 kidney and 15 lung) have been recruited to date with a total of 203 blood samples and 6 biopsies taken and results have been analysed for 131 samples. The highest percentage of ddcfDNA was 7.1% (heart), 1.6% (kidney) and 3.0% (lung) with a total of 7,7 and 11 informative SNPs, respectively.

Conclusions: We present the first study in pediatric solid organ transplant recipients using ddcfDNA as a potential noninvasive surrogate marker for monitoring allograft function in a genome-free analysis background. Our results suggest that identification of ddcfDNA through a specific panel of SNPs is a promising and reliable biomarker for monitoring the health of solid organ allograft.

O32

Reducing mitochondrial oxidative stress ameliorates renal ischaemia-reperfusion injury in kidney transplantation

Timothy E Beach[1], Hiran Prag[2], Krishnaa Mahbubani[3], Anja V Gruszczyk[2], Jack Martin[1], Mazin Hamed[1], Tracey A Prime[4], Angela Logan[2], Michael P Murphy[4], Kourosh Saeb-Parsy[1]

[1]University of Cambridge Department of Surgery, Cambridge, United Kingdom. [2]University of Cambridge MRC Mitochondrial Biology Unit, Cambridge, United Kingdom. [3]University of Cambridge Department of Surgery, Cambridge, United Kingdom. [4]University of Cambridge MRC Mitochondrial Biology Unit, Cambridge, United Kingdom

Introduction: Mitochondrial reactive oxygen species (ROS) production upon reperfusion is thought to be a key mechanism of graft injury, leading to poor initial function in kidney transplantation. ROS production is driven by rapid oxidation of succinate by complex II of the mitochondrial respiratory chain upon reperfusion. We investigated ROS production during reperfusion to assess whether inhibition of complex II by dimethylmalonate (DMM) could decrease ROS production and improve initial graft function.

Methods: Kidney function following IRI was investigated in mice and by ex vivo normothermic perfusion models of pig and declined human kidneys with appropriate ethical approval and informed consent. The mitochondrial-targeted ratiometric probe MitoB was used to measure ROS production in the mouse. The effect of DMM on succinate accumulation and renal function was investigated in mice and pigs.

Results: Succinate accumulation in mouse, pig and human kidneys was close to saturation after 5 mins of warm ischaemia. 5 minutes of warm ischaemia also resulted in maximal mitochondrial ROS production upon reperfusion (MitoP/MitoB; 5 vs 30 min, 0.011±0.002 vs 0.015±0.001; p=0.35; n=4). While cooling slowed accumulation of succinate, pig kidneys required >15 minutes to reach 4°C from 37°C despite optimal cooling and succinate levels were similar in declined DCD and DBD kidneys. In preliminary experiments, DMM administration prior to ischaemia was a promising strategy to improve renal function in the mouse (SCr at 24h reperfusion; 66±14 vs 150±33; p=0.0563; n=4) and the pig (FENa at 1h reperfusion; 0.35±0.08 vs 0.55±0.32, p=0.3257, n=2).

Conclusion: Even short durations of warm ischaemia result in maximal succinate accumulation and ROS production on reperfusion. Cooling of human kidneys is not always sufficiently rapid to prevent the rise in succinate, whereas administration of DMM prior to ischaemia may reduce succinate accumulation and ROS production and improve initial graft function.

O33

Viability assessment during D-HOPE liver perfusion

Rodrigo Figueiredo[1], Avinash Sewpaul[1], Ally Leitch[2], Lucy Bates[2], Ibrahim Ibrahim[2], Emily Thompson[2], Matthew Wright[2], Colin Wilson[1]

[1]Institute of Transplantation, Newcastle upon Tyne, United Kingdom. [2]Newcastle University, Newcastle upon Tyne, United Kingdom

Introduction: Dual hypothermic oxygenated perfusion (D-HOPE) can be used to recondition liver grafts prior to transplantation. Objective biochemical, haemodynamic and biliary parameters have proven successful in identifying livers for transplantation during clinical normothermic perfusion. We aimed to identify parameters associated with outcomes during D-HOPE and develop an objective assessment tool.

Methods: We analysed perfusion characteristics, biochemical and molecular signatures from livers (n=16) undergoing D-HOPE perfusion. Mesoscale multiplex plates (MESO QuickPlex™ SQ120 multiplex analyser) were used to quantify tissue and vascular injury as well as inflammatory status at different time points. Receiver Operator Characteristics (ROC) curve analysis was performed to establish the optimum values for each molecule during the molecular analysis.

Results: 10 livers were transplanted (mild injury) and 6 livers (severe injury) were not transplanted on the basis of an integrated subjective assessment of donor and recipient factors. There were no significant differences between the two groups based on vascular flows, lactate clearance, bile duct flow, and oxygen consumption. Perfusate ALT level above 358U/L at 20mins was seen in all discarded livers, but 1 liver was successfully transplanted with a value of 2112U/L. ROC curve analysis revealed significant differences in various molecular patterns between the two groups. An algorithm integrating a specific combination of 6 molecules could discern between mild and severe injury with 100% sensitivity and specificity. Some of these molecules are associated with specific damage pathways during ischaemic injury.

Discussion: Perfusate ALT alone can identify livers that can be transplanted with a sensitivity of 100% and specificity of 88.9%. However, a specific pattern of injury associated biomarkers have been identified that can successfully differentiate between severe and mild injury. This suggests both objective scoring of livers using molecular analysis during hypothermic injury is achievable and has identified potential targets for therapeutic intervention.

O34

The importance of communication and team work in achieving high quality data in clinical trials

Helen Thomas[1], Laura Pankhurst[1], Alison Deary[2], Anna Sidders[2], Cara Hudson[1], Katie Keen[2], Renate Hodge[2], Valerie Hopkins[2], Nick Smith[3], Helen Harizaj[4], Naomi Hayward[5], Beatriz Lopez Santamaria[6], Rachel Johnson[1]

[1]Clinical Trials Unit NHS Blood and Transplant, Bristol, United Kingdom. [2]Clinical Trials Unit NHS Blood and Transplant, Cambridge, United Kingdom. [3]Corporate Continuous Improvement Team NHS Blood and Transplant, Leeds, United Kingdom. [4]Medway NHS Foundation Trust, Gillingham, United Kingdom. [5]St George's University Hospitals NHS Foundation Trust, London, United Kingdom. [6]Evelina London Children's Hospital Guy's and St. Thomas' NHS Foundation Trust, London, United Kingdom

Introduction: During a clinical trial, data queries frequently arise and can be burdensome for the trial management team as well as the research sites. We aimed to improve the data cleaning process in our Clinical Trials Unit (CTU).

Methods: A Continuous Improvement (CI) event was organised focussing on data cleaning for Data Monitoring Committee (DMC) reports. CTU participants were data managers, statisticians and members of the clinical operations team. Clinical research nurses from research sites were also invited. Data were gathered in advance on the number of queries raised, touch time and elapsed time for all processes for an existing trial. Documents were collated to map a detailed timeline of events. CI lean tools were used including 8 wastes and the Kano model. The process was captured in an A3.

Results: The process mapping highlighted the sheer volume of steps in the process. Multiple documents led to duplication, errors and wasted effort, with associated frustration. There was a communication gap with research sites, who were unaware of the DMC's scheduling and requirements. Several agreed actions were tested and adopted, and primarily focussed on improved communication across the whole team. These included an infographic for sites to illustrate the data journey throughout a clinical trial. The actions have led to a significant reduction in the number of queries raised, improved response rates from sites, and a reduction in workload for all. The multidisciplinary approach was invaluable in ensuring a successful outcome.

Discussion: High quality data are essential for reports to monitoring committees, and this should be communicated throughout each trial. The CTU team have worked collectively to record all data queries in a single source and clear communication with the site research teams has increased responses to data queries. Improved tools and reports are now being implemented for other trials, including those in transplantation.

O35

A new approach to analysing time-to-event data for patients following kidney transplant

Lexy Sorrell[1], Yinghui Wei[1], Peter Rowe[2]

[1]University of Plymouth, Plymouth, United Kingdom. [2]Plymouth Hospitals NHS Trust, Plymouth, United Kingdom

Introduction: Analysis on patients from a single centre who have received kidney transplantation is considered, aiming to inform future clinical decisions. We primarily focus on the difference between living and deceased donors. The restricted mean survival time (RMST) is introduced to analyse the endpoints of kidney failure and death.

Methods: Observational data of 1199 patients who received kidney transplantation between 1997 and 2018 are analysed, where death with functioning graft is censored. We first use the Cox proportional hazards model to analyse graft and overall survival with variables: donor type, age, waiting list time, time until function, mismatch, diabetes and 6-month eGFR. The Cox model provides interpretation in the risk-scale whereas the RMST gives interpretation in the time-scale to compare groups.

Results: Adjusting for covariates, comparing the living donor group to the deceased donor group, the hazard ratio for overall survival is 0.59 (95% CI 0.40-0.86), and for graft survival is 0.89 (95% CI: 0.41 – 1.59). The 10-year difference in RMST for overall survival is 0.82 (0.50 to 1.15) and for graft survival 0.19 (-0.20 to 0.58). Therefore, living donor recipients live on average 9 months longer compared to deceased donor recipients. Figure 1 shows the difference in RMST increasing over time. Age and parent centre are the significant factors influencing overall survival. Age, the presence of diabetes and eGFR at 6 months are the factors influencing graft survival.

Figure 1. Difference in RMST

Discussion: The difference in overall patient RMST increases over time between living and deceased donor recipients. Advanced patient age is associated with inferior overall survival but reduces the risk of graft failure. This could be due to fewer older patients losing their grafts before death; therefore, the benefit of a living donor may be lesser for older patients. Future research could include the integration of data from other transplant centres.

O36

Sex differences in deceased and live donor renal transplant outcomes are age dependent: analysis of UK registry data

Katie Connor[1], Chloe Brown[2], Lisa Mumford[2], Lorna Marson[1]

[1]University of Edinburgh, Edinburgh, United Kingdom. [2]ODT, NHS Blood and Transplant, Bristol, United Kingdom

Background: The impact of recipient and donor sex on renal allograft outcome is conflicting and unstudied in the UK. Recent analysis of deceased donor (DD) transplants suggests recipient age is a key interacting factor influencing sex dependent outcomes at 3 years. We hypothesised that pre-menopausal female recipients had increased risk of graft failure at 5 years, particularly if the donor was male.

Methods: Data obtained from NHSBT Transplant Registry (2006-2015) on 8673 Live Donor (LD) and 14034 DD were included and analysed separately. Chi-Squared or Wilcoxon tests were employed for descriptive statistics as appropriate. Cox-proportional hazards models were used to estimate the effect of recipient and donor sex including a recipient age interaction term on 5y graft survival. Models were adjusted for significant factors.

Results: Five-year graft survival was 91.98% and 86.9% in LD and DD respectively. In DD but not LD, female-donor sex was associated with reduced risk of graft failure (HR 0.796; $p<0.001$) regardless of recipient sex. In LD, female-recipient sex was associated with increased risk of graft failure (HR 1.164, $p=0.053$). This negative effect was most pronounced in male-donor→female-recipient pairing of LD (HR 1.351, $p<0.01$), and in DD where this combination carried the highest risk of graft failure. When stratified by age, male-donor→female-recipient combination in 0-14y DD (HR 3.44; $p=0.01$) and 15-24y LD (HR 1.71; $p=0.055$) was associated with increased risk of graft failure vs. male-donor→male-recipient combination.

Conclusion: Sex dependent differences are evident in both LD and DD and are dynamically related to recipient age. Overall female donor sex was protective in DD but not LD, which may suggest sex dependent differences in graft activation during procurement. Male-donor→female-recipient combination had the poorest outcomes in LD and DD; most evident in pre-menopausal females

MP01

Aminoacylase-1 as a serum biomarker in delayed graft function after renal transplantation

Matthew Welberry Smith[1], Michelle Hutchinson[2], Helen Sewell[2], Rebecca Bartle[2], Damien McAleer[3], Mary Jo Kurth[3], Carys Lippiatt[1], Andrew Lewington[1], Mark Ruddock[3], John Lamont[3], Roz Banks[2]

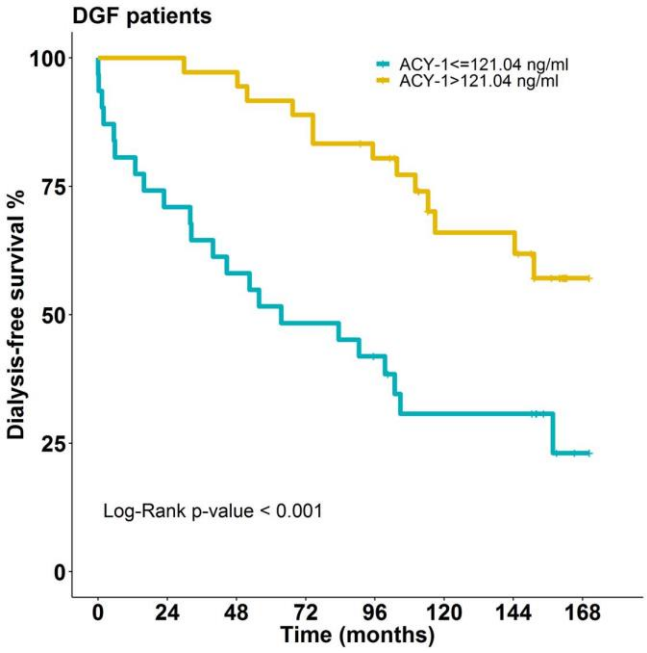
[1]St. James' University Hospital, Leeds, United Kingdom. [2]University of Leeds, Leeds, United Kingdom. [3]Randox Laboratories Ltd, Crumlin, United Kingdom

Introduction: Our previously published work identified early (day 1-3) aminoacylase-1 (ACY-1) as a potential biomarker with early predictive/diagnostic and prognostic utility in delayed graft function (DGF) after kidney transplantation. We report on the successful transition of ACY-1 from the laboratory to an industry platform, with long term follow-up data confirming ACY-1 has potential in guiding early management of suspected DGF, and in prognostic stratification after DGF.

Methods: The original research-grade ELISA was transferred to a newly developed and validated industry biochip-based platform (Randox Evidence Investigator). Previously tested samples were re-analysed on this platform. Follow-up data on patients was updated. Early diagnostic utility of ACY-1, including in combination with other known clinical markers, was examined, together with patient and graft survival

Results: 379 day 1 to 3 post-transplant serum samples were available from 237 renal transplant patients, median age 47.4 years, 63% male. Transplant types: DBD 54% DCD 26% LD 20%. Median follow-up 12.87 years (IQR 12.12-13.54). Excellent correlation between the original ELISA and biochip results was seen (r= 0.95; p

Figure 1:



Conclusion: ACY-1 is a potentially useful biomarker in DGF after kidney transplantation. Previous positive findings are confirmed with significantly extended follow-up. Evaluation in a large independent cohort, and multiplexing of ACY-1 with additional biomarkers, will be explored next. This study also demonstrates the successful translation of laboratory based discovery and validation of proteomic biomarkers into industry for future clinical use.

MP02

Preconditioning protects against ischaemia reperfusion injury through modulation of the matrix profile

Charlotte Brown[1], Usman Khalid[2], Emma Woods[1], Lucy Newbury[1], Irina Grigorieva[1], Gilda Pino-Chavez[1], Robert Steadman[1], Donald Fraser[1], Rafael Chavez[2], Soma Meran[1]

[1]Cardiff University, Cardiff, United Kingdom. [2]Cardiff Transplant Unit, Cardiff, United Kingdom

Introduction: Ischaemic preconditioning (IPC) reduces renal ischaemia-reperfusion injury (IRI) in-vivo, but mechanisms are not fully understood. We characterised the hyaluronan 'profile' in a model of acute kidney injury, to identify a possible underlying mechanism for IPC. Hyaluronan (HA) is a major polysaccharide of the extracellular matrix. Ordinarily, HA is limited to the medulla and undetectable at the renal cortex. In pathology, HA accumulates in the cortex and correlates with renal outcomes, possibly mediated through CD44, the predominant HA receptor. HA synthesis occurs at the plasma membrane, dependent on the HA synthases; HAS 1/2/3. Our hypothesis is that IPC prevents HA formation and/or assembly into a pro-inflammatory state through the inhibition of the pro-fibrotic synthase HAS2 and CD44 receptor expression.

Methods: A rat model of bilateral IRI was used, whereby both renal pedicles were clamped for 45 minutes. Male Lewis rats (n=25) were assigned to IRI, sham or preconditioning. Preconditioned rats underwent pulsatile IPC (3 cycles of ischaemia and reperfusion) prior to IRI. Kidneys were retrieved at 48 hours and assessed histologically, including antibody-specific immunohistochemistry. Serum creatinine was measured at baseline and at 48 hours. RT-qPCR was performed on whole kidney tissue.

Results: IRI was characterised by: marked histological damage including acute tubular necrosis and endothelial cell loss; and increased serum creatinine. In contrast IPC significantly reduced the histology scores and serum creatinine ($p < 0.05$). In response to IRI, the expression of HAS1/2, TSG-6 (HA-binding protein), HYAL2 (hyaluronidase) and CD44 was significantly increased. However, the application of IPC reduced the overexpression of both HAS2 and CD44 ($p < 0.0001$). Preliminary immunohistochemistry demonstrated relocated expression of both HAS1 and HAS2 from the medulla to the renal cortex.

Discussion: The reno-protective effect seen in this model was associated with modification of the HA 'profile', by preventing overexpression and relocation of key fibrotic mediators, namely HAS2 and CD44.

MP03

Disease modelling of normal and cirrhotic liver organoids

Foad Rouhani[1], Olivia Tysoe[1], Kourosh Saeb-Parsy[1], Fotios Sampaziotis[2], Ludovic Vallier[1]

[1]Department of Surgery, University of Cambridge, Cambridge, United Kingdom. [2]Department of Medicine, University of Cambridge, Cambridge, United Kingdom

Introduction: Organoids are three dimensional cellular structures, composed of multiple cell types and which enable in vitro disease modelling. Non-alcoholic fatty liver disease (NAFLD) is increasing in prevalence and is projected to become the most common indication for liver transplantation in the future. The mechanisms behind how liver damage occurs during NAFLD and the implications for genetic stability in the liver are largely unknown. As a proof of principle, we generated biliary organoids from normal and cirrhotic liver biopsies and compared cellular composition, differentiation capabilities and transcriptional profiles.

Methods: Needle biopsies were taken of declined organ donor livers and cirrhotic NAFLD patients at time of explant during liver transplantation. The tissues were processed and plated in culture media promoting intra-hepatic biliary cells which self-renew in Matrigel. Organoids were then individually picked and expanded. Further assessments included single cell clonal expansion, expression of hepatocyte and cholangiocyte markers and proliferation capabilities.

Results: Organoids were generated successfully from both healthy and cirrhotic biliary tissue with organoids forming after 4 days in culture. All organoids showed similar cell compositions on immunohistochemistry and flow cytometry. Cirrhotic organoids showed more genetic aberrations and showed features of NAFLD.

Discussion: The derivation system used to generate organoids from liver biopsies is reliable, robust and efficient. The cirrhotic organoids could be useful to model NAFLD in vitro and also to understand the mechanisms leading disease progression toward cancer.

MP04

Salt augments in vitro IL-17 responses in kidney transplant recipients

Rhys Evans, Stephen Walsh, Alan Salama

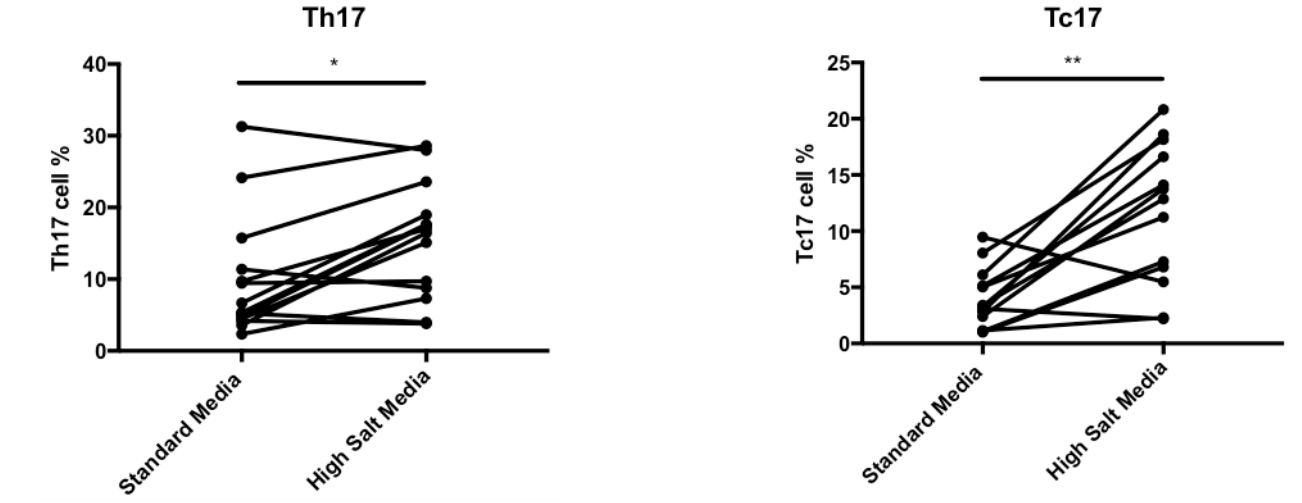
UCL Centre for Nephrology, London, United Kingdom

Introduction: Adherence to a low salt diet has been shown to improve long term outcomes in kidney transplant recipients (KTRs), but the mechanism of this effect is unknown. Salt is now recognized as having a direct effect on multiple immune cells, including Th17 and Tc17 cells, which are implicated in acute and chronic allograft rejection. We investigated how salt may affect *in vitro* IL-17 responses in KTRs on standard immunosuppression.

Methods: Peripheral blood mononuclear cells (PBMCs) were isolated from KTRs (>3 months post transplantation) and healthy controls, and cultured for 7 days under Th17 polarising conditions in standard media (Na concentration 133mmol/l) and in media supplemented with 40mM NaCl ('high salt media'). Th17 and Tc17 cells were analysed with fluorescence-activated cell sorting, and supernatant IL-17 concentrations were measured via an enzyme-linked immunosorbent assay. Cell populations and IL-17 concentrations were compared between standard and high salt media, and KTRs and controls.

Results: 14 KTRs (age 53 ± 14 years; median creatinine 108µmol/l) and 10 controls were included. All KTRs were on immunosuppression (13 maintenance calcineurin inhibitor with/without antiproliferative; 1 sirolimus monotherapy). In KTRs, Th17 cells accounted for 9.9 ± 8.5% of CD4+ cells in standard media and 15.5 ± 7.9% in high salt media (p=0.0134; **Figure**). Tc17 cells accounted 4.0 ± 2.6% of CD8+ cells in standard media and 11.6 ± 6.3% in high salt media (p=0.0017; **Figure**). Supernatant IL-17 concentrations were 3.3 ± 3.9ng/ml and 6.3 ± 7.6ng/ml in standard and high salt media respectively (p=0.0046). Th17 and Tc17 polarisation were greater in KTRs than controls in high salt conditions, whereas IL-17 production was greater in controls.

Figure: Th17 and Tc17 cell polarisation in KTRs in standard and high salt conditions



Discussion: Salt increases pro-inflammatory IL-17 responses in KTRs, despite *in vivo* immunosuppression. Whether salt restriction may be used to reduce immune mediated allograft injury in KTRs is to be investigated.

MP05

Validation of fingerprick microsampling for tacrolimus and creatinine as an alternative to venous blood

David Marshall[1], Monique Burgen[2], Catherine Byrne[2], Jon Jin Kim[2], Brian Keevil[1]

[1]Department of Clinical Chemistry, Wythenshawe Hospital, Manchester, United Kingdom. [2]Nottingham University Hospitals, Nottingham, United Kingdom

Introduction: Current practice requires regular venous blood samples for monitoring of tacrolimus levels post renal transplant. For paediatric patients this can be uncomfortable and require regular visits to hospital, which may have an impact on school performance and be inconvenient for parents or carers. Mitra volumetric absorptive microsamplers (VAMs) are a viable alternative to dried blood spots and absorb a fixed amount of blood (10 µL) from a finger prick. They can be sent through the post and upon arrival in the laboratory re-constituted for analysis. The aim of the study was to develop and validate LC-MS/MS assays for tacrolimus and creatinine analysis using VAMs in the same sample preparation procedure.

Method: Tacrolimus and creatinine LC-MS/MS assays were validated for use with VAMs according to FDA guidelines. Mitra samples were taken concurrently with venous blood samples (lithium heparin and EDTA) to allow their comparison. Shared sample preparation for both tacrolimus and creatinine was carried out in a 96 deep-well plate. Mass spectrometric analysis was then carried out for tacrolimus followed by re-injection of the sample extracts for creatinine analysis.

Results: Comparison of 35 Mitra samples with our in use LC-MS/MS assay for tacrolimus showed a minimal bias of 0.05 µg/L, 95% CI were -0.3 to 0.4 µg/L. Results were highly correlated (R^2=0.98, p<0.05, Figure1). Comparison of 41 plasma and Mitra samples for creatinine using a fully validated LC-MS/MS assay showed a bias of 3.3 µmol/L, 95% CI were -2.6 to 9.1 µmol/L. Results were highly correlated (R^2=0.98, p<0.05, Figure2).

Conclusion: We have developed assays for tacrolimus and creatinine using the Mitra microsampler and believe this approach provides a viable alternative to repeated venepuncture for TDM. This method opens up the opportunity for patients to do the monitoring of their own kidney function at home.

Figure 1:

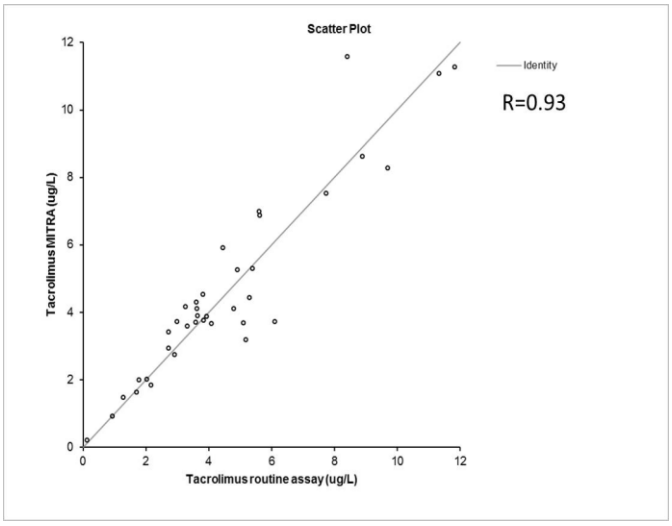
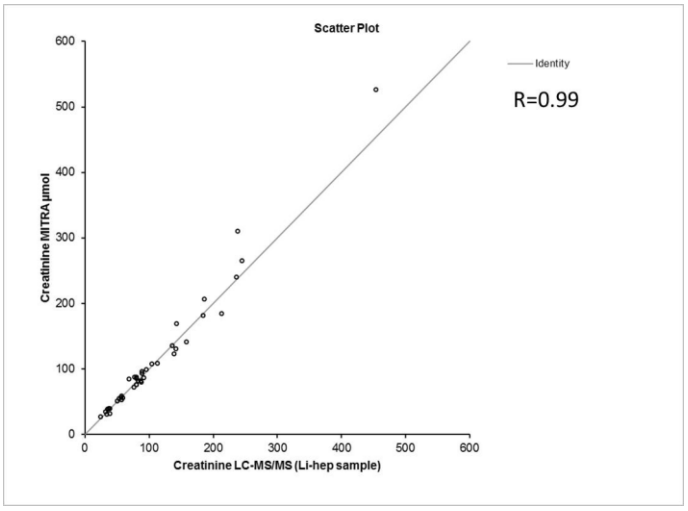


Figure 2:



MP06

First UK clinical experience of the molecular microscope (MMDx™) in the kidney transplant clinic

Christopher Lawrence[1,2], Sathia Thiru[2], Ananda Manoj[1], Sarah Fluck[1]

[1]The Lister Hospital, Stevenage, United Kingdom. [2]Addenbrookes Hospital, Cambridge, United Kingdom

Introduction: Molecular diagnostic methods are now included in the Banff classification of kidney transplant pathology. Traditional histopathology may be limited by intra/inter pathologist variation. The Molecular Microscope (MMDx™) uses microarrays to detect gene transcripts in pathology samples from transplanted organs. We report the first UK experience of using MMDx™ in the kidney transplant clinic.

Methods: 22 biopsies were performed in 20 patients consented for renal transplant biopsy and molecular testing. Samples went simultaneously for MMDx™ (Kashi Laboratory, Portland, OR) and conventional histopathlogy (13M:7F; Age 53±15 years, Median ABDR MM 3 (0-5), 13 DD/5 LD/1 SPK/1 ABOi). Time since transplant was 78.8±73 months. Indication for biopsy 'for cause' (20/22 including 2 re-biopsied post treatment), 1 non-adherence and 1 pre-conception). Histopathology was reported by the on-call histopathologist. Inter-pathologist variation was also assessed.

Results: MMDx™ results were available within 50 hours c.f. 24 hours for light microscopy and 48 hours for immunohistochemistry. Initial histopathological diagnoses were of rejection in 6/22 samples. Additionally MMDx™ identified moderate mixed rejection in the non-adherent patient whereas light microscopy was non-specific.

	Original Diagnosis	**Review Diagnosis**	**MMDx™**
1	Suspicious for Banff 1a	Banff 1a	Severe TCMR
2	Banff 1a	No Rejection, IFTA	No Rejection, IFTA
3	Banff 1a	Banff 1a	No Rejection, IFTA
4	Banff 1b	Banff 1b	Severe TCMR Mild ABMR
5	Banff 2a /?AMR	Banff 2a /?AMR	Severe TCMR
6	cAMR	cAMR	Severe ABMR and TCMR

Discussion: MMDx™ provides a powerful new tool in assessing kidney transplant dysfunction. Results are available in a similar time-frame to conventional methods. MMDx™ correlates well with histopathology. MMDx™ detects gene expression (upstream of damage) rather than downstream histopathological consequences. MMDx™ is limited by being unable to detect glomerulonephritis. The role of MMDx™ in everyday practice is to be established but its usefulness in categorising rejection reproducibly in clinical trials is clear.

MP07

Interleukin-2 receptor antibody induction therapy in standard-risk renal transplant in tacrolimus era: UK registry data

Hatem Ali[1,2], Ajay Sharma[1,3], Ihab Shaheen[1,4], Jon Jin Kim[1,5], Mohsen El Kosi[1,6], Ahmed Halawa[1,7]

[1]Institute of Medical Sciences, Liverpool, United Kingdom. [2]Royal Stoke University Hospitals, Stoke-on-Trent, United Kingdom. [3]Liverpool university, Liverpool, United Kingdom. [4]Royal hospital for sick children, Glasgow, United Kingdom. [5]Nottingham children hospital, Nottingham, United Kingdom. [6]Doncaster Royal Infirmary, Doncaster, United Kingdom. [7]Sheffield Kidney Institute, Sheffield, United Kingdom

Introduction: Our study aims to assess outcomes of IL-2 antagonist induction therapy regarding eGFR rate, patient and graft survival in standard risk population in tacrolimus era using the British renal transplant registry data.

Methodology: The study population involved all renal transplant patients from 2000 till 2015 who were registered in the UK transplant registry. Inclusion criteria involved all standard risk transplant patients who received tacrolimus and mycophenolate mofetil (MMF) on discharge and were maintained on the same medications for 2 years post-transplant. We used inverse probability weights (IPW) to adjust different covariates between the groups. Covariates included in the IPW analysis were recipient and donor age and sex, cold ischemia time, number of transplants, PRA, delayed graft function, HLA mismatch, steroid-free regimes, baseline eGFR, recipient ethnicity, extended criteria donor and donor type. Survival analysis for adjusted data and treatment effects model were used to assess outcomes.

Results: 3600 patients were included. Two groups were identified; induction group (n=2860) no-induction group (n=740). There was no significant difference between both groups regarding patient survival at 2 years (P=0.19) and 5 years (P=0.44) follow up, graft survival at 2 years (P=0.38) and 5 years follow up (P=0.56) and an eGFR rate at 1-year post-transplant (P = 0.2). In patients who received triple immunotherapy, there was no significant difference regarding graft survival at 2 years follow up (P=0.97) between induction and no-induction groups or in eGFR rate at 1-year post-transplant (P=0.2). In patients who received steroid-free regimen, there was no significant difference (P=0.33) in graft survival at 2 years follow up between induction and no-induction groups or in eGFR rate at 1-year post-transplant (P=0.65).

Conclusion: In standard risk renal transplant population, IL2 antagonist induction therapy doesn't influence eGFR rates at 1-year post-transplant, doesn't improve graft or patient survival outcomes at 2 years and 5 years post-transplant.

MP08

Renal transplant histopathological score at implantation and 3 months: association with graft outcomes 1-year post-transplantation

Rachel Hung[1], Alexander Bell[1], Kerry-Lee Rosenberg[1], Benedict Phillips[2], Michael Sheaff[1], Abigail Lee[1], Raj Thuraisingham[1]

[1]The Royal London Hospital, London, United Kingdom. [2]Guy's and St Thomas NHS Foundation Hospital, London, United Kingdom

Introduction: Implantation biopsies are commonly performed to determine baseline status and predict long-term allograft outcome. However, the prognostic capacity of these biopsies is controversial. In our unit, a protocol renal biopsy is also performed 3 months post-transplant. We investigated whether histopathological scores at implantation, 3 months and change in score between both biopsies (delta score) correlated with renal outcomes.

Methods: We investigated adult recipients of a single kidney transplant between January 2015 and December 2016. Biopsies from time zero and 2 months were reviewed and assigned a Remuzzi (R) score by two consultant histopathologists. Data collected included donor and recipient variables, graft outcomes at 3 months and 1 year (urine PCR and eGFR), biopsy prove rejection episodes, degree HLA mismatch, induction immunosuppression, patient survival and death censored graft survival (DCGS). Recipients were grouped according to R score threshold (group A

Results: During the study period, 152 single kidney transplants occurred (Live donor 29%, DBD 48%, DCD 23%). Median recipient age (range) was 49 (20-73) years. Median R score (range) was 2 (0 – 6), 3 (0 – 8) and 1 (-4 – 7) at implantation, 3 months and delta score respectively. Group B was associated with a lower eGFR (p=0.01) and also biopsy proven rejection (p=0.04) at 1 year compared to group A. A delta score of 1 was associated with a reduction in eGFR of 3.2mls/min/1.73m at 1 year (p< 0.001). R score was not associated with DCGS or patient survival.

Discussion: The initial histopathological score and more strikingly, the change in scores from implantation to 3 months impacts eGFR at 1 year post transplantation. Consideration should be given to performing protocol biopsies routinely at 3 months to further inform graft outcomes.

MP09

Antibody incompatible transplantation in the UK: risk aversion or a new metric of success of the UK Living Donor Sharing Scheme?

Miriam Manook[1], Sue Fuggle[2], Rachel Johnson[3], Lisa Burnapp[3], Nizam Mamode[1]

[1]Guy's Hospital, London, United Kingdom. [2]Oxford University Hospitals, Oxford, United Kingdom. [3]NHS Blood & Transplant, Bristol, United Kingdom

Objectives: Antibody incompatible transplantation (AIT) is established worldwide as feasible and successful for patients with end stage kidney disease (ESKD) with Human Leucocyte Antigen (HLAi) and ABO blood group (ABOi) incompatible donors. For such patients, participation in the UK Living Kidney Sharing Scheme (UKLKSS) is recommended before AIT. We wanted to understand the way in which clinicians make decisions on entry into and exit from the UKLKSS.

Methods: An electronic survey was sent to all UK renal transplant centres (n=24), in 2014, and again in 2018, following changes to the UKLKSS. Questions focused on entry & duration in the UKLKSS for HLA and ABO incompatible pairs, and provision of ABO, and HLAi within that centre.

Results: Between 2014 & 2018, the size & success of the UKLKSS increased, while ABOi and HLAi numbers declined. Patients registered in the UKLKSS are discussed regularly but, with variable frequency. . For unsuccessful patients in the UKLKSS, the duration of scheme entry and decision to proceed with AIT varies by centre. ABOi transplantation is offered in 96% of centres. Compared to 2014, in 2018 50% fewer units consider direct ABOi transplantation for unsuccessful pairs with ABO titres of 1:512 or more. Similarly, in 2014 direct HLAi transplantation was offered in 58% of centres, in 2018 this had fallen to 37%. In 2018, more centres reported leaving HLAi pairs in the UKLKSS indefinitely if antibody levels were deemed prohibitive by their centre. Interestingly, in 2018, 25% of centres report offering a combination of antibody removal and UKLKSS, while a further 33% would consider using this approach.

Conclusions: With the increasing innovation and success of the UKLKSS, there are fewer direct HLAi and ABOi transplants taking place. There is greater utilization of delisting & combined UKLKSS + AIT, but a general trend towards risk aversion is observed.

MP10

Effect of CIT on outcomes of DBD and DCD donor kidney transplants: an updated registry analysis

Maria Ibrahim[1,2], Lisa Mumford[1], John Forsythe[3,1], Chris Watson[4], Chris Callaghan[2,1]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]Guy's and St Thomas' NHS Trust, London, United Kingdom. [3]Royal Edinburgh Infirmary - NHS Lothian, Edinburgh, United Kingdom. [4]Addenbrooke's Hospital, Cambridge, United Kingdom

Introduction: Up-to-date knowledge of the impact of cold ischaemic time (CIT) on kidneys with differing characteristics is essential in order to enable optimal organ utilisation decisions. This study aims to: 1) describe CIT trends over the last decade; 2) identify the effect of CIT on the outcomes of kidneys with varying donor characteristics.

Methods: Data were obtained from the UK Transplant Registry on deceased donor adult single kidney-only transplants between 1 January 2000 and 31 December 2017. Machine perfused kidneys were excluded. Kidney 'quality' was quantified using the new UK Kidney Donor Risk Index, to be used in the 2019 Kidney Offering Scheme. Univariate and multivariable analyses were conducted.

Results: CITs of kidney transplants from donation after brain death (DBD) and donation after circulatory death (DCD) donor kidney transplants have both dramatically reduced (Figure 1). Univariate analysis of DCD donor kidney transplants showed decreasing death-censored graft survival (DCGS) when CITs exceeded 12 hours (p=0.0003). Prior to 2006, DBD donor kidneys had reduced DCGS with CITs >18 hours; however, surprisingly, transplants after 2006 showed no such CIT threshold (Figure 2). Multivariable Cox proportional hazards models correcting for donor, recipient, and immunological factors were built; increasing CIT was independently associated with reduced DCGS for DCD donor kidney transplants but not for DBD donor transplants. When kidneys from the highest risk UKKDRI quartile were considered, the impact of increasing CITs on univariate DCGS were unchanged for both DCD and DBD donor organs.

Discussion: Multiple efforts on individual and organisational levels have led to considerable reductions in CITs. This updated registry analysis confirms that a CIT threshold for DCD donor kidneys still exists. The effect of CIT of DBD donor kidney transplants has changed over time for reasons that are currently unclear. These findings should help inform clinical practice in the UK.

Figure 1: CIT trend for DBD and DCD donor kidney transplants

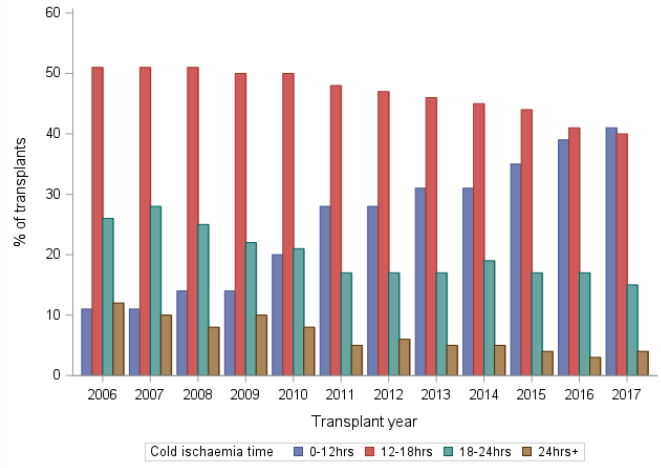
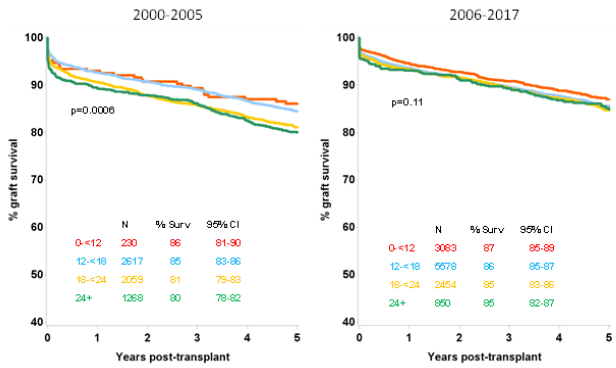


Figure 2: Kaplan Meier survival graphs of 5-year death-censored graft survival of DBD donor kidney transplants



MP11

UK national outcomes of transplants from paediatric donors: 10 years' experience

Muhammad Arslan Khurram, Nikolaos Karydis, Chris Callaghan, Ioannis Loukopoulos, Pankaj Chandak, Theodoros Kasimatis, Francis Calder, Nizam Mamode, Nicos Kessaris

Department of Transplantation, Guy's and St. Thomas NHS Foundation Trust, London, United Kingdom

Introduction: Paediatric donors have been contributing to the kidney donor pool but there are concerns regarding the small nephron mass, technical issues including risks of thrombosis and long-term outcomes. We present UK national outcomes data for paediatric kidneys.

Methods: Retrospective analysis of NHSBT database for paediatric kidney donors from 2007-2016. The cohort of paediatric donors was further divided into ≤ 5 and >5 years for analysis.

Results: Total of 631 paediatric (<18 years) kidney transplants were performed in the study period (single and en-bloc).

	En-bloc				Single			
Type	DBD		DCD		DBD		DCD	
Age of donor	≤5 years	>5 years	≤5 years	>5 years	≤5 years	>5 years	≤5 years	>5 years
No (%)	46 (97.9%)	1 (2.1%)	35 (94.6%)	2 (5.4%)	15 (3.9%)	371 (96.1%)	17 (1.2%)	159 (98.8%)

There were no statistical differences in the recipient age (36.0years v 35.9years), cold ischaemic times (14.2hours v 15.1hours) or the anastomotic times (39.1min v 38.8mins) between ≤ 5 and >5-year-old donor groups. The graft function (immediate, DGF or primary non-function rates) and the 12 months eGFRs (82.4 v 78.0) mL/min/1.73 m^2 were also similar. 82.7% of the en-bloc kidney transplants were from donor aged ≤5 years old. The graft survival rates were similar between the two donor age groups, between en-bloc and single kidney transplants and among donor types (DBD v DCD); overall and in single kidney groups. En-bloc DCD kidneys had worse graft survival (p 0.0007) compared to DBD donors.

Conclusion: Paediatric kidney donors remain a precious source of renal allografts with excellent one-year eGFRs. Despite concerns, the outcomes from small (≤ 5years old) paediatric donors are similar to those of older paediatric donors. Careful selection of donors and recipients is warranted when using en-bloc kidneys from small DCD donors.

MP12

Long-term outcomes of renal and simultaneous pancreas and kidney transplantation from paediatric donors

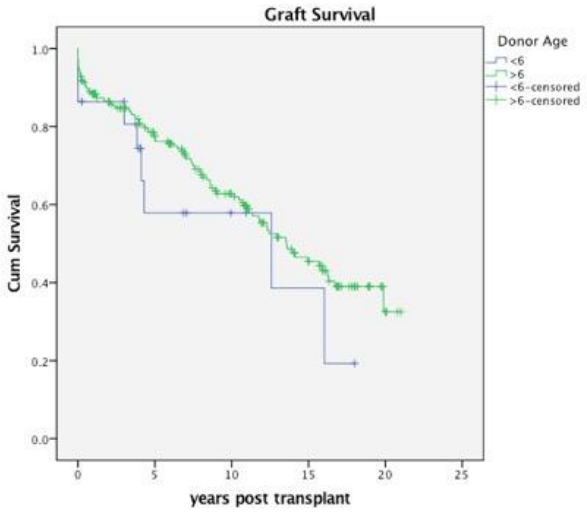
Muhammad Arslan Khurram[1,2,3], Pankaj Chandak[1,2,3], Olivia Shaw[4], Ioannis Loukopoulos[1], Chris Callaghan[1,2,3], Theodors Kasimatis[1], Nikolaos Karydis[1], Jelenan Stojanovic[3], Stephen Marks[3], Sheila Boyle[3], Helen Jones[2], Nick Ware[2], Grainne Walsh[2], Martin Drage[1,2,3], Jonathon Olsburgh[1,2,3], Francis Calder[1,2,3], Geoff Koffman[1,2,3], Nizam Mamode[1,2,3], Nicos Kessaris[1,2,3]

[1]Department of Transplantation, Guy's & St Thomas NHS Foundation Trust, London, United Kingdom. [2]Paediatric Nephrology and Transplantation, Evelina London Children's Hospital, London, United Kingdom. [3]Paediatric Nephrology and Transplantation, Great Ormond Street Hospital, London, United Kingdom. [4]Clinical Transplantation Laboratory, Guy's & St Thomas' NHS Trust, Viapath, London, United Kingdom

Introduction: Paediatric donors have been contributing to the kidney donor pool but there are concerns regarding the small nephron mass, technical issues (including risks of thrombosis) and long-term outcomes. We present our experience of transplantation from paediatric donors from a single centre.

Methods: Retrospective, single centre analysis of all recipients undergoing transplantation from paediatric donors (1997-2018)

Results: 237 paediatric donors; 99 females. Mean donor age 12.5 years (SD 4.2). 192 (81%) DBD donors while 45 (19%) were DCD. Mean recipient age was 23.4 years (SD 15.8). 12 (5.1%) kidneys were transplanted as en-bloc grafts, 45 (19%) as simultaneous pancreas kidney transplants and 180 (75%) were single-kidney only transplants. Mean donor age for the en-bloc kidney transplants was 2.3 years (SD 1.56) and the recipient age was 22.3 years (SD 10.6). Patient and renal allograft survival was 100% and 80% respectively for en-bloc kidneys (two cases lost to follow up) at mean follow-up of 3.9 years (SD 3.5). 36/45 (80%) of the renal allografts from SPK transplants were functioning, 2 patients (4.4%) had died with functioning kidney allograft and 7 (15.6%) had graft failure at last follow up (follow up 6.1 years, SD 4.6). 87/180 (48.3 %) of the single renal-only grafts were functioning, 15 patients (8.3%) had died with a functioning graft and 74 (41.1%) suffered graft failure at the last follow up (8.8 years, SD 6.5). There was no difference in the graft survival outcomes of donors ≤ 6 or >6 years of age on Kaplan-Meier analysis (p=0.293).



Conclusions: Despite the concerns, the long-term graft outcomes of kidney transplants from paediatric donors remain excellent. There is no difference in the long-term outcomes between donors ≤6 years and >6 years of age. Careful selection can lead to acceptable long-term outcomes and is a valid source of increasing the donor pool.

MP13

Twelve years experience of kidney transplantation in children weighing <15kg

Muhammad Arslan Khurram[1,2,3], Pankaj Chandak[1,2,3], Zainab Arslan[2], Faisal Jamshaid[1], Chris Callaghan[1,2,3], Jonathon Olsburgh[1,2,3], Martin Drage[1,2,3], Francis Calder[1,2,3], Geoff Koffman[1,2,3], Helen Jones[2], Nick Ware[2], Grainne Walsh[2], Sheila Boyle[3], Stephen Marks[3], Nizam Mamode[1,2,3], Jelena Stojanovic[3], Nicos Kessaris[1,2,3]

[1]Department of Transplantation, Guy's & St Thomas NHS Foundation Trust, London, United Kingdom. [2]Paediatric Nephrology and Transplantation, Evelina London Children's Hospital, London, United Kingdom. [3]Paediatric Nephrology and Transplantation, Great Ormond Street Hospital, London, United Kingdom

Introduction: Renal transplantation is the gold standard treatment for end-stage kidney disease. There are increased challenges in small paediatric renal transplant recipients especially when placing an adult kidney into a small abdomen. This study aims to compare outcomes in children <15kg and to ≥15kg weight at the time of transplant.

Methods: Data was retrieved from a prospectively collected database apart from the weight at time of transplant and the last eGFR, which was collected retrospectively from two large paediatric kidney transplant units in the UK.

Results: 453 children, with a kidney transplant between 2005 and 2016, were reviewed. Group A (<15kg) included 68 cases (median age 2 years, IQR 2) and Group B (≥15kg) had 385 (median age 12 years, IQR 6, p<0.001). 64 cases from Group A have a functioning graft at last follow up (3 failed, 1 died) and 351 in Group B (32 failed, 2 died). The median follow up was 2 years (IQR 3) for Group A and 2 years (IQR 4) for Group B. Median donor age (years) was 36 (IQR 12) and 41 (IQR 12) for Group A and B respectively (p<0.001). Group A included 57 live donors and 11 DBD donors. Group B had 233 live donors, 141 DBD and 11 DCD donors. All recipients in Group A were first transplants and 36 recipients in Group B were re-transplants (p=0.009). The last median eGFR was 65 (IQR 26.5)ml/min/1.73m^2 and 52 (IQR 24) in Group A and B respectively (p<0.001). There was no difference in graft and patient survival outcomes following transplantation in <15kg and ≥15kg paediatric recipients on Kaplan-Meier analysis (p=0.533 and 0.369).

Discussion: Despite the obvious recipient differences, patient and graft survival was comparable between children <15kg and ≥15kg in our cohort. Transplantation in small children is feasible with excellent outcomes in specialised units.

MP14

Arterio-enteric fistulae complicating failed pancreatic grafts: a case for prophylactic transplant pancreatectomy?

Sarah Cottee[1], Gail Defries[1], Andrew Butler[1,2], Gavin Pettigrew[1,2], Neil Russell[1,2], Simon Harper[1], Vasilis Kosmoliaptsis[1,2], Asif Jah[1], Kourosh Saeb-Parsy[1,2], Christopher Watson[1,2]

[1]Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom. [2]University of Cambridge, Cambridge, United Kingdom

Introduction: Following a case of gastrointestinal haemorrhage due to an arterio-enteric fistula in a pancreas transplant recipient, we reviewed the incidence of this deadly complication.

Methods: Records of failed pancreas transplants since 2001 were reviewed; patients dying with a functioning graft were excluded. All were implanted intraperitoneally with arterial anastomosis to the common or external iliac artery, caval venous drainage and enteric exocrine drainage.

Results: 281 patients underwent SPK transplant between 1/1/2001 and 1/11/2018; 5 underwent re-transplantation. 40 pancreas grafts failed: 15 thrombosis; 9 recurrent “autoimmune” diabetes; 7 rejection; 5 unknown causes; 4 other causes. 28 patients died, 19 with a functioning graft. Five patients developed catastrophic gastrointestinal haemorrhage 59, 423, 542, 620 and 778 days after graft failure. Four had fistulae between the donor iliac artery graft and graft duodenum. Two had endovascular-covered stents placed in the recipient iliac artery to exclude the fistula before subsequent stent excision and replacement of the artery with a third part allograft artery. Two others died from haemorrhage whilst in hospital undergoing investigation. The fifth died in the emergency room with an exsanguinating rectal bleed (presumed diagnosis: arterio-duodenal fistula - autopsy pending). Organisms grown from the fistulating artery in the cases which underwent surgery were Vancomycin resistant enterococcus and an E. coli in one, and Klebsiella pneumoniae, Candida glabrata, Enterococcus faecalis and Staphylococcus haemolyticus in the other. In a third patient, Eikenella corrodens (a mouth commensal) was grown from blood taken just before death.

Discussion: 5/40 patients with a failed pancreas developed an arterio-enteric fistulae with 60% mortality; all grafts remained *in situ* after failure. No case occurred where there was autoimmune recurrence and the pancreas remained well vascularised. Failed pancreas grafts seem susceptible to arterio-enteric fistulation, raising the question whether the failed pancreas should be removed to prevent this potentially fatal complication.

MP15

Three-year patient and kidney graft outcomes using Expanded Criteria Donors (ECDs) or high UKKDRI criteria

Kalid Abdi Karim[1], Sam Turner[2], Kerem Atalar[3], Kiran Sran[3], Theodoros Kasimatis[3], Ioannis Loukopoulos[3], Nikolaos Karydes[3], Chris Callaghan[3], Nizam Mamode[3], Nicos Kessaris[3]

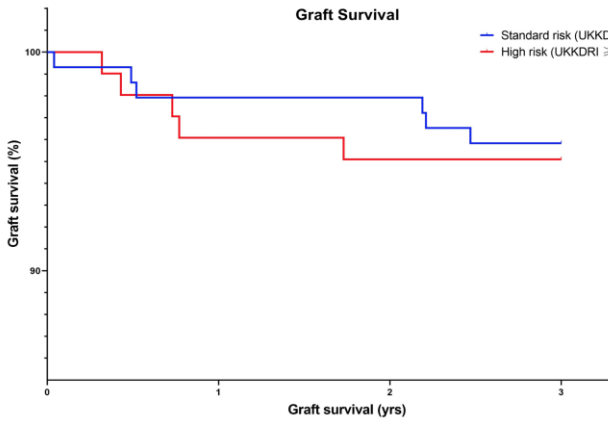
[1]King's College London, London, United Kingdom. [2]North Bristol NHS Trust, Bristol, United Kingdom. [3]Guy's and St Thomas Trust, London, United Kingdom

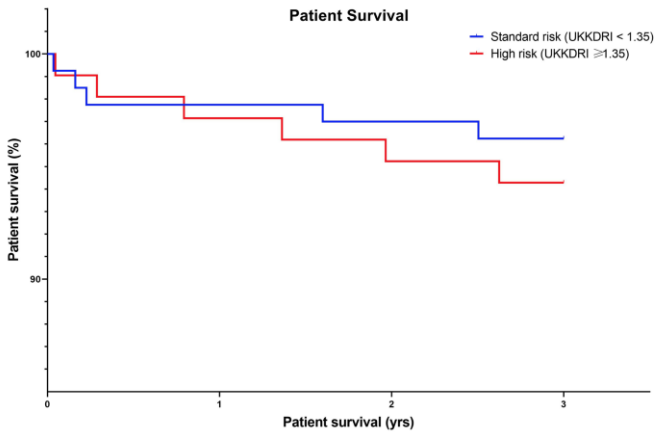
Introduction: ECDs are those aged ≥60 or aged 50-59 with 2 of: hypertension, death from cerebrovascular cause or terminal serum creatinine >133μmol/L. Another method of categorizing donors is using the UK Kidney Donor Risk Index (standard risk <1.35, high risk ≥1.35).

Methods: We analyzed all adult deceased donor (DD) kidney transplants performed at our center between 2012-2013 over 3 years. We compared outcomes using standard criteria donors (SCD) with ECDs as well as using UKKDRI.

Results: Of the 257 DD kidneys transplanted, 131(51%) were SCD kidneys and 126(49%) ECD. DGF occurred in 107 (41.6%) recipients. There was no significant difference between DGF in recipients who received SCD and ECD kidneys. 37% of SCD kidney recipients experienced DGF, whereas this was the case in 47% of ECD recipients. There was no difference between donor HTN (p=0.488), DM (p=0.533) and graft outcomes at 3 years. 10.3% SCD and 13.5% of ECD transplants failed after 3 years. Graft survival was 79.4% in SCD recipients and 78.4% in ECD recipients at 3 years. There was no difference between graft (p=0.321) and patient survival (p=0.371) between SCD and ECD recipients 3 years. The median UKKDRI for standard risk kidneys was 1.021 (IQR = 0.256) and 1.593 (IQR = 0.504) for high risk kidneys. Kaplan Meier analysis showed no difference between high risk and standard risk kidneys in terms of patient (log rank p=0.483) and graft survival (log rank p=0.776). Finally, there was no significant difference between the occurrence of DGF in standard and high-risk kidneys (p=0.455).

Discussion: Interestingly, there was no significant difference in patient and graft survival 3 years post transplantation in standard and high-risk kidney recipients using UKKDRI. 3-year graft and patient survival was also not significantly different between SCD and ECD kidney recipients. This can aid consenting of patients receiving ECD/high risk kidneys.





MP16

Comparing deceased donor kidney utilisation in the UK and US: what can we learn from each other?

Maria Ibrahim[1,2], Gabe Vece[3], Jenny Mehew[1], Rachel Johnson[1], Chris Callaghan[2], John Forsythe[4,5], Darren Stewart[3]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]Guy's and St Thomas' NHS Trust, London, United Kingdom. [3]UNOS, Richmond, Virginia, USA. [4]Royal Infirmary of Edinburgh - NHS Lothian, Edinburgh, United Kingdom. [5]NHSBT, Bristol, United Kingdom

Introduction: The importance of international comparisons in healthcare is well established. In transplantation, meaningful global comparisons in organ utilisation are lacking due to fundamental differences in organ offering systems and variations in donor types and demographics. This UK-US collaboration aimed to identify useful metrics of deceased donor kidney utilisation to facilitate shared international learning.

Methods: Data from the UK Transplant Registry and the OPTN database were analysed; deceased donors and kidney transplants from 01/01/2006 to 31/12/2017 were considered. To identify a comparable kidney 'Utilisation Rate' (UR), several denominators were assessed. Rates were stratified according to numerous parameters, including donor type and Kidney Donor Risk Index (KDRI), and system differences were also considered.

Results: Regardless of definitions, kidney URs have been steady in both countries for the last 5 years (Figure 1). The UK appears to have greater utilisation of retrieved kidneys and kidneys available from donors than the US; however, these metrics are not directly comparable due to important differences in kidney retrieval practices between the two countries. The donor age and KDRI of transplanted kidneys in the UK are higher than the US, though small paediatric kidney transplantation is more common in the US (Figure 2). Only 0.8% of kidneys transplanted in the UK were en bloc compared with 2.6% in the US. In 2017, 41% of utilised kidneys in the UK were from DCD donors (UR amongst recovered kidneys 84%) compared with 19% in the US (UR 79%). URs across KDRI deciles in the UK varied much less than the US (range 79%-97% versus 36%-99%).

Discussion: The donor age and KDRI distributions of transplanted kidneys differ markedly between the two countries; multiple mutual learning points were identified when considering utilisation behaviours. Finding a common metric for organ utilisation is challenging due to differences in organ retrieval practices and data recording.

Figure 1. Kidney 'utilisation rate' trends using varying denominators, 2006-2017

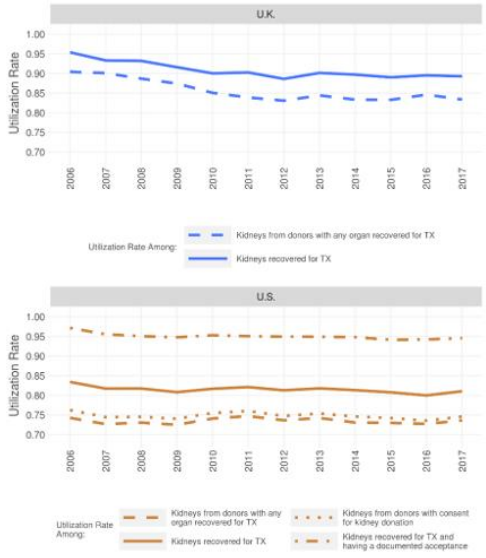
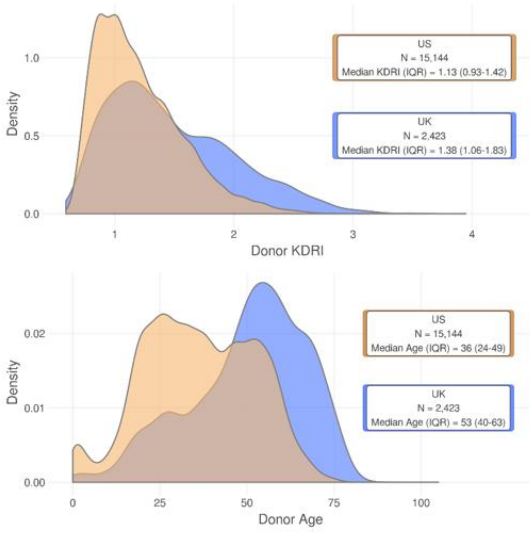


Figure 2. Overlaid density curves comparing KDRIs and donor ages of transplanted kidneys in 2017



MP17

The use of individual performance polygons to drive improvement at a level 1 hospital

Christopher Derry, Ian Thomas
Southmead Hospital, Bristol, United Kingdom

Introduction: The use of performance polygons has previously been used to measure hospital performance against a series of key performance indicators as set out in the potential donor audit. However, they do not allow for identification of individual performance that highlights excellence or poor performance that can then be addressed to encourage best practice. We have produced individual performance polygons for each ICU consultant at a level 1 hospital and compared them to our unit and national performance.

Methods: We collected data on every death on our ICU over a 3 year period identifying the consultant involved in the provision of end of life care. Where patients met the organ donation referral criteria measures of performance were identified as per The Actual and Potential Deceased Donation Report. These were then entered into a performance polygon alongside our unit's rates and national rates for the same performance indicators. Factors that may have prevented intended best practice were also identified.

Results: We were able to identify individuals whose performance was in line with best practice recommendations and provide feedback useful for the purposes of appraisal and revalidation. No evidence of consistently poor performance was identified.

Discussion: By providing individual feedback we have been able to provide evidence of performance in line with best practice recommendations. Individuals are able to use such feedback for the purposes of appraisal and revalidation. We also suggest that such positive feedback reinforces best practice and may be more likely to encourage future similar patterns of behaviour. Whilst we did not identify individuals whose performance fell below best practice recommendations the use of individual performance markers allows the use of targeted interventions where poor performance is identified.

MP18

Visual assessment of the quality of perfusion of deceased-donor kidneys after procurement: should we trust our eyes?

Dilan Dabare[1], James Hodson [2], Adnan Sharif[1], Neena Kalia[3], Nicholas Inston[1]

[1]Queen Elizabeth Hospital, Birmingham, United Kingdom. [2]University of Birmingham, Birmingham, United Kingdom. [3]University of Birmingham, Birmingham, United Kingdom

Introduction: Visual assessment of the quality of perfusion remains a fundamental, yet poorly evaluated, aspect of donor kidney appraisal. We aimed to evaluate the consistency of grading of perfusion and its association with organ utilisation and graft outcomes.

Methods: A retrospective analysis of all deceased-donor kidney transplants from 2000-2016 was performed using the UK Transplant Registry database. Perfusion quality was graded at retrieval and implanting as: 1 = good, 2 = fair, 3 = poor, 4 = patchy. Multivariable analyses were performed to determine whether grade of perfusion is an independent predictor of discard rates, delayed graft function/primary non-function (DGF/PNF) rates and graft survival.

Results: Analysis included 31,167 organs from 15,750 donors, of which 2,556 (8.2%) were discarded, most commonly due to 'poor perfusion' (15%). In transplanted organs (n=28,611), consistency of grading at retrieval vs. implanting centre was poor (Kappa=0.179), with only 17.2% of grade 4 organs retaining the same grade. Grade of perfusion at retrieval was independently associated with discard rates ($p<0.001$), which increased from 6.5% at grade 1, to 41.8% at grade 3, before falling to 27.1% at grade 4. Perfusion grade at retrieval was associated with DGF/PNF rates (6.6% vs. 2.8% for grade 3 vs. 1), but not long-term graft survival ($p=0.454$). However, perfusion grade at implanting was a significant independent predictor of both outcomes. DGF/PNF rates increased progressively with the perfusion grade at implanting ($p<0.001$). Graft survival declined significantly only between grades 1 and 3 ($p=0.002$), with grade 1 and 4 organs having similar outcomes (HR: 1.03, $p=0.764$).

Conclusions: Perfusion grading at retrieval has poor consistency with implanting grade and is associated with organ utilisation, despite not being associated with long-term outcomes. Outcomes become worse based on implanting grade 1-3 but not grade 4, suggesting the need for a re-evaluation of the grading system.

MP19

Reducing the impact of organ retrieval on daytime emergency operating lists at a level 1 hospital

Peter Sykes, Ian Thomas, Rachel Stone, Izzy Derrick, Sylvia Crump

Southmead Hospital, Bristol, United Kingdom

Introduction: There has been a 92% increase in deceased organ donation since 2008. Combined with the increasing length of the donor pathway retrieval at our institution was increasingly becoming a procedure that took place during 'daytime' hours when operating theatre utilisation was maximal. This led to retrieval taking place on the general surgical operating list with a perception that other emergencies were being delayed with subsequent increase in hospital length of stay for those patients. We undertook a number of steps to reduce the length of the donation process and restore organ retrieval to primarily an overnight procedure.

Methods: An audit of all organ retrievals in 2017-18 demonstrated that >90% took place during daytime hours. A number of interventions were undertaken to reduce the length of the donor pathway including pre made tissue typing and virology boxes, early tissue typing for patient's on the ODR, performing BSD testing before midday, establishing a defined blood set for the purposes of organ donation on the electronic requesting system, creating a BSD testing kit, early GP and coroner referral and 2 SNOD's working in parallel with one dedicated to family support

Results: An audit of retrieval times since these changes were introduced in June 2018 has demonstrated a reduction in the amount of time that retrieval takes place between 08:00 and 18:00

Discussion: We suggest that small changes in multiple steps can contribute to a reduction in the length of the donation pathway. This has led to less organ retrieval taking place during daytime hours and so reducing the impact on the general surgical operating list.

MP20

Organ donation in patients following out-of-hospital cardiac arrest

William Gaunt, James Hooker, Alistair Meikle

University Hospital Crosshouse, Kilmarnock, United Kingdom

Introduction: Survivors of out-of-hospital cardiac arrest who remain severely neurologically impaired, are a group of patients who may be considered for DCD [1-4]. Often this group of patients are on minimal cardiovascular and respiratory support prior to WLST, and there is a perception that time to death can be prolonged well beyond the warm ischaemic time-frame for donation to be feasible. Following a study by Tordoff and Bodenham [1], we were interested to see how our rates of DCD in patients who presented to our ICU after having suffered an OOHCA with severe neurological impairment (but not brainstem dead) compared to those published in their study.

Methods: Case-notes of patients admitted to our ICU following OOHCA were analysed between May 2015-May 2018. We utilised a data collection tool based on that of Tordoff and Bodenham [1]. We collected data on ventilator and cardiovascular support parameters immediately prior to WLST.

Results: We analysed 32 patients (19 male: 13 female). Median age: 60 years. Initial rhythms: asystole (11), VF (10), PEA (7) and unknown (4). Median time of collapse to ROSC: 32 minutes (4-100 mins). 25/32 (78%) patients died within hospital. 21/25 (84%) had WLST. Median time to asystole following WLST: 130 mins (5-8640 mins). 10/21 (48%) patients were referred for DCD, and 6/10 (60%) of families were approached for authorisation. Of six families approached two agreed (33%). Two patients proceeded to DCD. Analysis of cardiovascular and respiratory support parameters prior to WLST failed to determine predictive factors to indicate death was likely within a three hour time-frame.

Discussion: DCD rates appear to be higher in our ICU (2/32 vs 1/100) (6.25% vs 1%). As was previously indicated by Tordoff and Bodenham [1], our data further highlighted the difficulty in predicting those individuals who have suffered an OOCHA and who may be suitable candidates for DCD.

MP21

Method of transplant and other factors associated with *de novo* DSA development post lung transplant – what is the impact?

Lu Wang, Anders Andreasson, Christine Straughan, Andrew Sims, Kevin Brennan, Andrew Fisher, Stephen Clark, Gareth Parry, Karen Booth, John Dark

Freeman Hospital, Newcastle upon Tyne, United Kingdom

Introduction: Donor specific antibodies to human leukocyte antigens have been reported to adversely affect the outcomes of lung transplantation. This study aimed to identify risk factors for development of *de novo* DSA (*dn*DSA) within 1-year post-transplant and examine its impact on recipients' medium-term survival.

Methods: Recipients' age, single vs bilateral lung transplantation, pre-existing antibodies, *dn*DSA, method of transplantation (ECMO, off-pump or on-pump), primary graft failure (PGD) grade 3 within 72hrs, blood transfusion, post-op ITU stay, ECMO and renal support, and survival status were collected from the unit's database. Binary logistic regression was used to identify risk factors for developing *dn*DSA within 1-year post-transplant and multivariable Cox regression to identify risk factors for survival.

Results: From Jan 2012 to Oct 2017, 242 adults received lung transplantation and survived beyond 30-day post-op in our unit. Recipients dying within 30-day were excluded. 116 patients (47.9%) developed *dn*DSA within 1-year post-transplant. Transplantation performed with ECMO (p=0.005, OR 3.12, 95% CI: 1.42-6.84) is significantly associated with *dn*DSA within 1-year post-transplant. Age (p=0.006, OR 1.03, 95% CI: 1.01-1.05), PGD grade 3 within 72hrs (p=0.008, OR 2.79, 95% CI: 1.30-5.97), red blood cell transfusion (ppost-op renal support (p=0.020, OR 2.19, 95% CI: 1.13-4.23) are associated with worse medium-term survival. However, neither pre-existing antibodies (p=0.503) nor *dn*DSA (p=0.557) has an impact on survival.

Discussion: This study found that use of ECMO for lung transplant is associated with DSA development within 1-year post-transplant. This association has never been reported in the literature before. However, the presence of *dn*DSA has no impact on medium-term survival in this cohort. Further study is required to look at the effect of *dn*DSA on development of chronic lung allograft dysfunction and long-term survival.

MP22

The impact of DCD heart transplantation on the waiting list: a single centre experience

Aravinda Page, Rudolf Duehmke, Simon Messer, Sergio Barra, Marius Berman, Sai Bhagra, Jayan Parameshwar, Steven Tsui, Pedro Catarino, Stephen Pettit, Stephen Large

Royal Papworth Hospital, Cambridge, United Kingdom

Introduction: Heart transplantation from DCD donors has been practiced at our institution since 2015 and markedly increased our transplant activity. In this observational study, we explored the impact of DCD heart transplantation on waiting time for heart transplantation, need for mechanical circulatory support and waiting list mortality.

Methods: We interrogated our local transplant database for all patients listed for heart transplantation to include a period from March 2012 to March 2018. The first era (pre-DCD) included all patients listed in the 3 years before the introduction of DCD heart transplantation and the second era (DCD) included all patients listed in the 3 years after the introduction of DCD heart transplantation. To account for variances in the urgency listing process over the period, analyses were performed on cumulative waiting times. Continuous variables were analysed with a t-test and categorical variables with Fisher's exact test. Competing risk analysis was performed on outcomes of transplant and death on the waiting list with a modified likelihood ratio test.

Results: The introduction of DCD hearts was associated with increased heart transplant numbers, compared with the preceding three years with an increased probability of being transplanted from the waiting list in the DCD era. The waiting list mortality rate (deaths per 100 patient-years) was similar for the two eras, suggesting that the patients had a similar risk profile. There was a significant reduction in waiting time in the DCD era associated with a significant reduction in the death or the need for MCS on the waiting list.

Discussion: We have seen a significant increase in heart transplant activity and a reduction in the waiting time for heart transplantation. DCD heart transplantation may have the potential to reduce waiting list mortality and the need for mechanical circulatory support by increasing the pool of donor hearts that are available for transplantation.

Figure 1. Competing risk analysis comparing the time to transplant and death between the pre-DCD and DCD periods (death, p=0.44; transplant, p<0.01)

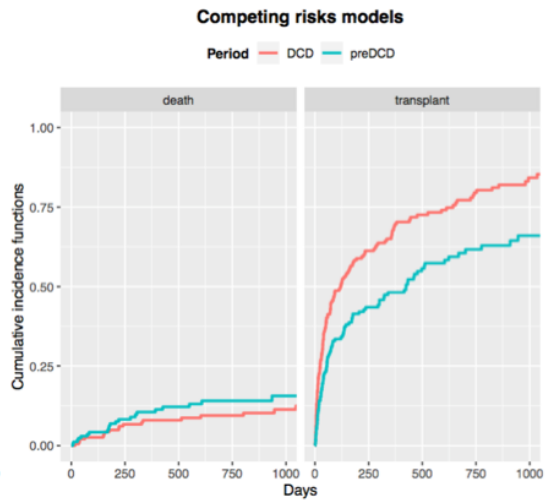


Table 1. Waiting list characteristics between Group 1 (pre-DCD era) vs Group 2 (DCD era) (All data expressed as numbers, *n* or mean, standard deviation)

	pre-DCD era	DCD era	P value
Patients listed	173	196	
Mean age	47 (14)	50 (14)	0.05
Total transplants (DCD transplants)	98 (0)	148 (43)	
Mean waiting time/patient (days)	287 (322)	203 (267)	0.006
Need for MCS while on waiting list	11 (6%)	6 (3%)	0.14
Deaths on waiting list	27 (15.6%)	19 (9.7%)	0.11
Death or need for MCS on waiting list	38 (22%)	25 (12%)	0.03
Death rate per 100 yr on W/L	19.8	17.4	

MP23

Bigger is better – oversizing may improve survival in single lung transplantation for pulmonary fibrosis

Kathrin Freystaetter[1], Jennifer Mehew[2], Sophie Tait[1], Omer Senbaklavaci[1], John Dark[1]

[1]Department of Cardiothoracic Surgery, Freeman Hospital, Newcastle Upon Tyne, United Kingdom. [2]Statistics and Clinical Studies, NHS Blood and Transplant, Bristol, United Kingdom

Introduction: Donor to recipient predicted total lung capacity (pTLC) ratio is used to guide size matching. Guidelines do not differentiate between underlying diseases. We aimed to assess if post-transplant outcomes for pulmonary fibrosis (PF) single lung transplant recipients is improved when receiving an oversized lung.

Methods: Data on all PF patients who received a first single or bilateral lung-only transplant in the UK between 2007 and 2016 were obtained from the UK Transplant Registry. Donor to recipient pTLC mismatch ratio was used to assign patients to three groups: <-20%, -20% to 0%, ≥0%. Post-transplant survival was assessed using Kaplan-Meier survival curves and log-rank tests. The pTLC mismatch ratio was further analysed as a continuous non-linear variable using an unadjusted Cox Proportional Hazards Regression model.

Results: 321 patients were included; 243 (76%) male, mean age 56 years. Mean donor pTLC was 5.7L, mean recipient pTLC 6.4L, mean pTLC mismatch ratio -10.1%. Kaplan-Meier analysis suggested no significant difference between mismatch categories upon 90 day (p=0.28) or 1 year (p=0.16) post-transplant survival, borderline significance 5 years post-transplant (p=0.08). No significant differences were found analysing the bilateral lung transplant cohort alone. Analysis of single lung recipients showed borderline significance at 1 year (p=0.07) and significant difference 5 years post-transplant (p=0.05). An unadjusted Cox Regression model was therefore applied to single lung transplant recipients only, demonstrating a significant non-linear effect of pTLC mismatch ratio at 90 days and borderline effect at 1 and 5 years post transplant (p=0.05, p=0.09 and p=0.06, respectively). The non-linear effect detected for 90 day post-transplant survival was such that the hazard of death decreases the larger the mismatch, until approximately ±20%, with a similar effect 1 and 5 years post-transplant.

Discussion: Oversizing donor lung allografts in patients receiving a single lung transplant for PF may improve survival in both the short and long term.

MP24

Successful utilisation of VA ECMO to transfer critically ill patients in the UK

Jason Ali, Alain Vuylsteke, Jo-Anne Fowles, Pedro Catarino, David Jenkins, Marius Berman

Royal Papworth Hospital, Cambridge, United Kingdom

Introduction: A national programme of veno-venous (VV) ECMO provision is now well established. Upon suitable referral, a specialist hospital will send a retrieval team to the referring hospital and if appropriate patients will be commenced on VV ECMO and transferred for ongoing care. There is no such service for patients with refractory cardiogenic shock. Here we present a series of patients retrieved with salvage VA ECMO examining feasibility and long-term outcomes.

Methods: Since 2012, a multidisciplinary team similar to our ECMO retrieval service attended 14 patients referred to us with refractory cardiogenic shock. Of these, 12 were instituted on VA ECMO support (6 peripheral and 6 central) and subsequently transferred to our centre. One patient was found to be brain stem dead on attendance, and the remaining patient had a chest drain inserted for large effusion and clinically improved requiring no further input.

Results: All 12 patients instituted on VA ECMO support were safely transferred to our centre. The diagnoses included: cardiomyopathy, myocarditis, post-cardiotomy cardiogenic shock, pulmonary embolism, b-blocker overdose, trauma and post-partum complications. The mean distance travelled was 110.3 miles. The median period of support on ECMO was 2.5 days. The median length of ICU stay was 17 days. Three patients recovered, three patients received urgent heart transplants and two underwent a pulmonary endarterectomy. Seven patients (58.3%) were discharged from our hospital. The 1-year and 5-year survival is 50%.

Conclusion: Our experience demonstrates the feasibility and survival benefit of a salvage VA ECMO retrieval service for a small number of selected patients with refractory cardiogenic shock who have no other treatment options. Patients can be safely transferred long distances, even with an open chest. We suggest that the current national respiratory ECMO service could be commissioned to support the transfer of those patients.

MP25

Severe acute kidney injury after cardiac transplantation is a marker of poor early outcome and impacts on late renal function – a UK cohort study

Lu Wang[1], Tengyao Wang[2], Sally Rushton[3], Gareth Parry[1], Neil Sheerin[1], John Dark[1]

[1]Freeman Hospital, Newcastle upon Tyne, United Kingdom. [2]University College London, London, United Kingdom. [3]National Health Service Blood and Transplant, Bristol, United Kingdom

Introduction: Severe acute kidney injury (AKI) requiring haemofiltration is associated with worse mortality post-cardiac transplantation, but its long-term renal consequences are not known. This study analysed its impact on the mortality and long-term renal function in adult cardiac recipients in the UK.

Methods: Age, gender, pre-op cardiac pathology, and diabetes mellitus (DM), survival status, peri-op renal function, and post-op haemofiltration of all adults who received cardiac transplantation between 1995 and 2017 in the UK, were retrieved from the UK Transplant Registry. Serum creatinine was collected immediately pre-op, 3-month post-op, and annually afterwards. Binary logistic regression was used to identify risk factors for post-op haemofiltration requirement and multivariable Cox regression to identify risk factors associated with mortality and development of stage 5 chronic kidney disease.

Results: From 1995 to 2017, 3365 adults received cardiac transplantation in the UK. 876 (26.0%) patients developed post-op severe AKI requiring haemofiltration. The risk factors of haemofiltration include congenital cardiac disease (p=0.002, OR 1.90) and age (p = 0.003, OR 1.01). Both 1-year survival, 59.8% (95%CI: 56.6-63.2%), and 5-year survival, 50.7% (95%CI: 47.2-54.4%) of this group were strikingly lower than that of the non-haemofiltration group, 89.2% (95%CI: 88.0-90.5%), and 78.4% (95%CI: 76.7-80.1%). Age (p=0.002, HR 1.01), insulin-dependent DM (p=0.002, HR 1.45), and post-op severe AKI requiring haemofiltration (p<0.001, HR 2.40) increased risk of mortality. Long-term renal function of this group declined faster than that of the non-haemofiltration group (p<0.001, HR 2.23), even after controlling for 3-month post-op eGFR. Also, insulin-dependent DM (p=0.004, HR 2.13) is a risk factor of renal failure in long term.

Discussion: This study confirmed that severe AKI requiring haemofiltration is associated with worse mortality, especially within the first year post-op. As predicted in the studies in non-transplant patients, it has an adverse impact on the long-term deterioration of renal function.

MP26

Haemofiltration after lung transplantation is a marker of poor early outcomes and impacts on late renal function – a UK cohort study

Lu Wang[1], Tengyao Wang[2], Sally Rushton[3], Gareth Parry[1], Neil Sheerin[1], John Dark[1]

[1]Freeman Hospital, Newcastle upon Tyne, United Kingdom. [2]University College London, London, United Kingdom. [3]National Health Service Blood and Transplant, Bristol, United Kingdom

Introduction: Haemofiltration dependent acute kidney injury (AKI) is associated with worse survival after lung transplantation, but its long-term renal consequences are not known. This study aimed to examine its impact on the mortality and long-term renal function in the adult lung recipients in the UK.

Methods: Age, gender, pre-op lung pathology, and diabetes mellitus (DM), survival status, peri-op renal function and post-op haemofiltration of all adults who received lung transplantation from 1995 to 2017 in the UK, were retrieved from the UK Transplant Registry. Serum creatinine was collected immediately pre-op, 3-month post-op, and annually afterwards. Multivariable Cox regression was used to study the risk factors associated with mortality and development of stage 5 chronic kidney disease (eGFR<15).

Results: 2929 adults underwent lung transplantation from 1995 to 2017. 488 (16.7%) developed post-op haemofiltration dependent AKI. Their 1-year survival, 47.1% (95% CI: 42.8-51.8%), and 5-year survival, 30.8% (95% CI: 26.6-35.7%) were significantly worse than that of the non-haemofiltration group, 85.1% (95% CI: 83.6-86.5%), and 58.2% (95% CI: 56.1-60.4%). Age (p=0.018, HR 1.01) and post-op haemofiltration (p<0.001, HR 2.43) were associated with increased risk of mortality, while cystic fibrosis (p=0.004, HR 0.72) was associated with reduced risk. Long-term renal function of the haemofiltration group declined faster than that of the non-haemofiltration group (p<0.001, HR 2.30), even after controlling for 3-month post-op eGFR.

Discussion: This study confirmed that post-transplant haemofiltration is associated with worse mortality, especially within the first year post-op, and has an adverse impact on the long-term deterioration of renal function. In lung transplant recipients, AKI in the immediate post-op period is usually associated with primary graft dysfunction, and thus haemofiltration may be performed at an earlier stage than would be dictated by renal status alone. However, AKI requiring haemofiltration post-op nonetheless is associated with renal failure in long term.

MP27

A cross-sectional analysis of the urinary microbial community in renal transplant recipients with symptoms of urinary tract infection

Sanchutha Sathiananthamoorthy[1], Flora Cheng[1], Fiona Mccaig[2], Mark Harber[2,1], Jennifer Rohn[1]

[1]University College London, London, United Kingdom. [2]Royal Free Hospital, London, United Kingdom

Introduction: Urinary tract infections (UTIs) are amongst the most prevalent infections worldwide, resulting in significant healthcare burden, and worsening outcomes in renal transplantation. Adequate diagnosis and treatment in renal transplant recipients is therefore crucial, but the urinary microbial community is poorly characterised in this cohort. Despite antibiotic treatment, recurrent UTI is common and likely due to complex host-pathogen interactions. Some uropathogens have the capacity to invade the bladder urothelium and form intracellular communities. Diagnosis is further complicated by evidence that the gold standard urine culture is inadequate for UTI detection.

Methods: In this cross-sectional study, midstream urine (MSU) specimens were collected from renal transplant recipients describing UTI symptoms at the renal clinic. Urinary dipstick was performed and an aliquot submitted to the hospital laboratory for MSU culture. This culture was replicated in our laboratory and samples were also enriched by centrifugation before culture. Microbial colonies were identified using MALDI-TOF MS. Alongside urinary microscopic analysis, bacterial association with urothelial cells was visualised by immunofluorescence staining.

Results: MSUs were provided by 26 patients, of which 11 tested positive for leukocyte esterase on dipstick (mean age = 51.6 years, SD = 3.50) and 15 tested negative (mean age = 50.3 years, SD = 3.72). Three patients (11.5%) tested positive for nitrite, all of whom were positive for leukocyte esterase. Whilst only 18 (69.2%) produced growth on MSU culture, all specimens (100%) grew bacteria on sediment culture. These centrifuged cultures revealed *Staphylococcus*, *Enterococcus* and *Escherichia* to be the most predominant isolates (Figure 1). Immunofluorescence imaging showed bacterial association with urothelial cells (Figure 2).

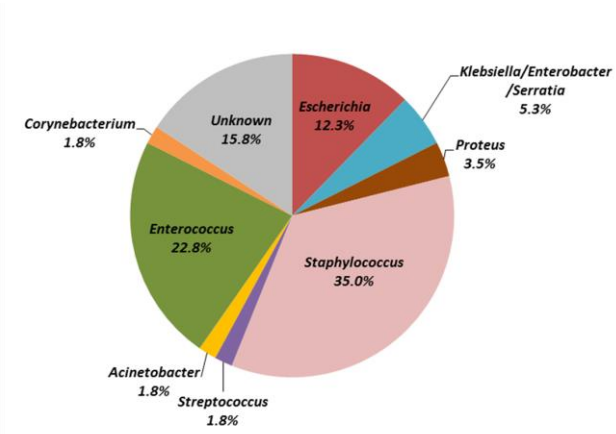


Figure 1 Percentage frequency of bacterial isolated from sediment culture of renal transplant recipients (*n* = 26).

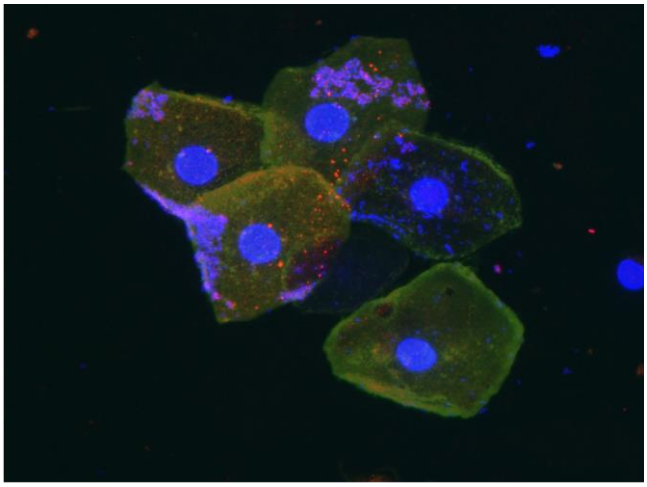


Figure 2 Immunofluorescence image of bacterial association with urothelial cells.

These findings provide novel insight into the understudied urinary microbial community in symptomatic renal transplant recipients and highlight the potential deficiencies of the MSU culture.

MP28

Incidence and clinical impact of *Candida* contamination of the preservation solution in retrieved organ for liver transplantation

Anita Verma, Anil Dhawan, Shirin Khorsandi, Sergio Assia-Zamora, Wendy Little-john, Miriam Cortes , Hector Vilca-Melendez, Nigel Heaton

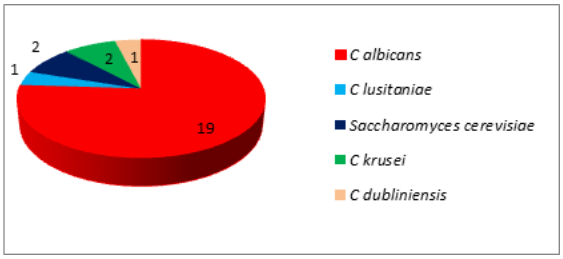
Institute of Liver studies, Kings College Hospital, London, United Kingdom

Introduction: In response to a mortality event associated with a mycotic aneurysm in a low risk liver transplant recipient (LTR), we introduced screening of donor organ preservation fluid (OPF) to determine the incidence of fungal contamination and its impact on liver transplant recipients (LTR) outcomes.

Methods: Six hundred two samples of preservation solution from liver and vessels were cultured for 312 LTR prior to graft implantation between Oct 2016- July 2018. Institutionally all the the high risk LTR receive antifungal prophylaxis for 5-10 days. Diagnosis of invasive fungal infections (IFI) was followed based on host factors, imaging and positive fungal biomarker beta-d-glucan (BDG) for yeast infection and galactomannan (GM) if suspecting *Aspergillus* infection.

Results: The overall contamination rate with C*andida spp* was 8% (Fig). Twenty five LTR received a fungal OPF positive organ. Fifty percent had probable or proven IFI (table1). Four LTR developed OPF related IFI, 2 had vascular complication and died.

Conclusions: Fungal contamination of OPF of abdominal organ is upto 8%. These patients are at risk of developing IFI. The complications can be avoided by close monitoring and instituting early antifungal therapy.



Recipients Characteristics and invasive fungal infection (IFI) of liver transplant recipients (LTR) who received the contaminated donor organ perfusion fluid (DOPF) with *Candida spp*	
LTR	n=25
Age LTR Median (range)years	36 (2-71)
Underlying daignosis	
Primary biliary cirrhosis	3
Hepatitis C	2
Biliary atresia	4
Alcoholic liver disease	2
Acute liver failure	2
Primary sclerosing cholangitis	4
Alagille syndrome	1
Acute on chronic liver failure	3
Immunosuppression	
Tacrolimus +predinisolone	25
MMF	3
Basiliximab	5
Overall IFI	12
Probable	8
Proven	4
IFI due to OPF contaminated Candida SPP	4
Vascular complications (mycotic aneurysm)	2
Intrabdominal IFI	2
Length of hospital stay Median (range) days	21 (9-146)
Mortality due to IFI related to contaminated OPF *Candida spp*	2

MP29

The impact of hepatitis E virus infection on the Scottish solid organ transplant population

Mhairi Donnelly[1], Sandeep Ramalingam[1], Ingolfur Johannessen[1], Kate Templeton[1], Ines Ushiro-Lumb[2], Leanne Stratton[3], Johnny Cash[3], Kenneth Simpson[1]

[1]Royal Infirmary of Edinburgh, Edinburgh, United Kingdom. [2]NHSBT, Edinburgh, United Kingdom. [3]Royal Victoria Hospital, Belfast, United Kingdom

Introduction: Our understanding of HEV infection has evolved with recognition that HEV genotypes 3 and 4 cause autochthonous infection in high-income countries and chronic infection in immunocompromised patients, which may rapidly result in cirrhosis. We aimed to assess the impact of HEV infection on the Scottish solid organ transplant (SOT) population.

Methods: Patients were identified by the treating physicians and highlighted to the study team; all patients received clinical input from a single hepatologist (KJS). Electronic notes were reviewed and data obtained included patient demographics, type of transplantation, characteristics of HEV infection, and clinical impact of infection.

Results: We identified 27 patients within the Scottish SOT population whose clinical course was affected by HEV infection (renal recipient n=12, liver recipient n=9, combined liver/kidney n=2, simultaneous pancreas/kidney [SPK} n=2 and live renal donor n=2). The observed consequences of HEV infection were:

Impact/consequence of infection	No. of affected patients	Patient group affected
Iatrogenic infection due to use of grafts from viraemic donors	2	Liver (1), renal (1) recipient
Development of cirrhosis	2	Renal recipients
Required treatment	15	Liver, renal, SPK recipients
Infection contributing to need for transplantation	1	Liver cirrhosis
Delay in living organ donation due to viraemia	2	Renal living donor (and recipients)

One of the patients who developed liver cirrhosis died. In the patients receiving grafts from viraemic donors, phylogenetic analysis confirmed donor derived transmission via the renal allograft in one patient. In the patient receiving a liver graft from a viraemic donor, the renal recipients from the same donor developed genotype 3c infection with phylogenetic analysis confirming a common source.

Conclusion: In Scotland, HEV infection has a wide variety of consequences in the SOT population. Increased awareness of infection and its complications will hopefully lead to increased testing and timely treatment of chronic infection in immunosuppressed populations.

MP30

Pyuria may help risk stratify renal transplant patients with bacteriuria

Charlotte Seneschall, William Osbourne, Anan Ghazy, Michelle Willicombe

Imperial College Hospitals NHS Trust, London, United Kingdom

Introduction: Asymptomatic bacteriuria (ASB) is common post transplantation and evidence suggests there is no treatment benefit. ASB is defined as the presence of >10^5 bacterial colony-forming units per ml of urine without symptoms. Pyuria has not been incorporated into ASB definitions. Pyuria is often seen in transplant patients with UTIs and maybe a way of determining the difference between host response to bacteria versus colonisation. This study aims to determine the clinical relevance of pyuria in renal transplant patients with bacteriuria.

Method: 786 renal transplant recipients were categorised into 3 groups according to urine microscopy post-transplant: no bacteriuria (B-), B+W- (bacteriuria with no pyuria) and B+W+ (bacteriuria and pyuria). Pyuria is defined as >50 white cells per cubic millimetre. Bacteriuria is defined above. Median follow up is 3.79 (3.6-3.9) years.

Results: There were 427(54.3%) B-, 166(21.1%) B+W- and 192(24.4%) B+W+ patients. Significant differences in the demographics are shown below.

	B- (N%)	B+W- (N%)	B+W+ (N%)	P value
Females	97(22.7)	66(39.8)	100(52.1)	<0.0001
Age	50.4±13.2	53.8±12.8	54.5±13.3	<0.0001
Deceased donor	267(62.5)	117(70.5)	138(71.9)	0.035
Diabetes	96(22.6)	43(26.1)	61(33.9)	0.013

There was no difference is bacteraemia episodes between the B- and B+W- groups, at 11(2.6%) and 8(4.8%), p=0.16; which were significantly less than the B+W+ group, 52(27.1%), p<0.001. Allograft outcomes are shown below.

	HR (B+W+) v (B-)	P value (B+W+) v (B-)	HR (B+W-) v (B-)	P value (B+W-) v (B-)
Death	2.23(1.30-3.82)	0.007	1.62(0.90-2.93)	0.12
Allograft loss	3.47(1.84-6.53)	<0.0001	1.26(0.65-2.47)	0.56
Rejection	1.61(1.09-2.39)	0.035	1.32(0.88-1.99)	0.16

Discussion: The presence of pyuria may help stratify those patients at risk of detrimental allograft outcomes associated with bacteriuria.

MP31

Unspecified (non-directed, altruistic) kidney donors are getting younger

Hannah Maple[1], Peter Gogalniceanu[1], Marriam Ghaffar[1], Lisa Burnapp[1,2], Heather Draper[3], Paul Gibbs[4], Joseph Chilcot[5], Sam Norton[5], Nizam Mamode[1]

[1]Guy's and St Thomas's NHS Foundation Trust, London, United Kingdom. [2]NHS Blood and Transplant, Bristol, United Kingdom. [3]University of Warwick, Coventry, United Kingdom. [4]Queen Alexandra Hospital, Portsmouth, United Kingdom. [5]King's College London, London, United Kingdom

Introduction: Unspecified kidney donation (UKD; also known as 'non-directed', 'altruistic' donation) continues to be practiced across the UK. One of the aims of the BOUnD (Barriers and Outcomes in Unspecified Donation) study is to assess demographic and other characteristic differences between specified (SKDs) and unspecified kidney donors (UKDs) in the UK. The aim of this study was to compare current demographic trends with those published from the formative years of UKD (Maple et al.; 2014).

Methods: An analysis of BOUnD participants was conducted. All patients were referred by their local living donor team. Along with basic demographic questions participants were asked about other altruistic behaviours and what motivated them to donate.

Results: 418 participants were recruited between January 2016 and October 2018 (223 SKDs, 195 UKDs). Table 1 demonstrates the similarities and differences between the two groups. UKDs were significantly more likely to engage with altruistic behaviours, such as blood donation, charity work and being on the organ donor register ($p<0.001$). Both groups were predominantly motivated by a desire to help someone in need (SKD 160 (98.2%) vs UKD 164 (91.6%). These data are comparable to those published in 2014, however this sample of UKDs were significantly younger (48.5yrs (SD 15.58) vs 54yrs (SD 13.58); $p=0.029$) and fewer held religious beliefs (36.6% vs 54.5%).

Discussion: The demographic profile of UKDs is similar to that seen previously, although UKDs are getting younger and are not more religious than SKDs. Concerns regarding religion as an influencer or motivator for UKD appear completely unfounded and should no longer be a concern to transplant professionals.

Table 1:

	SKDs (%)	UKDs (%)	P value
Age	42.9 years (SD 12.24)	48.5 years (SD 15.58)	0.610
Gender (M)	92 (48.7)	97 (51.3)	0.082
Ethnicity (white)	157 (94.0)	168 (93.9)	0.951
In a relationship / widowed	143 (85.1)	94 (51.9)	<0.001
Children	131 (78.0)	95 (53.1)	<0.001
Religious beliefs	111 (73.0)	63 (36.6)	<0.001

MP32

Measuring the impact of the new guidelines for living donor kidney transplantation

Sarah Heap, Mark Murphy

St George's University Hospitals NHS Foundation Trust, London, United Kingdom

Introduction: The living donor guidelines were updated in March 2018. The acceptable GFR for donation become more conservative for some patients. The purpose of this study was to evaluate the impact of these changes on our centre and to establish the number of potential kidney donors that would be at more risk after donating.

Method: A prospective database was used to identify patients who donated between May 2011 and February 2018. Their pre-donation corrected GFR (by *51Cr-EDTA* or iohexol) was noted and compared to the new 2018 guidelines. Follow-up data was collected.

Results: There were 284 donations (M:F 129:155) in this period. Nineteen donors were identified with a GFR below the advisory range (M:F 11:8).

GFR Points Below New Guidelines	No. of Patients	Ages of Patients **Mean***(all ages)*	No of Patients with BMI>28	No of Patients who were Hypertensive
1	4	**55.2***(47, 51, 53, 70)*	2	1
2	5	**56.6***(52, 56, 58, 58, 59)*	2	0
3	4	**47***(27, 50, 54, 57)*	0	0
4	1	**28**	0	0
5	2	**28.5***(28, 29)*	1	0
6	1	**57**	1	0
7	2	**54.5***(50, 59)*	0	0
	Total: 19 (11 Male, 8 Female)	**Mean 48.9 (22-29)**	**Total: 6**	**Total: 1**

Conclusion: 6.7% (n=19) of donors would have been below the advisory level for donation under new guidelines. Nationally, there were 7307 living donor transplants in the same period. Assuming similar demographics allowing us to extrapolate this data, this would equate to 490 donors whose GFR is below the new guideline. The detailed assessment of renal function "is used to inform potential donors of the long-term risks of donation". Now the guidelines are more conservative, is it our ethical duty to contact donors and explain their lifetime risk of renal dysfunction may be higher than anticipated?

MP33

Incisional hernia post hand assisted laparoscopic donor nephrectomy: significant donor morbidity

Adnan Taib[1], Zia Moinuddin[2,3], Hussein Khambalia[4,3], Alexander Shaw[1,3], Martyn Stott[1], Babatunde Campbell[1], Titus Augustine[1,3], David van Dellen[1,3]

[1]Manchester University Foundation NHS Trust, Manchester, United Kingdom. [2]Manchester University Foundation NHS Trus, Manchester, United Kingdom. [3]University of Manchester, Manchester, United Kingdom. [4]Manchester University NHS Foundation Trust, Manchester, United Kingdom

Introduction: Hand Assisted Laparoscopic Donor Nephrectomy (HALDN) evolved to allow safe kidney donation via a hand port incision, whilst preserving the benefits of laparoscopic surgery. However, morbidity in this group of voluntary and healthy patients remains undesirable. The reported incidence of significant long-term surgical complications in this cohort, including incisional hernia (IH), remains variable. This study aimed to investigate the incidence and potential risk factors in IH development post HALDN.

Methods: A retrospective analysis of a contemporaneously maintained database and electronic records of patients who underwent intraperitoneal HALDN at a single centre over 10 years (01/2008-11/2018) was performed. Data collected included incidence and time to diagnosis of incisional hernia. Potential patient confounders (demographics, body mass index (BMI), smoking status, respiratory co-morbidities, previous abdominopelvic surgery, hernia history) and surgical risk factors (hand port site, wound complications, re-operation, post-operative chest infection) were also assessed. Univariate and multivariate logistic regression analysis was performed.

Results: There was an IH incidence of 8.9% (n=69) in 771 included patients. Median time to hernia diagnosis was 12 months (IQR 5-16). Univariate analysis revealed respiratory co-morbidities (14.5% vs 6%, p=0.019), obesity (BMI³ 30kg/m^2) (35.5% vs 19.7%, p=0.017), wound complications (24.6% vs 9%, p<0.01), re-operation (7.2% vs 2.1%, p=0.027), post-operative chest infection (23.2% vs 10%, p<0.01) as risk factors for incisional hernia occurrence. On multivariate analysis respiratory co-morbidities (OR 2.96, 95% CI 1.21 – 7.24), re-operation (OR 3.64, 95% CI 1.04-12.69) and post-operative chest infection (OR 2.46, 95% CI 1.21 – 5.02) were significant predictors of IH formation.

Discussion: IH post-HALDN results in significant morbidity in a previously healthy donor population. Pre- and post-operative respiratory compromise and re-operation increase this risk. Focused prehabilitation and post-operative care (enhanced recovery programmes) may therefore reduce incidence. Further studies comparing incisional hernias in total laparoscopic and HALDN are also required to establish if further technique refinement may be important.

MP34

Left versus right living donor nephrectomy: comparison of indications and outcomes in a large centre and a survey of national practice

Osborne Vaz[1], Mohan Shanmugam[2], Zia Moinuddin[3,1], Rajinder Singh[4], Raman Dhanda[1], David van Dellen[1,3], Bence Forgacs[1], Afshin Tavakoli[1], Tunde Campbell[1], Michael Picton[1], Lisa Mumford[5], Titus Augustine[1,3]

[1]Department of Renal & Pancreas Transplantation, Manchester University NHS Foundation Trust, Manchester, United Kingdom. [2]Department of Anaesthetics, Manchester University NHS Foundation Trust,, Manchester, United Kingdom. [3]Faculty of Biology, Medicine & Health, University of Manchester, Manchester, United Kingdom. [4]1Department of Renal & Pancreas Transplantation, Manchester University NHS Foundation Trust, Manchester, United Kingdom. [5]Statistics and Clinical Studies; NHS Blood and Transplant, Oxfordshire, United Kingdom

Introduction: In the modern era, almost all living donor nephrectomies are done laparoscopically. The left kidney is the preferred kidney due to the longer left renal vein and potentially easier approach technically. There is some reticence in selecting the right kidney in a donor. We analysed 873 donors done laparosopically in a large centre evaluating laterality and indications for a right donor nephrectomy. Donor and recipient outcomes were compared and a survey was carried out of national practice.

Methods: All living donor nephrectomy and transplants done over 12 years (January 2006 - November 2018) were analysed retrospectively from electronic patient records, the departmental database and paper records. The indications for selection of a right nephrectomy were recorded along with other variables including BMI, warm ischaemia time, hospital stay and donor surgical or medical complications. Outcome variables in the recipients namely graft function, DGF, PNF, TRAS, Ureteric stenosis, graft loss and death (with or without functioning graft) were analysed and compared between the two groups.

Results: 873 nephrectomies were done laparoscopically of which 860 donors were done by the laparoscopic hand assisted technique. In 121 patients data was deficient and were excluded. There were 7 conversions (1.16%). 604 were Left sided nephrectomies and 135 (15.7%) right sided. No statistically significant differences were observed in donor and recipient outcomes (p>0.05)

Table 1: Demographics and comparisons

Demographics and surgical comparisons					
	LEFT(n,%)		RIGHT(n,%)		Overall(n)
Number of cases	604	81.70%	135	18.30%	739
Age average(yrs)	47.10		47.57		
UK average	10271	84%	2036	16%	
Conversions	2	0.33%	5	3.70%	
Surgical time (mins)	181.42		166.80		172.10
Sequential transplants	517		110		
Parallel transplants	87		25		

Table 2: Donor Complications.

Complications in Donor				
	RIGHT(n,%)		LEFT(n,%)	
Bleeding	1	0.70%	10	1.60%
Superficial SSI	5	3.70%	17	2.80%
Deep SSI	1	0.70%	2	0.30%
UTI	2	1.40%	18	2.90%
Incisional Hernia	7	5.10%	36	5.90%
Reoperation	2	1.40%	18	2.90%

Discussion: Analysis of this large group shows that while the left kidney is preferred and the right selectively chosen, there is no impact of laterality of the kidney on recipient outcomes. The side of donor nephrectomy should be decided on functional and anatomical reasons. Nationally the Left: Right split is almost 4:1 with 84% being left and 16% being right. Centres where right donor nephrectomy is not offered may be disadvantaging donors and recipients.

MP35

A single-centre pilot study into the recipient and donor factors impacting living donor kidney transplantation

Fatima Saeed, Muir Morton

Manchester Foundation Trust, Manchester, United Kingdom

Introduction: The NHSBT 2016 position paper reported a downward trend in living donor kidney transplants (LDKT) with a call to investigate the reasons behind this phenomenon. In the literature, male sex, advanced age, autoimmune disease, dialysis dependence and previous transplantation were associated with a lower likelihood of obtaining a LDKT. Given the regional variation in practice and transplant rate, a pilot single-centre study was conducted to identify possible factors.

Methods: Retrospective and prospective data collection of the demographics, primary renal disease, transplant status, dialysis dependence and previous transplantation of all adult patients (n=123) waitlisted on the national transplant register between the calendar year 2016-2017 at the Manchester Foundation Trust. Data analysis in SPSS and displayed using GraphPad. Statistical analyses: chi-square, t-test and Mann-Whitney with an alpha <0.05. *Exclusion*: suspended within 90 days of listing, multiple organ transplant apart from simultaneous pancreas-kidney.

Results: Of the patients listed, 69.9% did not have a donor identified. Older age and male sex were correlated with no donor availability. Geographical area, deprivation score, marital and employment status, and previous transplantation did not have a statistically significant impact. N=71 donor enquiries were made and n=4 transplants were completed. There was a 48% attrition from point of contact with the transplant centre to surgical appointment. Most frequent reasons in order: ABO incompatibility/high mismatch (22%), medical contraindication (14%), donor BMI >35 (11%), donor decision (11%), recipient decision (8%) and eGFR below BTS cut-off (8%). Most frequent suspension reason was for cardiology input, stable kidney disease (eGFR >15) and medical deterioration. Of the 24 transplants performed, n=3 were LDKT.

Discussion: Only age and gender correlated with donor availability. Drop-out in donors was mostly for medical reasons, but included personal and social reasons. These are worth exploring further, including a multi-centre study to look for trends and other region specific factors.

MP36

Identification of exosome proteins associated with transplant outcome from donor plasma

Adam Thorne[1,2], Honglei Huang[1,2], Benedikt Kessler[2], Rutger Ploeg[1]

[1]Nuffield Department of Surgical Sciences, University of Oxford, UK, Oxford, United Kingdom. [2]Central Proteomics Facility, Targeted Drug Institute, University of Oxford, UK, Oxford, United Kingdom

Introduction: Despite organ shortage for transplantation, many high-risk organs retrieved from donation after brain death (DBD) or circulatory arrest (DCD) are discarded due to lack of specific and sensitive molecular markers to support the clinical decision. Exosomes are 40-100nm vesicles derived from cell endocytosis and function as important mediators regulating exchange of proteins and genetic material between cells. We hypothesise that there is a differentiated exosome signature per donor type that may serve as marker to predict kidney transplant outcome.

Methods: Using the QUOD biobank with integrated clinical data, DBD and DCD donors were divided into two groups [High: eGFR>60ml/min (N=40); Low: eGFR<30ml/min (N=40)] according to kidney function at 12m post transplant. Serum samples were pooled according to eGFR (High vs Low), DBD vs DCD, age (young vs old). Exosomes were extracted from 300ul of pooled serum using a size exclusion column. Proteins and microRNA of exosomes were measured by label free proteome and Q-PCR, respectively.

Results: In DBD donors, 29 proteins showed >2-fold increase in high eGFR vs low eGFR, with statistical enrichment analysis associated with blood coagulation pathways. Thirty-six proteins showed a decrease in high eGFR, affiliated with stress response pathways. In DCD donors, 23 proteins showed >2-fold increase in high eGFR, related to blood coagulation pathways (Figure 1). The expression level of miR-21, miR-423 and miR-1825 were found to be similar High and Low, but were significantly increased in DCD vs DBD (Figure 2).

Discussion: Exosomal proteomes in donor serum reveal proteins associated with posttransplant eGFR. These proteins are stronger expressed in DBD than DCD, and involve blood coagulation and acute phase response pathways, reflecting the systemic inflammation caused by cerebral injury. Three microRNAs appear associated with donor types but not eGFR. In summary, small molecules from exosomes differentiate between donor type and may serve as markers to predict eGFR.

Figure 1. Proteome analysis of protein expression Log2 fold changes (high eGFR/low eGFR) in old (x-axis) and young donors (y-axis).

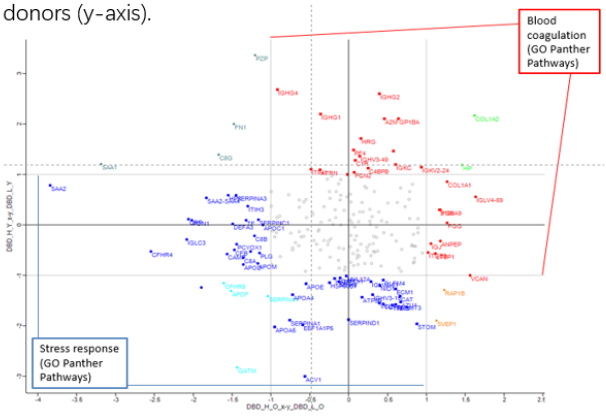
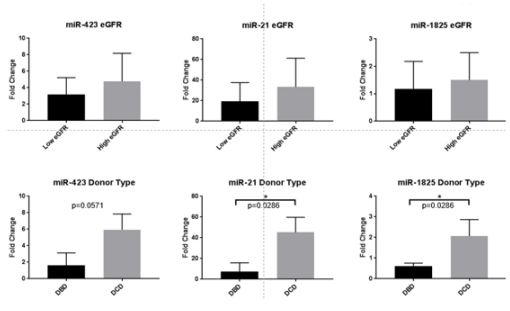


Figure 2. microRNA alteration between outcomes (high eGFR vs low eGFR) and donor types (DBD vs DCD).



MP37

Unravelling mechanisms of delayed graft function and recovery in DCD kidney transplantation

Letizia Lo Faro[1,2], Kaithlyn Rozenberg[1,2], Honglei Huang[1,2], Sergei Maslau[1], Henri Leuvenink[3], Edward Sharples[2], Rutger Ploeg[1,2]

[1]University of Oxford, Oxford, United Kingdom. [2]Oxford Transplant Centre, Oxford, United Kingdom. [3]University Medical Centre Groningen, Groningen, Netherlands

Introduction: Delayed graft function (DGF) is a consequence of acute kidney injury and will remain a significant challenge due to the increasing use of extended criteria donors. There is currently no way of predicting DGF or its duration. This study investigated the biological pathways in DCD kidneys at time of donation that related to DGF and could discriminate between different DGF durations.

Methods: N=30 DCD kidney biopsies were selected from the QUOD biobank and stratified according to outcome and DGF duration (immediate function, IF n=10, short DGF (1-6 days), SDGF n=10; long DGF (7-22 days), LDGF n=10). Samples were matched for donor and recipient age, gender, BMI (<30), f-WIT, no donor AKI and CIT (≤ 18h). Proteins were extracted and analysed by LC-MS/MS proteomics. Pathway analysis was run by Ingenuity Pathway Analysis. Correlations between protein levels and DGF duration were studied by Pearson correlation.

Results: 3,999 proteins were identified and n=418, n=181 and n=374 were significantly different ($p<0.05$, unpaired t-test) in SDGF vs IF, LDGF vs IF and LDGF vs SDGF respectively. SDGF kidneys presented activation of stress pathways geared towards cell survival (eIF2 and autophagy signalling) when compared to IF, while LDGF kidneys presented impaired response to stress (downregulation of Nrf2-mediated oxidative stress response). eIF2, mTOR signalling and glycolysis were all downregulated in LDGF vs SDGF (Figure 1). Histone H3.3, which accumulates at sites of DNA injury, was increased in LDGF and its levels correlated with DGF duration (Pearson r 0.7224).

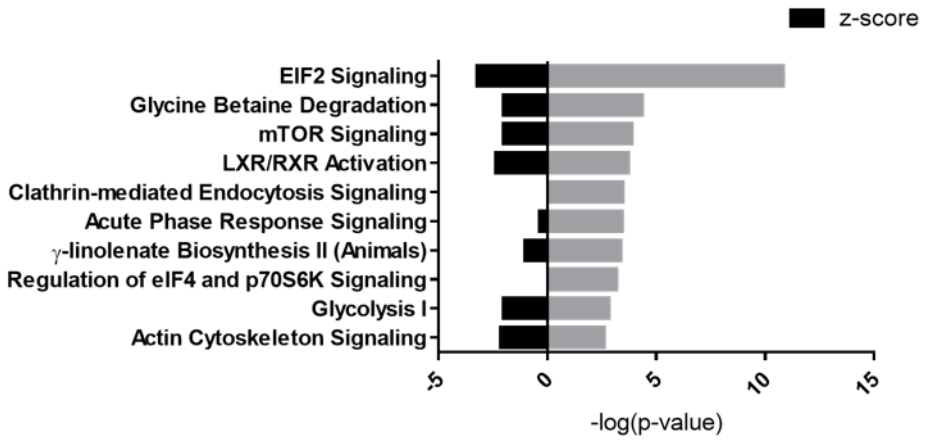


Figure 1. Top 10 canonical pathways significantly downregulated in LDGF vs SDGF as identified by IPA analysis.

Discussion: DCD kidneys with short duration DGF present acute cellular injury at time of donation, alongside upregulation of repair pathways (e.g. chaperone-mediated autophagy, eIF2-dependent protein translation). In contrast, DCD kidneys with prolonged DGF present widespread translational, metabolic and antioxidant deficiencies. These pathways could be targeted therapeutically to reduce DGF incidence and duration.

MP38

RT-qPCR analysis of tolerance genes reveals significant differences between paediatric and adult kidney transplant patients

Jon Jin Kim[1,2], Irene Rebello-Mesa[1], Manohursingh Runglall[1], Stephen Marks[3], Manish Sinha[4], Robert Lechler[1], Graham Lord[1], Maria Hernandez-Fuentes[1], GAMBIT Study Investigators[1]

[1]MRC Centre for Transpplantation, King's College London, London, United Kingdom. [2]Nottingham University Hospitals, Nottingham, United Kingdom. [3]Great Ormond Stret Hospital, London, United Kingdom. [4]Evelina Children's Hospital, London, United Kingdom

Introduction: Spontaneous operational tolerance is described clinically in kidney recipients with stable allograft function for at least one year despite stopping all immunosuppression. We previously published a set of 10 genes discriminating tolerant patients against stable patients, patients with chronic rejection and healthy controls. This study aims to validate the 10 gene signature in a subgroup of paediatric transplant patients within the Genetic Analysis of Molecular Biomarkers of Immunological Tolerance (GAMBIT) study.

Method: GAMBIT was a prospective, case-control cross-sectional study aiming to validate the biomarkers of tolerance. Gene expression of the 10 genes in addition to FOXP3 and Alpha-Mannosidase were measured by RT-qPCR and normalized to HPRT. Drug effects on gene expression were calculated using empirical Bayes moderated linear models across the whole dataset. Prediction analysis was performed using the regularized multivariate logistic regression method Elastic-Net.

Results: 34 paediatric patients were recruited (29 stable, 5 chronic rejection, 0 tolerant) with a mean age of 12.3 (±3.0) years at a mean time of 7.6 (±3.0) years post-transplant. To assess effect of age on gene expression, stable patients were analysed comparing adults versus paediatrics and showed significantly differences in 10/11 genes [Figure1]. Gene expression was significantly associated with age though the level of variability attributable to age was small (R values 0.05 – 0.34). Prediction analysis was applied to the paediatric subgroup as a factor compared to adults. One tolerant paediatric patient was identified within the stable group. This was a 12 year old male living donor recipient (111 mismatch) who was 10.5 years post-transplant. He had DSA detected against Class I and Class II.

Conclusions: RT-qPCR analysis of tolerance genes revealed significant differences between paediatrics and adults which was partly explained by age. Further large scale studies are required to assess the interaction of immune related genes with age in the paediatric population.

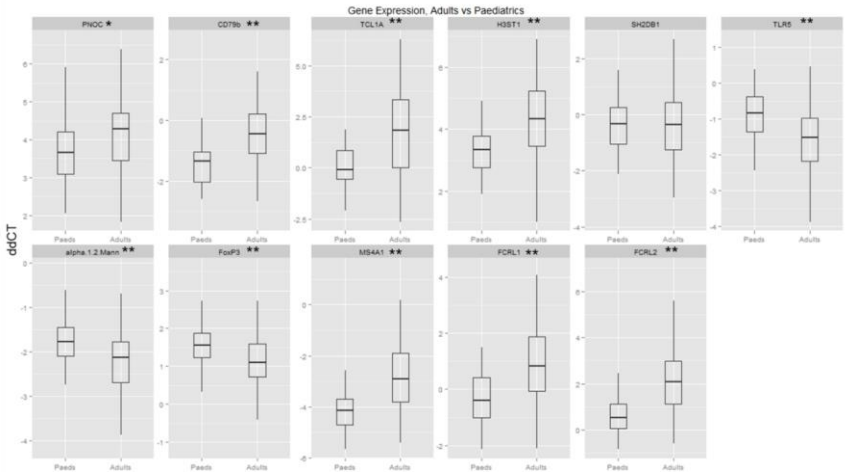


Figure1: Adult v paediatric Stable patients.*p<0.05**p<0.005

MP39

The role of KIR polymorphisms in renal transplant outcomes

Patrick Trotter, Jyothi Jyaraman, Jessica Padley, Daniel Hart, John Trowsdale, James Traherne, Menna Clatworthy

University of Cambridge, Cambridge, United Kingdom

Introduction: Natural Killer cells have been implicated in the pathogenesis of rejection, and their activation is modulated by the engagement of Killer cell Immunoglobulin-like Receptors (KIRs) with their cognate HLA class I ligands. The KIR genes are highly diverse and polymorphisms in KIR genes have been associated with differential outcomes in infection and pregnancy. We aimed to interrogate the role of activating and inhibitory *KIR* polymorphisms in kidney transplant recipients and to determine whether variation in these genes impacts on transplant outcomes.

Methods: Genomic DNA was extracted from n=1401 kidney transplant recipients and n=665 donors (living and deceased) from stored blood or spleen at a single transplant centre between 2008-2017. Information on donor and recipient HLA was collected from the local Tissue Typing laboratory or NHSBT. KIR gene type, copy number and haplotype was determined using a validated high throughput qPCR method - qKAT. qKAT was used to detect 17 KIR genes and their important variants, and SSP-PCR was used to detect polymorphisms in *KIR2DS4*. Information on recipient infection (CMV and BK virus) and acute rejection was collected from electronic medical records.

Results: Analysis of KIR polymorphisms demonstrated that the presence of the full length (cell-surface-expressed) variant of *KIR2DS4* in the renal transplant recipient, with the presence of HLA-Cw4 (the epitope with strongest affinity for KIR2DS4) in the donor, was significantly associated with increased incidence of acute rejection (OR 3.07 (1.32-7.15), p=0.033). However, given the small number of recipients with this *KIR* variant transplanted with a kidney from a Cw4 donor, interpretation is limited.

Conclusions: Polymorphisms of *KIR2DS4* were associated with significant increase in likelihood of acute rejection if the donor had HLA-Cw4. The KIR locus is one of the most complex regions in the human genome and we are currently exploring how other *KIR*/*HLA* interactions between recipient and donor may influence transplant outcomes.

MP40

Insulin treatment in pancreas donors on intensive care is a marker of beta cell death as evidenced by microRNA data

Iestyn Shapey[1,2], Angela Summers[2], James O'Sullivan[3], Petros Yiannoullou[1,2], Neil Hanley[1], Titus Augustine[2,1], Martin Rutter[1,4], David van Dellen[2,1]

[1]University of Manchester, Manchester, United Kingdom. [2]Department of Transplantation, Manchester University NHS Foundation Trust, Manchester, United Kingdom. [3]Manchester Centre for Genomic Medicine, Manchester, United Kingdom. [4]Manchester Diabetes Centre, Manchester University NHS Foundation Trust, Manchester, United Kingdom

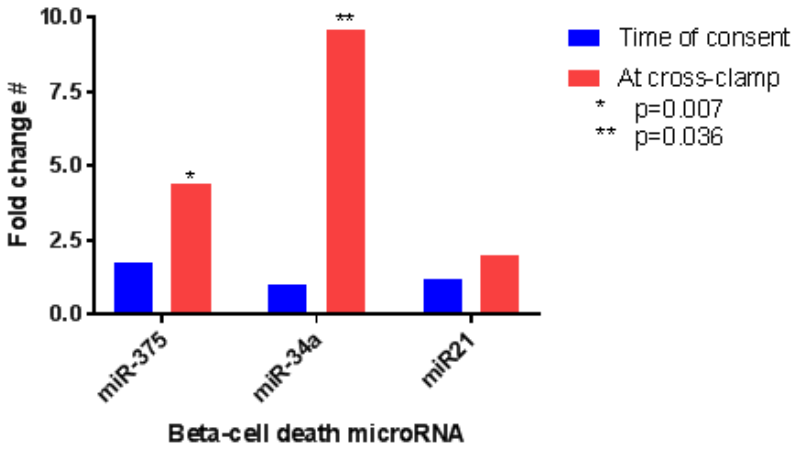
Introduction: We showed in prior studies that donor insulin use on intensive care predicts early beta cell dysfunction in islet and solid pancreas transplantation. We hypothesized that beta cell death explains this requirement for insulin.

Methods: Plasma samples from 100 brain dead pancreas donors were collected by the Quality in Organ Donation Biobank: a) at consent; and b) at the time of aortic cross-clamp. Beta cell death was assessed from expression of miR34a (pro-apoptotic), miR21 (anti-apoptotic) and miR-375 (beta-cell death marker). Immunoassays assessed levels of circulating inflammatory cytokines and insulin secretion. We compared biomarker levels between insulin-treated and non-insulin-treated donors (ITD *vs* NITD) and between time-points within-groups.

Results: Insulin was received by 43 (43%) donors; there were no significant differences in clinical variables by insulin use. C-peptide levels across the 2 time points were lower in in ITD *vs* NITD (63 [26-304] vs 296 [45 vs 181] ng.hour/mL, p=0.001). In ITD *vs* NITD, at the time of retrieval, MiR-375 levels were 4-fold higher (p=0.007), miR-34a 10-fold higher (p=0.036) and miR-21 was similar (numerically 2-fold higher, p=0.243; figure 1). In NITD, between consent and cross clamp, mir-375 levels were reduced 6-fold (p=0.050), miR21 reduced 4-fold (p=0.016) and miR-34a levels were unchanged (numerically 3-fold lower; p=0.465), whereas in ITD, all 3 miR levels were unchanged. IL-6 levels were lower in ITD *vs* NITD at the time of consent (43 [16-100] vs 154 [33-633] pg/mL, p=0.001) and cross-clamp (54 [30-109] vs 117 [47-222] pg/mL, p=0.005).

Discussion: In ITD, greater expression of beta cell death-associated microRNA and lower IL-6 levels provide a possible mechanistic explanation for post-transplant beta-cell dysfunction in prior studies. In NITD, time-related reduction of microRNAs suggests lowered activity in pathophysiological pathways leading to beta cell death. These microRNAs provide potential therapeutic targets; intervention studies could determine if this approach could improve transplant outcomes.

Figure 1: Differences in MiR levels comparing insulin treated and non-insulin treated donors on intensive care during organ donation



Positive values indicating higher levels in insulin treated donors

MP42

A porcine model comparing NRP and cold storage versus NRP and ex-situ perfusion in the distant procurement of DCD hearts

Aravinda Page[1], Simon Messer[1], Paul White[1], Simon Colah[1], Nabeel Razzaq[1], Hatim Alibhai[2], Stephen Large[1]

[1]Royal Papworth Hospital, Cambridge, United Kingdom. [2]Royal Veterinary College, London, United Kingdom

Introduction: Adult DCD heart programmes have relied largely on ex-situ heart perfusion during transport of the donor organs even after normothermic regional perfusion (NRP) in the donor where the heart is formally assessed after circulatory arrest. In this pre-clinical porcine study we compare the use of cold storage as an alternative to ex-situ heart perfusion following NRP.

Methods: The porcine model of DCD was established with hypoxic arrest after baseline functional measurements were taken including thermo-dilution cardiac studies and pressure-volume loop measurements. Following mechanical asystole a fixed warm ischaemic period was allowed to model for the observation period and the time taken for transfer and access to the heart and major vessels in the clinical setting. NRP was established and the hearts perfused for 60 minutes before being weaned from NRP and functionally assessed. The hearts were then subject to cold storage (CS) with cardioprotective flush or ex-situ heart perfusion (ESHP) for 2 hours. The hearts were then functionally assessed.

Results: There were 5 animals in the NRP+CS and 6 in the NRP+ESHP groups respectively. All NRP+CS hearts and 5 out of the 6 NRP+ESHP were able to function in working mode for assessment on the rig with the left side loaded to a left atrial pressure of 20mmHg (Table 1).

Discussion: These data suggest that NRP sufficiently resuscitates DCD hearts to allow for cold storage following functional assessment. In the porcine model, ESHP did not appear to offer any added advantage over conventional CS of 2 hours. Further work is required to determine the upper limit of cold ischaemic time that would be tolerated by the DCD heart and we should be cautious in extending CS until we have further information to guide us in the longer usage of CS after NRP.

Table 1. Ex-situ assessment of left ventricular function (all values expressed as mean, standard deviation)

	NRP+CS (n=5)	NRP+ESHP (n=5)	p-value
Aortic flow (L/min)	0.79 (0.38)	0.66 (0.44)	0.64
Coronary flow (L/min)	0.80 (0.17)	0.84(0.33)	0.81
Mean arterial pressure (mmHg)	58 (3)	50 (10)	0.10
Heart rate (bpm)	113 (10)	115 (17)	0.72
Cardiac output (L/min)	1.5 (1.1)	1.3 (0.7)	0.75
Pes (mmHg)	110.10	91 (13)	0.15
Ped (mmHg)	22.25	21(6)	0.94
Pdev (mmHg)	93.61	74 (17)	0.07
dP/dt max (mmHg/s)	1515.00	1078 (310)	0.03
dP/dt min (mmHg/s)	-706.47	-558 (173)	0.13
ESPVR	7.41	3.23 (1.4)	0.11

MP43

Near-infrared fluorescence imaging with ZW800-1 dye to assess donor kidneys while on ex-vivo normothermic machine perfusion

Asel Arykbaeva[1], Kaithlyn Rozenberg[2], Letizia LoFaro[2], J Doppenberg[1], A Valentijn[1], A Terwisscha van Scheltinga3[1], H Putter[1], I Alwayn[1], J Frangioni[3], K Burggraaf[4], A Vahrmeijer[1], J Hunter[5], Rutger Ploeg[5,1], V Huurman[1]

[1]Leiden University Medical Center, Leiden, Netherlands. [2]University of Oxford, Oxford, United Kingdom. [3]Curadel, Malborborough, USA. [4]Centre for Human Drug Research, Leiden, Netherlands. [5]University of oxford, Oxford, United Kingdom

Introduction: To increase organ utilisation without compromising outcomes, assessment of real-time perfusion using near-infrared fluorescence (NIRF) imaging prior to transplantation may assist in the decision making. ZW800-1 is a water soluble dye cleared by the kidney that allows visualisation of kidney perfusion. We studied the feasibility of NIRF imaging as a technique to measure perfusion and kidney function during normothermic machine perfusion (NMP).

Methods:

Slaughterhouse pig kidneys underwent 2h HMP, and were placed on NMP at 37°C for 7h with oxygenated, leukocyte-depleted autologous whole blood. Dose-escalation experiments (0.125; 0.25; 1.0; 4.0 mg/kg **per kidney weight**) were conducted to obtain reproducible images. Boluses of ZW800-1 were injected intravenously after 1h and 6h of NMP. Following ZW800-1 injection fluorescent images of kidneys were quantified as signal-to-background ratios (SBRs) using the FLARE imaging system. Urine and perfusate samples were collected to measure ZW800-1 concentration and calculate excretion as a reflection of kidney function.

Results: Dosage experiments showed that 1.0 mg/kg of the compound was optimal, allowing reliable assessment of perfusion with a clear differentiation between well perfused and marginally perfused kidneys. The average SBR (n=5) ***in the 1.0 mg/kg group*** decreased from 3.42±1.09 to 2.28±0.73, corresponding with a ZW800-1 concentration in the perfusate decreasing from 100±51 µg/ml up to 6.4±36.5 µg/ml, whilst increasing in the urine up to 8.7±14.4 µg/ml throughout the perfusion. The clearance of dye per kidney (median 17%±24%) was directly associated with diminished fluorescence intensity.In kidneys without any urine production, the **SBR** remained the same.

Discussion: This pilot study showed NIRF imaging is feasible during NMP. By assessing the fluorescent intensity of different areas of the kidney and the urine dye excretion, NIRF imaging could provide clinically relevant information concerning perfusion and function, potentially helping clinical decision making in high risk kidneys.

MP44

Patterns of lactate metabolism during ex-situ normothermic machine perfusion of discarded donor livers - a detailed analysis of the VITTAL perfusions

Richard W Laing[1,2], Hynek Mergental[1,2], Amanda Kirkham[3], M Thamara P R Perera[1,2], Yuri L Boteon[1,2], Joseph Attard[1,2], Lorraine Wallace[1], Darren Barton[3], Manpreet Wilkhu[3], Stuart Curbishley[1], Desley A Neil[4,1], Stefan G Hübscher[4,1], Paolo Muiesan[2], John J Isaac[2], Keith J Roberts[2], Manuel Abradelo[2], Hentie Cilliers[2], John Isaac[2], Julian Bion[5], Peter J Friend[6,7], Christina Yap[3], Simon C Afford[1], Darius F Mirza[1,2]

[1]NIHR Birmingham Biomedical Research Centre, University Hospitals Birmingham NHS Foundation Trust and University of Birmingham, Birmingham, United Kingdom. [2]Liver Unit, Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust (UHBFT), Birmingham, United Kingdom. [3]Cancer Research UK Clinical Trials Unit, University of Birmingham, D3B team, Birmingham, United Kingdom. [4]Department of Cellular Pathology, Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust (UHBFT), Birmingham, United Kingdom. [5]Department of Intensive Care Medicine, Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust (UHBFT), Birmingham, United Kingdom. [6]University of Oxford, United Kingdom, Nuffield Department of Surgical Sciences, Oxford, United Kingdom. [7]OrganOx Ltd., Oxford, United Kingdom

Introduction: The subjective nature of donor liver assessment contributes to variation in organ acceptance between centres. An objective assessment process may provide information to guide the decision-making process and improve liver utilization.

Methods: VITTAL was a prospective, non-randomised, open label, single-arm adaptive phase II trial that aimed to test and transplant high-risk livers discarded by all UK centres using ex-situ normothermic machine perfusion (NMP). The viability criteria were based on the clearance of perfusate lactate to levels ≤2.5mmol/L, bile production, glucose metabolism, pH and physiological flow rates – assessed within 4 hours of commencing NMP. Bile pH and perfusate transaminase levels were also measured.

Results: Thirty-one livers were enrolled and underwent viability testing. Four distinct patterns (A-D) of lactate metabolism were identified (Figure 1). Twenty-three livers achieved pattern A, metabolising lactate to ≤2.5mmol/L within 4 four hours (two were not transplanted - one because of arterial anatomy and one because of biopsy-confirmed malignancy) and three livers achieved pattern B (a subsequent increase in lactate levels). Of these, two were discarded and one was transplanted as the hepatectomy had already commenced – this patient experienced significant early allograft dysfunction. Five further livers (4 pattern C and 1 pattern D) were not transplanted and these perfusions were associated with absence of glucose metabolism and poor pH homeostasis. Pattern A livers functioned immediately post-transplant with outcomes comparable to matched controls. Poorer metabolic capacity was associated with higher perfusate transaminase levels at 4 hours (ALT(IU/L) A:2277 [658-4700], B:7391 [5785-8625] and C:7857 [6511-20750] p

Conclusion: Lactate metabolism during NMP is a sensitive indicator of graft viability. A perfusate ALT level less than 5000 appears to correlate well with liver 'transplantability'. A subsequent rise in lactate (pattern B) may indicate poor metabolic capacity and should raise concerns regarding graft function.

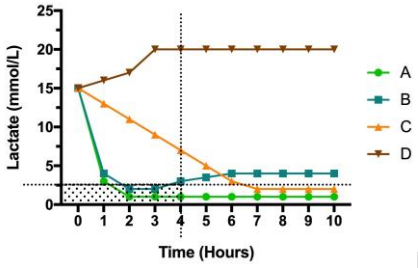


Figure 1.

MP45

The Vanguard Study: human performance evaluation of UK National Organ Retrieval Service (NORS) teams utilising a single scrub nurse in thoraco-abdominal organ retrieval

Galina Morozova[1], Amanda Martindale[1], Hugh Richards[1], Ian Currie[1,2], Cecelia McIntyre[3], John Stirling[4]

[1]The University of Edinburgh, Edinburgh, United Kingdom. [2]NHS Lothian, Edinburgh, United Kingdom. [3]NHS Blood and Transplant, Newcastle, United Kingdom. [4]NHS Blood and Transplant, Edinburgh, United Kingdom

Introduction: The NORS review recommended a single scrub nurse to provide support simultaneously to abdominal and cardiothoracic teams in thoraco-abdominal retrieval. This model, although contentious, had been successfully employed by the Scottish Organ Retrieval Team. The current study reports the impact on individual and team performance as part of the wider Vanguard study, which piloted the single scrub practitioner role with five NORS teams, to determine whether this model could be extended UK-wide.

Methods: Participants comprised members of abdominal (n=56) and cardiothoracic (n=54) surgical teams attending thoraco-abdominal retrievals in the UK from end May to end December 2017. Data were collected by validated psychometric scales to assess teamwork and individual workload, anxiety, confidence, demands and coping resources. Additionally data were collected through open comments contained in response forms and quantitative data describing context (e.g. duration) and outcome of retrieval. Comparisons were made between retrievals using single scrub practitioner (Vanguard) and dual scrub practitioners (Standard).

Results: Abdominal and Cardiothoracic teams reported different responses. Vanguard configuration was associated with significantly higher anxiety for abdominal but not cardiothoracic teams. Perceived workload increased for abdominal teams during Vanguard but decreased for cardiothoracic teams (Figure 1). Scrub practitioners reported elevated anxiety and decreased confidence in retrievals using Vanguard configuration (Figure 2).

Discussion: This is the first large scale study examining human performance factors in organ retrieval in the UK. Despite successful use previously of the single scrub nurse in Scotland, this study shows a significant negative impact on abdominal teams in Vanguard configuration. As retrieval faces major developments, these data support the need to use human performance analysis as an essential part of successful development in organ retrieval practice. Alongside efforts to advance technological aspects of organ preservation and refine surgical techniques it is equally important to investigate the application of such advancements by individuals and teams.

Figure 1. Perceived Workload Comparison Results (unpaired t-test)

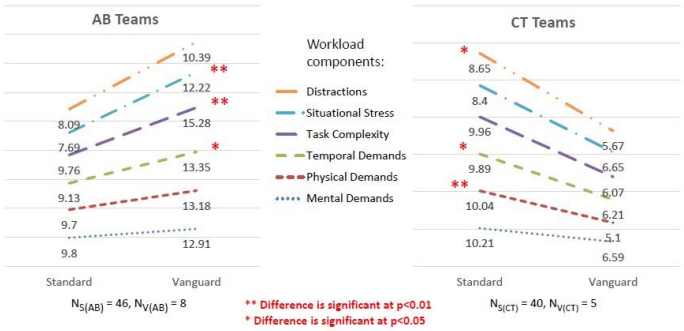
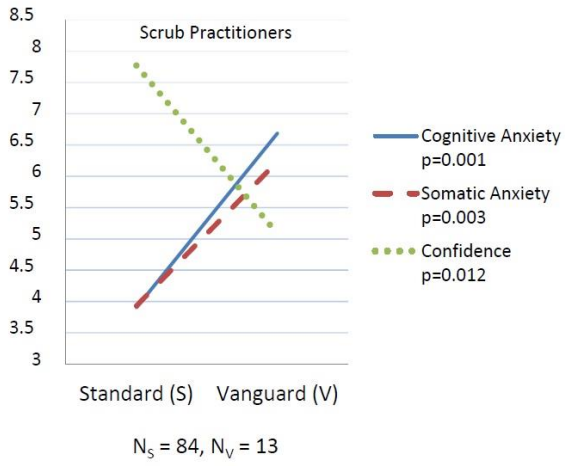


Figure 2. Mental Readiness Comparison Results (unpaired t-test)



MP46

An exploration of the experiences impacting on organ donation specialist nurses sense of wellbeing

Rachel Stoddard-Murden

Organ Donation and Transplantation, Plymouth, United Kingdom

Introduction: Public Health England (2014) postulated that economic growth is intrinsically linked to wellbeing, this concurs with the "NHS Health and Wellbeing Review's" (Boorman, 2009). Although risks to the wellbeing of nurses, emergency workers and care givers are well documented; (Mitchell, 1983; Rushton et al, 2006; Hildebrandt, 2012 and Berg et al, 2016) there is a dearth of literature relating to Specialist Nurses in Organ Donation (SNODs). This study explores the experiences that impact on the SNODs sense of wellbeing.

Methods: To enable meaning and understanding of the participants' wellbeing experiences combined with the dearth of literature an inductive qualitative approach was selected to make sense of phenomena from an individuals' perspective. A descriptive phenomenological approach with purposive sampling of nine SNOD's. Face to face audio recorded, semi-structured interviews in spring 2016 were transcribed verbatim and analysed thematically. An independent researcher coded 10% increasing credibility.

Results: All participants defined wellbeing in a hedonic way, enabling a common language. There was agreement that experiences impacted on a continuum scale of wellbeing. All scored their wellbeing level and identified that work life tipped into home life. The" Burden of Death" theme was a continuous struggle, whether the emotional or physical impact.

Six main themes emerged:

- Wellbeing is a Feeling
- External Experiences
- Internal Experiences
- The Burden of Death
- Coping Strategies
- Organisational factors

Discussion: These findings will raise awareness in practice and offer guidance to develop wellbeing strategy's for NHSBT to assist colleagues to balance their wellbeing. The small sample with potential bias due to self-selection participation could have influenced the outcomes. A larger study to illuminate information of the experiences that impact all groups of clinical staff's

MP47

Attitudinal change to SNOD involvement in ICM trainees associated with attending the National Deceased Donation Simulation Course

Ben Ivory

NHSBT, Birmingham, United Kingdom

Introduction: The Deceased Donation Simulation Course (DDSC) is a 2-day course aimed at senior ICM trainees. It aims to improve the knowledge, skills and attitudes of ICM doctors around the process of organ donation. SNOD presence at the donation conversation is recognised to be an important factor in improving consent rates to OD and we aimed to assess whether attitudes to SNOD involvement in the conversation changed in delegates who attended the course.

Methods: The DDSC uses a variety of teaching methodologies (lectures, small group work, low and hi fidelity sim and communication sim) to deliver 2 days of education around organ donation.Key to the course is encouraging early SNOD involvement in the OD consent process. To assess the success of this part of the course, delegates were required to fill out an attitudinal survey to SNOD involvement before attending the course, and again at completion. The survey asked delegates to rate how likely there were to involve the SNOD at a variety of stages in the OD pathway with 1 being the least likely and 5 being the most likely.

Results:

Stage of donation:	Likelihood of SNOD involvement – mean pre-course score (max of 5)	Likelihood of SNOD involvement - mean post-course score (max of 5)	P value (unpaired students T Test)
Explaining concept of brain death	3.76	4.7	0.002
Explaining results of brain death testing	4.0	4.85	0.004
Exploring a plan to WLST on a patient with DBI	3.76	4.9	0.001
Exploring WLST on patient with no donation potential	3.18	4.6	<0.001

Discussion: These data show a significant change in self reported attitudes to SNOD involvement in a variety of clinical scenarios by ICM trainees. If these changes in attitude are translated into increased SNOD attendance and involvement, previous data would suggest that the DDSC may improve organ donation consent rates.

MP48

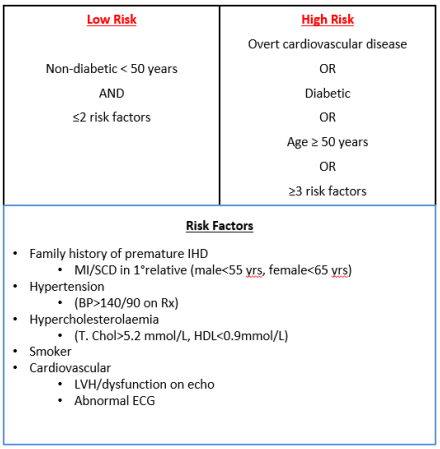
Prediction of cardiac risk - we need a better test!

Rhodri Pyart[1], Azeem Sheikh[1], Melanie Pickman[2], Karina Karlsson[2], Richard Wheeler[1], Sian Griffin[1]

[1]Cardiff and Vale University Heath Board, Cardiff, United Kingdom. [2]Morriston Hospital, Swansea, United Kingdom

Introduction: Cardiac assessment prior to renal transplantation involves an integration of clinical information and targeted investigations, with the aim of recipient optimisation including treatment of remedial disease and guidance to peri-operative risk.

Methods: A retrospective analysis of 587 patients considered for renal transplantation over a three year period was undertaken. 280 were declined due to comorbidity or frailty. The remainder were classified as low (113) or higher (194) risk according to the algorithm below. Outcome measures were activation, major adverse cardiac event (MACE) and death during the follow up period to 01/07/2018 (6 – 42 months).



Results:

						Activated not transplanted		Transplanted	
Risk	Stress Test (ETT, DSE or MPI)	Stress test outcome	Stress test details	Activation	Transplanted	MACE	Deaths	MACE/of which in first 30 days	Deaths/of which in first 30 days
Low (n=113)	Yes (13)	13 negative	NA	13	11 (85%)	0	0	0	0
	No (100)	NA	NA	100	79 (79%)	0	0	1/0	2/0
High (n=194)	Angio, PCI or CABG within preceeding 2 yrs (10)*	NA	NA	10	7 (70%)	1	1	0	4/4
	Not documented (41)	NA	NA	41	34 (85%)	0	0	1/1	1/0
	Yes (143)	119 negative	NA	118	80 (68%)	1	9	6/1	7/4
		24 positive	8 alternative stress test - negative	8	6	1	0	1/0	1/0
			5 acceptable angiography	5	2	0	0	0	1/0
			2 PCI, 1 CABG**	3	2	0	1	0	0
			8 declined for transplantation	0	0	NA	6	NA	NA

ETT – exercise tolerance test, DSE - dobutamine stress echocardiogram, MPI – myocardial perfusion imaging
*for symptomatic disease
**for disease discovered during assessment

Discussion:

1. Clinical risk stratification, together with a normal echocardiogram, identifies low risk patients in whom stress testing is unnecessary and post-transplant outcomes excellent.
2. Abnormal stress testing leads to cardiac intervention or decline for transplantation in a small but significant number of patients. Outcomes were good for those who had a normal coronary angiogram and those with surgically amenable disease, but poor for those in whom revascularisation was not possible.
3. Clinically high-risk patients with normal stress testing remain at increased risk of adverse outcomes, emphasising the predictive insensitivity of current investigations. This should be borne in mind when counselling potential recipients of their individual risk.

MP49

Improving outcomes after kidney transplantation in patients over the age of 65 years

V R Latha Gullapudi, William McKane

Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, United Kingdom

Introduction: Guidelines recommend that patients should not be deemed ineligible for kidney transplantation based on age alone and appropriate selection of patients is vital. Our aim was to evaluate the trend in local outcomes in older patients.

Methods: 622 consecutive renal transplants performed in a single institution 2006-2015 were analysed. Data was collected from electronic records. Patients aged ≥65 were compared to those aged <65 years. A local analysis from 1996-2005 was used as an historical comparator, and deceased donor graft survival data in the ≥65s from NHSBT as a national comparator.

Results: In 2006-2015, 12.5% (n=78) were ≥65 years. Median age was 68 (IQR 5) and 68% were males. 85.9% had deceased donor transplants in ≥65 group compared to 65.6% in <65 group (p=0.002). 93.6% ≥65 group vs 83.5% in the younger group received a first allograft (p=0.142). In ≥65 group, 19.2% were diabetic and the median Charlson comorbidity index (CCI) was 5 (IQR 2). Patients ≥65 years comprised only 6.4% of all transplant activity in the 1996-2005 historical comparator group and exclusively received deceased donor transplants. There were no significant differences in median age (p=0.79) or CCI (p=0.254) between the historical and contemporary decades, arguing against more restrictive patient selection. Graft and patient survival is summarised in table 1 and 2 respectively:

Table 1: Graft survival

	<65	≥65	p value	<65	≥65	p value
	1 year			5 year		
1996-2005		80				
2006-2015	94.8	94.8	0.377	89	90.8	0.6
NHSBT*	94.3	92.2	0.004	85.8	84.8	0.33

Table 2: Patient Survival

	<65	≥65	p value	<65	≥65	p value
	1 year			5 year		
1996-2005	98.3	78.1		92.5	42.7	
2006-2015	98.7	93.6	<0.0001	94.8	80.3	<0.0001
NHSBT*	97.6	92.5	<0.0001	90.3	70.3	<0.0001

*2013-17 for 1 year and 2009-13 for 5 year analyses

Conclusions: Graft and patient survival in older patients have significantly improved when compared to the previous decade and are comparable to the national outcomes, despite lack of evidence of increased selection. Multiple factors are likely to contribute to this, including tailoring of immunosuppression and improved infection prevention measures.

MP50

BMI influence on the outcomes of renal transplant

Valentina Bianchi, Ioannis Kostakis, Theodoros Kasimatis, Clare Flach, Panoraia Paraskeva, Christopher Callaghan, Benedict Phillips, Nikolaos Karydis, Nicos Kessaris, Francis Calder, Ioannis Loukopoulos

Department of Transplantation, Guy's Hospital, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

Introduction: Our aim was to assess the effect of body mass index (BMI) on the outcomes of renal transplant and the management of obese patients with end-stage renal disease (ESRD) across the UK.

Methods: We collected data regarding renal transplants during 10 years (2007-2016) from the UK Transplant Registry, excluding paediatric cases and simultaneous transplants with pancreas or liver. We also conducted a national survey sending a questionnaire to the 23 renal transplant centres of the UK, which included 12 questions about the influence of BMI in decision making processes regarding renal transplant.

Results: 20861 adult renal transplant recipients (men: 61.7%, mean age: 49 years, mean BMI: 26.32) were included. There was a higher risk for DGF and PNF as BMI increased ($p<0.0001$, $p=0.0004$), which remained significant in multivariate analysis. 11.6% of recipients lost their graft. Underweight and obese patients had shorter graft survival ($p<0.0001$). However, only obese recipients had worse graft survival in multivariate analysis. 9.8% of recipients died, 78.3% of them with a functioning graft. There was no significant differentiation in regards to graft survival among the different BMI groups ($p=0.278$). Nevertheless, underweight recipients had shorter overall survival in multivariate analysis ($p=0.021$). Concerning our survey, all renal transplant units responded. The median percentage of recipients with BMI≥35% was 15%. Unacceptable BMI was considered a BMI over 35 in 61% of responders and a BMI over 40 in 26% of responders. 14 units suspended their patients when they gained weight above their cut-off limit. However, only one centre refered its patients to weight management.

Conclusions: Obese recipients are more likely to have DGF and PNF and they have worse graft survival, whereas underweight recipients have worse overall survival. There is also variability concerning the management of obese patients with ESRD across the UK.

P001 – poster withdrawn
P003 – poster withdrawn

P002
The role of sphingosine-1-phosphate in vascular permeability

Georgina Wilkins[1], Simi Ali[1], Neil Sheerin[1,2], John Kirby[1]

[1]Newcastle University, Newcastle upon Tyne, United Kingdom. [2]Freeman Hospital, Newcastle upon Tyne, United Kingdom

Introduction: Improving the quality of otherwise discarded organs is important to help meet ever-increasing demand. Flushing organs with perfusate in a perfusion rig has proven successful, however adding therapeutics to this system could improve this further. Sphingosine-1-phosphate (S1P) is a signalling lipid that binds five G-protein coupled receptors. These receptors are capable of altering endothelial permeability, thus using agonists and/or antagonists of S1PRs could enhance the endothelial barrier, reducing risk of oedema and leukocyte infiltration.

Methods: Human microvascular endothelial cells (HMEC-1) were grown in hypoxic conditions (1% O_2) for twenty four or forty eight hours and the changes to S1PR gene expression measured using qPCR. Concurrently, concentrations of S1P were compared between serum and perfusate using an enzyme-linked immunosorbent assay (ELISA). Lastly, HMEC-1 grown on transwells were treated with S1P/S1PR agonists then Evans Blue dye. Changes in absorbance of the solution in the bottom chamber was measured as Evans Blue dye extravasated, to measure barrier permeability.

Results: After twenty four hours in hypoxic conditions, S1PR1 and S1PR3 gene expression significantly decreased; after forty eight hours, S1PR3 gene expression significantly increased. The ELISA found concentrations of S1P in serum were significantly higher than perfusate. While treatment with S1P saw no change in permeability, treatment with an S1PR1 agonist significantly decreased permeability of HMEC-1 whereas, treatment with a S1PR3 agonist increased permeability.

Discussion: This study demonstrates how periods of ischaemia effect S1PR gene expression on the endothelium. S1PR1 agonists were shown to have positive effects on endothelial integrity, however, S1P in perfusate used in transplantation are lower than physiological levels so are unable to exert these barrier enhancing effects during perfusion. As S1P concentrations in perfusate are lower than physiological levels, addition of S1PR1 agonists to perfusate could potentially enhance the endothelial barrier in transplanted organs.

P004

HLA-binding B cell phenotype associates with patterns of indirect anti-HLA T cell reactivity in sensitised renal transplant recipients

Hannah Burton[1], Laura McLaughlin[1], Olivia Shaw[2], Nizam Mamode[1], Jo Spencer[3], Anthony Dorling[1]

[1]MRC Centre for Transplantation, King's College London, London, United Kingdom. [2]Clinical Transplantation Laboratory, Guy's Hospital, London, United Kingdom. [3]Department of Immunobiology, King's College London, London, United Kingdom

Introduction: B cells (BC) are increasingly recognised as an important aspect of the cell-mediated alloimmune response. In vitro, BC can support or regulate indirect T cell alloreactivity in response to donor antigens[1] and the associated patterns of interferon-γ production on ELISpot associate with clinical outcome[2]. This suggests that manipulating BC responses could improve transplant outcomes if we understood the factors that determine which of these roles BC are playing in individual patients. We hypothesise that the specific phenotype of HLA-binding BC will associate with distinct patterns of ELISpot reactivity.

Methods: PBMC from HLA-sensitised transplant recipients with known DSA were incubated with donor-relevant Pure® biotinylated HLA proteins and visualised flow cytometrically using fluorochrome-conjugated streptavidin. Concomitant staining with an antibody panel enabled deep phenotyping of the HLA-binding BC. Corresponding non-biotinylated Pure® HLA proteins were used in indirect interferon-γ T cell ELISpot assays to assess how BC influence the alloresponse to specific HLA in sensitised patients.

Results: HLA-binding BC can be detected in sensitised recipients at frequencies ranging from 0.01-0.88% circulating BC. Control experiments confirm:

1. Only BC show dose-dependent binding of biotinylated HLA
2. Binding is: i) via the HLA component, not biotin; ii) to the BC receptor; iii) not to Fc receptors.

Different BC subpopulations can bind HLA, though frequencies vary amongst individuals. Higher frequencies of HLA-binding class-switched memory BC (but not overall frequency of this subpopulation), strongly associate with a B-dependent anti-donor-HLA interferon-γ response in ELISpot assay. Work is underway to study BC phenotypes associated with suppression of anti-donor-HLA reactivity.

Discussion: We report for the first time a significant association between HLA-binding BC phenotype and indirect T cell alloreactivity. We aim to correlate these findings with clinical outcomes in a larger cohort, potentially uncovering a means to identify patients at risk of adverse outcomes.

References: [1]Shiu KI 2015; 88,560–568; [2]Shiu KI 2017; 91,477–492

P005

Evaluating the immunomodulatory potential of human amniotic epithelial cells as a therapeutic in *ex vivo* donor lung reconditioning

Chelsea Griffiths[1,2], William Scott III[1,2], Simi Ali[1,2], Andrew Fisher[1,2]

[1]Institute of Cellular Medicine, Newcastle University, Newcastle Upon Tyne, United Kingdom. [2]NIHR Blood and Transplant Unit in Organ Donation, Newcastle Upon Tyne, United Kingdom

Introduction: *Ex Vivo* Lung Perfusion (EVLP) provides a platform for the evaluation and reconditioning of donor lungs deemed unsuitable for transplant. Elevated expression of pro-inflammatory cytokines, interleukin-8 (IL-8) and Tumour necrosis factor-α (TNFα), in donor lungs are associated with worsened outcomes after transplantation. EVLP offers a platform to administer advanced therapeutics, including cell-based therapies such as human Amniotic Epithelial Cells (hAECs). This study aims to evaluate the immunomodulatory properties of hAECs against pro-inflammatory macrophage activation.

Methods: hAECs were isolated from term-placenta through enzymatic digest and cultured for 3, 4 and 5 days to generate conditioned media. Isolated cells were characterised using immunocytochemistry and flow cytometry for surface markers. The THP-1 monocytic cell line was differentiated into macrophages using phorbol 12-myristate 13-acetate (PMA) then treated with IFNγ and LPS to generate pro-inflammatory macrophages. ELISA and qPCR were used to detect any decrease in IL-8 and TNFα expression upon subsequent treatment with hAECs or their conditioned media.

Results: Three term-placenta were used to harvest hAECs through a serum-free process, generating large yields of viable cells. Isolated hAECs strongly expressed epithelial cell markers Cytokeratin 19 and EpCAM (>90%) but not markers of endothelial or mesenchymal cells (≤ 2%). The THP-1 cell line was successfully polarised to pro-inflammatory macrophages, demonstrated by significantly increased protein expression of IL-8 and TNFα. A significant decrease was observed for IL-8 and TNFα protein expression upon hAEC treatment of the pro-inflammatory macrophages at 6 and 24 hours, compared to the LPS control. hAEC treatment also lead to a 1.2 fold decrease in IL-8 gene expression compared to the LPS treated control at 6 hours.

Discussion: In this study, we demonstrated the potential for hAECs to reduce the production of key inflammatory cytokines (IL-8 and TNFα) from pro-inflammatory macrophages. Future studies plan to assess the therapeutic potential of hAECs within the EVLP platform.

P006

Hypoxia: the culprit in kidney injury?

Raiyyan Aftab[1], Rishab Kapoor [2], Neil Sheerin [1]

[1]Newcastle University, Newcastle, United Kingdom. [2]Vanderbilt University Medical Centre, Nashville, USA

Background: Acute Kidney Injury (AKI) is associated with increased mortality amongst patients and predisposes them to developing chronic kidney disease (CKD), which has a significant disease burden. One of the most common causes of AKI is ischaemia which leads to tissue hypoxia; ultimately causing significant damage to the kidney and resulting in fibrosis. TGF-β and integrin αvβ6, which activates latent TGF-β, have also been implicated in the development of renal fibrosis.

Methods: This project was designed to study the relationship between prolonged hypoxia in renal tubules and integrin αvβ6, particularly focusing on TGF-β activation and the development of fibrosis following hypoxia. An in-vitro model of hypoxia was established using a human proximal tubular epithelial cell line (PTECS), HKC8. HKC8 cells were cultured in 1% O_2, using 100µM $CoCl_2$ as a positive control. Protein expression was quantified using immunofluorescence, western blots and flow cytometry. TGF-β activity was assessed using a SMAD-luciferase reporter line.

Results: Culturing HKC8 cells in 1% O_2 led to decreased expression of epithelial marker E-Cadherin at 24-hours ($p \leq 0.05$) and 48-hours ($p \leq 0.05$) and increased expression of fibrotic marker alpha smooth muscle actin (αSMA) at 24-hours ($p \leq 0.05$) and 48-hours ($p \leq 0.05$). Luciferase assays established that hypoxia causes an increase in TGF-β signalling. Furthermore, hypoxia also increased the cell surface expression of integrin αvβ6. Silencing the integrin αvβ6 led to a decrease in the production of TGF-β as well as stabilisation of the epithelial phenotype.

Conclusion: HKC8 cells cultured in 1% O_2 develop a fibrotic phenotype, thus implicating ischaemia induced hypoxia in the pathophysiology of renal fibrosis. This is most likely driven by increased TGF-β production in the kidney following hypoxia. Hypoxia increased expression of integrin αvβ6 and knockdown reduced bioactive TGF-β production and protected the epithelial phenotype. αvβ6 is a target for reducing the impact of hypoxic kidney injury.

P007

Modelling and elucidating leukocyte-endothelial interactions in ex-vivo organ perfusion

Thomas Pither[1], Catriona Charlton[1], Joseph Barsby[1], Morvern Morrison[1,2], Chelsea Griffiths[1], Lucy Bates[1,2], William Scott[1,2], Simi Ali[1], Andrew Fisher[1,2]

[1]Institute of Cellular Medicine, Newcastle upon Tyne, United Kingdom. [2]Institute of Transplantation, Newcastle upon Tyne, United Kingdom

Introduction: Ex-vivo lung perfusion (EVLP) provides a means of expanding the current donor pool available for transplant in the case of end-stage organ disease. Previous research by our group has indicated the importance of IL-1β in determining the transplant success of perfused lungs and highlighted its mechanistic importance *in vitro*. Therefore, we sought to establish a working *ex vivo* model of neutrophil tracking within the vasculature to validate these observations.

Methods: 3 lungs were transported to Newcastle University at 4°C before being cannulated and gradually warmed to 35°C on a Medtronic© circuit. A bolus of neutrophils was gradually infused over 60 seconds before the lungs were perfused for 120 minutes, with regular perfusate samples being acquired for the duration as well as biopsies fixed in 4% PFA. Perfusates were quantified for cell numbers using a FACS Accuri™ C6 flow cytometer. Tissue was imaged using a Zeiss LSM 880.

Results: CFSE-labelled neutrophils were present in the perfusate of all 3 perfused lungs over 120 minutes of perfusion as shown in Fig. 1, with numbers correlating to % weight gain of lungs. An inverse correlation was also observed between perfusate cell count within 5 minutes of infusion and unbound cells post-perfusion. Neutrophils were also present within the tissue of lungs when imaged.

Fig. 1 – Neutrophil numbers in the perfusate

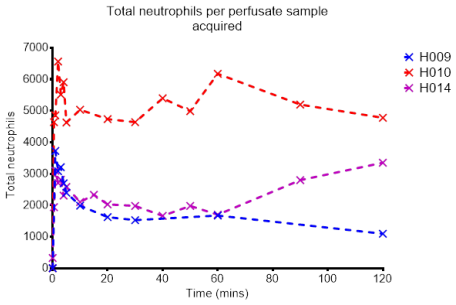
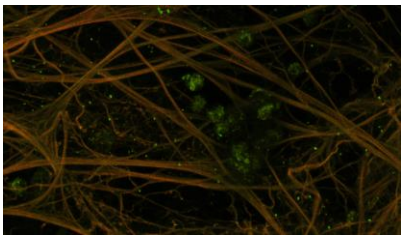


Fig. 2 – Imaged neutrophils within the tissue of a perfused lung



Discussion: The pilot *ex vivo* study performed provides a robust readout for assessing the extent of lung injury post-cold storage. Neutrophils could be reliably detected in the perfusate via flow cytometry, as well as imaged within lung tissue post-perfusion. Future work with this model will utilise perfusion of individual lungs to assess therapeutic intervention *ex vivo* and provides a promising platform by which to do so.

P008 – poster withdrawn

P009

Development of a lobar model of ex-vivo lung perfusion as a platform for evaluating novel therapeutics

Joseph T. Barsby, Catriona Charlton, Morvern I. Morrison, Tom Pither, John H. Dark, William E. Scott III, Andrew J. Fisher

NIHR Blood and Transplant Research Unit in Organ Donation and Transplantation, Institute of Cellular Medicine, Newcastle University and Institute of Transplantation, Freeman Hospital, Newcastle Upon Tyne, United Kingdom

Introduction: Ex-vivo lung perfusion (EVLP) allows objective ex-situ assessment of donor lung function and an opportunity for therapeutic intervention. Human donor-lungs for research are a scarce resource making it paramount they are used efficiently; maximising data output. We therefore developed a lobar-EVLP model, dissecting lung pairs into constituent lobes (*n=1-3*) before isolated perfusion of each lobe. By pairing controls and interventions from the same donor, we can also reduce inter-individual pharmacogenetic discrepancies.

Methods: Porcine lung pairs (procured as food-chain by-products) were used for dissection and perfusion protocol development. Perfusion was performed with open drainage, an acellular perfusate, and ventilation was corrected for lobe weights. Physiology was evaluated; including pulmonary arterial pressures (PAP), blood gas analysis, ventilation indices, tissue weight-gain and collection of tissue biopsies.

Results: 38 porcine lobes (17 lung pairs) were perfused. Median dissection time was 75mins. Perfusions lasting <30mins, or achieving <20% cardiac output (CO) with PAP of >15mmHg were considered a failure. 15 lobes perfused successfully for an average of 92mins (25-140mins). Average maximum CO tolerated (PAP ≤15mmHg) was 33% (22.5%-40%). Of the 23 failed lobes, *n=11* perfused for <20mins, *n=7* did not tolerate a CO of ≥20%, and *n=5* achieved neither. As the technique and rig advanced, fewer failures were seen (60% of failures within the first 19 attempts). Primary reason for failure was loss of endothelial integrity resulting in tissue consolidation. Attempts to perfuse human lobes (*n=4*) achieved stable successful perfusion in n=3 (75%).

Discussion: We present a foundation for further study. It is suspected that thermally traumatic post-mortem processing for the food-chain before procurement reduces lung viability and may explain many of the issues observed. Application of human lobar-EVLP may offer a valuable tool for screening therapeutic interventions for EVLP.

P010

Normothermic machine perfusion of kidneys allows assessment of mitochondrial respiration and facilitates recovery following kidney injury

Kaithlyn Rozenberg[1], Letizia LoFaro[1], Laura Knijff[1], Fungai Dengu[1], Ann Ogbemudia[1], Annemarie Weissenbacher[1,2], Rutger Ploeg[1], James Hunter[1,3]

[1]University of Oxford, Oxford, United Kingdom. [2]Innsbruck Medical University, Innsbruck, Austria. [3]University Hospitals Coventry and Warwickshire, Coventry, United Kingdom

Introduction: Normothermic Machine Perfusion (NMP) is a preservation strategy that may allow viability assessment of organs prior to transplant. 1h of Kidney NMP is currently being assessed in a clinical trial in the UK and recent work showed that 24h NMP is feasible in discarded human kidneys. The mechanism of action is yet to be determined and we aimed to assess mitochondrial function during NMP.

Methods: Anaesthetised pigs (n=5) had the vascular pedicle to one kidney clamped for 60min. The healthy contralateral kidney was removed and placed on NMP for 8h (healthy control (HC), n=5). Following 60min warm ischaemia the injured kidney was removed and placed on HMP for 24h. After 24h the injured kidney underwent NMP for 8h (n=5). An autologous red-cell based perfusate with albumin was used as a perfusion solution. Urine was recirculated for volume repletion and electrolyte balance. Mitochondria were extracted from fresh tissue and a Clark electrode was used to assess oxygen consumption and mitochondrial function. Succinate and ADP were added as substrates and respiration was measured.

Results: Interestingly, average renal blood flow was significantly higher in injured kidneys compared with healthy controls (67vs.93ml/min/100g: P=0.0039, figure 1). Median intrarenal resistance was stable throughout perfusion and similar between groups (0.47vs.0.39ru: P=0.17). Median cumulative urine output was similar in both groups (107vs.58ml: P=0.16)). Injured kidneys were more acidotic (median pH; 7.61vs.7.28: P=0.0021). HC showed no difference in mitochondrial respiration throughout perfusion, however in injured kidneys at 8h (52.07±36.24 nmol O2/min/mg, mean ±SD) respiration was significantly increased compared to other time points (-10min 11.29±6.8, p=0.0165), and (1h 15.49±7.7, p=0.0356), figure 2.

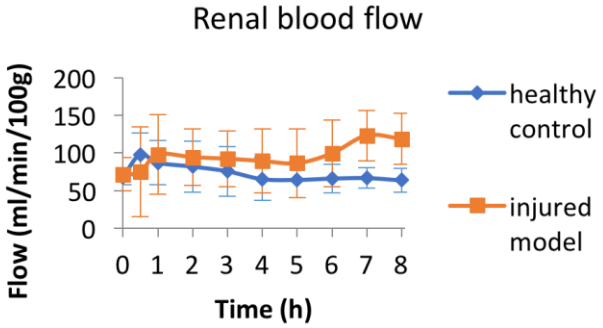


Figure 1.

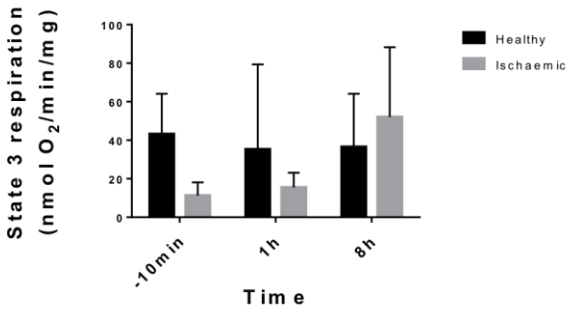


Figure 2.

Discussion: Healthy kidneys were able to consume oxygen immediately and there was no change during 8h NMP. Injured kidneys showed an increase in oxygen consumption over 8h NMP, suggestive of mitochondrial recovery.

P011

Progression of acute kidney injury to fibrosis (functional and histological characterisation from AKI to CKD): a rat's tale

Charlotte Brown[1], Usman Khalid[2], Emma Woods[1], Lucy Newbury[1], Irina Grigorieva[1], Gilda Pino-Chavez[1], Robert Steadman[1], Soma Meran[1], Rafael Chavez[2]

[1]Cardiff University, Cardiff, United Kingdom. [2]Cardiff Transplant Unit, Cardiff, United Kingdom

Introduction: Ischaemia reperfusion injury (IRI) is an inevitable consequence of transplantation, leading to delayed graft function acutely and chronic damage and fibrosis in the long-term. This is becoming more important with increasing usage of DCD and expanded criteria donors. The development of an experimental model of IRI and fibrosis would be an important tool to study both acute and chronic kidney injury. Hyaluronan (HA) is a major polysaccharide of the extracellular matrix. Ordinarily, HA is limited to the medulla and undetectable at the renal cortex. In pathology, HA accumulates in the cortex and correlates with renal outcomes, possibly mediated through CD44, the predominant HA receptor. HA synthesis occurs at the plasma membrane, dependent on the HA synthases, HAS 1/2/3.

Methods: A rat model of bilateral IRI was established, whereby both renal pedicles were clamped for 45 minutes. Male Lewis rats (n=82) were assigned to IRI or sham. Kidneys were retrieved and assessed histologically at different timepoints (24h, 48h, 72h, 7d, 14d, and 28d); through haematoxylin and eosin and Masson's Trichrome stains, in addition to immunohistochemistry. Serum creatinine was measured at baseline and prior to sacrifice.

Results: Mean serum creatinine peaked at 162µmol/L, 24h post-IRI. Creatinine normalised by 72h, thereafter remaining within normal range. 45 minutes of IRI caused marked histological damage at 24-72h, characterised by acute tubular necrosis, endothelial cell loss, tubulo-interstitial damage, and glomerular capsule thickening. Polynuclear cells were abundant, confirming the acute inflammatory state. At 28d post-injury, vasculitis was present. Glomeruli were congested, demonstrating tuft retraction. Fibrosis was abundant throughout the renal cortex. Preliminary immunohistochemistry demonstrated increased expression of pro-fibrotic mediators CD44 and HAS2 at the renal cortex.

Discussion: This is a reliable and reproducible in-vivo model of acute kidney injury and its development into fibrosis – demonstrating the AKI to CKD continuum.

P012

Using second-harmonic generation and automated image analysis to quantify renal transplant fibrosis

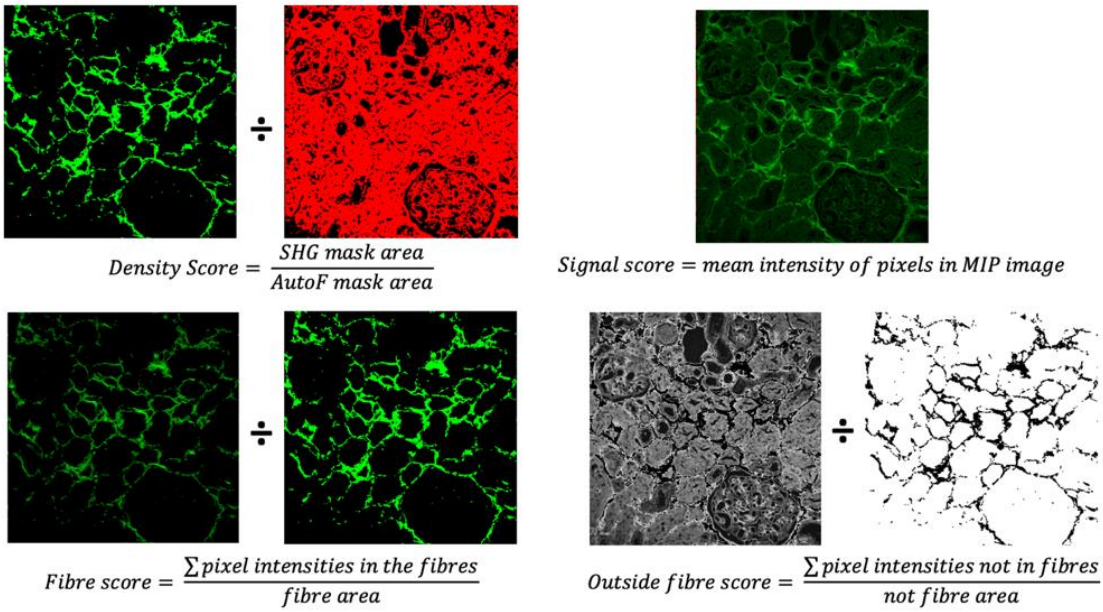
Daniel Hart, Patrick Trotter, John. R. Ferdinand, Thomas Dennison, Menna. R. Clatworthy

University of Cambridge, Cambridge, United Kingdom

Introduction: Histological assessment is used to aid decision-making around kidney transplant utilisation, but scoring is subjective, with low reproducibility and high intra- and inter-observer variability. Second harmonic generation (SHG) by two-photon microscopy has previously been used to quantify hepatic fibrosis. We sought to develop SHG two-photon microscopy and automated image analysis to quantify renal fibrosis in human kidneys, to determine if this could potentially be used as to assess organ quality in pre-implantation biopsies.

Methods: Biopsies were taken from n=4 discarded deceased donor kidneys and n=5 pre-implantation biopsies and 7uM sections generated. Imaging was performed using a multi-photon laser and data collected for tissue autofluorescence and SHG. For each section, six 590x590x10µm regions were imaged, generating a stack (z=10) of 512x512px images. Imaris was used to produce composite images for export, and MATLAB employed to develop an automated image quantification tool for collagen fibres. We used Otsu's method for thresholding, morphological opening to reduce noise, and subsequent masking. SHG image data was quantified by the generation of four scores, to assess collagen distribution and density throughout the sample (Figure.1). Anti-type I collagen staining was used to validate the specificity of the SHG signal.

Fig 1.



Results: SHG signals were consistent with the expected distribution of fibrillar type I collagen. We observed good concordance in the quantity of fibrillar collagen between adjacent sections. No association was found between quantity of fibrillar collagen and delayed graft function or renal allograft survival in the recipients of the n=5 kidneys scored, likely due to small sample size.

Discussion: Automated analysis of SHG by two photon microscopy can be utilised to visualise and quantify fibrillar collagen in transplant kidneys. Further work is on-going to increase sample size and to compare the SHG-quantified fibrillar collagen with standard histological stains and collagen transcript and protein levels using RNA sequencing and mass spectrometry.

P013

The use of vasodilators in a porcine model of kidney normothermic machine perfusion

Kaithlyn Rozenberg[1], Francesco Guzzi[1], Laura Knijff[1,2], Negin Mirtorabi[1], Letizia Lo Faro[1], Rutger Ploeg[1], James Hunter[1]

[1]University of Oxford, Oxford, United Kingdom. [2]University Medical Center Groningen, Groningen, Netherlands

Introduction: Normothermic machine perfusion (NMP) of kidneys has potential as a diagnostic and therapeutic tool, to restore function and assess organ viability. The optimal conditions for kidney NMP are still to be determined and different protocols are currently available. We are optimizing a porcine model of kidney NMP and compared the effects of different vasodilators in terms of perfusion parameters and metabolic analysis.

Methods: Slaughterhouse pig kidneys were retrieved and preserved on HMP for 3hours. Kidneys then underwent NMP for up to 7hand three groups were compared: verapamil bolus 0.25 mg/h (n=3), sodium nitroprusside (SNP), continuous infusion of 25 mg/h (n=3) and no vasodilator (n=4). An oxygenated, autologous blood-based solution containing albumin and electrolytes was used for perfusion. Insulin and nutrients were added as needed and perfusion parameters including renal blood flow, intrarenal resistance and urine production were monitored. Acid-base and metabolic parameters were also analysed.

Results: There was no difference in overall renal blood flow (ANOVA, 91 ± 35 vs 93 ± 29 vs 97 ± 53ml/min/100g, p=0.598) or mean intrarenal resistance between the groups (0.47 ± 0.14 vs 0.63 ± 0.13 vs 0.81 ±0.71ru, p=0.659). There was increased total urine production in the SNP group compared with no vasodilator (48 ± 16 vs 10 ± 10ml, p=0.031). The SNP group had a significantly lower pH (7.27 ± 0.06 vs 7.47 ± 0.03 and 7.45 ± 0.07, p = 0.008) and increased lactate levels (10.3 ± 3.36 mmol/L vs 1.0 ± 0.81 and 2.21 ± 1.85 mmol/L, p=0.003) compared to the verapamil and no vasodilator groups (figure 1 and figure 2).

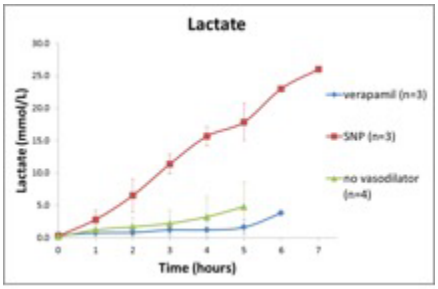


Figure 1.

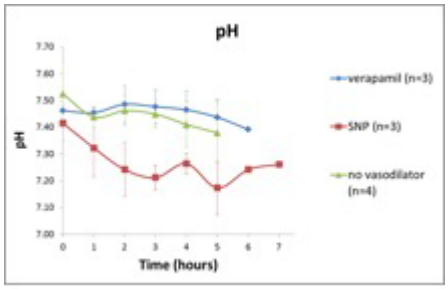


Figure 2.

Discussion: NMP of pig kidneys can be performed without the addition of a vasodilator. SNP increased urine output however accumulation of its toxic metabolite (cyanide) caused worsening lactic acidosis throughout perfusion.

P014

Multilineage human haematopoietic repopulation in non-irradiated NBSGW mice

George Adigbli[1], Joanna Hester[1], Peng Hua[2,3], Irene Roberts[3,4], Suzanne Watt[2], Fadi Issa[1]

[1]Transplantation Research Immunology Group, Nuffield Department of Surgical Sciences, University of Oxford, John Radcliffe Hospital, Oxford, United Kingdom. [2]Stem Cell Research, Nuffield Division of Clinical Laboratory Medicine, Radcliffe Department of Medicine, University of Oxford, John Radcliffe Hospital, Oxford, United Kingdom. [3]MRC Molecular Haematology Unit, Weatherall Institute of Molecular Medicine, Radcliffe Department of Medicine, John Radcliffe Hospital, Oxford, United Kingdom. [4]Department of Paediatrics, University of Oxford, Children's Hospital, John Radcliffe Hospital, Oxford, United Kingdom

Introduction: Haematopoietic stem cell (HSC) transplantation for the treatment of haematological pathologies is one of the great success stories of modern transplantation. However, studying HSC transplantation experimentally is currently limited by *in vivo* models that cannot yet recapitulate the full breadth of haemopoeisis. In order to address this, we developed a humanised immune system mouse capable of long-term multilineage haemopoiesis using the "NBSGW" strain, whose genetic modifications obviate the need for myeloablative irradiation.

Methods: Human cord blood CD133+ HSCs were transplanted intravenously into NBSGW mice (*n*=20). Blood samples were taken serially (weeks 2-20) and relevant tissues harvested for full analysis at week 21. In order to improve erythroid differentiation, clodronate liposomes were injected intravenously to deplete mouse macrophages.

Results: Human CD45+ cell chimerism in the peripheral blood, BM and spleen developed steadily after HSC transplantation (Figure 1). Chimerism levels were HSC dose-dependent. Unlike in other immunodeficient mouse strains, at higher doses ($\geq$5x10^{3}HSCs) no sex-dependent differences in BM engraftment were seen. Multilineage engraftment was seen, consisting of B cells, T cells and myeloid cells (Table 1). Human double positive (CD4+CD8+) thymocytes and peripheral CD4+ and CD8+ memory and naïve T cell subsets were present, suggesting *de novo* T cell development. CD235+ erythroid progenitors and a small population of erythrocytes were detected in BM and blood, respectively. These increased dramatically (164-fold) following clodronate treatment. Consistent engraftment and multilineage human leukocyte reconstitution was observed with as few as 5000 transplanted CD133+ HSCs.

Discussion: In contrast to previous reports, this technically uncomplicated model that utilises adult mice does not require mouse irradiation, co-transplantation of human haematopoietic stromal tissues, or human cytokine provision. Not only does this provide a useful method for assessing HSC function *in vivo*, but potentially also a framework to assess human transplant responses encompassing the breadth of innate, cellular and humoral immunity.

Figure 1. human leukocyte frequency in peripheral blood

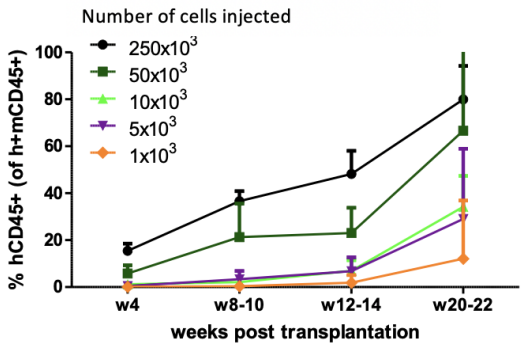


Table 1. Frequencies of human leukocyte populations in the spleen, bone marrow and peripheral blood at week 20-22 post-transplant.

		1x10^3 (n=11)	5x10^3 (n=7)	10x10^3 (n=7)	50x10^3 (n=7)	250x10^3 (n=3)
spleen						
% hCD45+	mean (SD)	32.0 (39.4)	73.5 (25.4)	79.0 (10.7)	93.6 (5.3)	98.5 (0.9)
% CD19+	mean (SD)	84.6 (5.9)	86.9 (3.2)	87.5 (3.4)	85.0 (6.0)	75.1 (8.7)
% CD33+	mean (SD)	2.5 (1.0)	2.2 (1.2)	2.2 (0.6)	2.0 (1.0)	1.5 (0.3)
% CD3+	mean (SD)	1.5 (2.9)	1.8 (3.0)	2.6 (2.7)	5.3 (5.6)	14.2 (10.8)
BM						
% hCD45+	mean (SD)	35.0 (36.2)	75.5 (17.6)	64.6 (9.5)	87.8 (11.0)	97.4 (1.9)
% CD19+	mean (SD)	72.1 (17.0)	69.0 (22.5)	81.4 (9.3)	54.5 (18.8)	36.7 (3.9)
% CD33+	mean (SD)	7.9 (11.0)	11.7 (14.2)	9.0 (11.5)	25.6 (8.9)	26.4 (6.8)
% CD3+	mean (SD)	0.8 (1.1)	1.0 (1.6)	0.9 (1.5)	1.8 (2.0)	8.5 (6.7)
blood						
% hCD45+	mean (SD)	12.1 (24.7)	29.0 (30.0)	28.1 (12.8)	50.6 (31.7)	80.0 (14.2)
% CD19+	mean (SD)	50.4 (41.1)	76.6 (16.7)	85.2 (5.5)	77.1 (7.9)	51.5 (14.6)
% CD33+	mean (SD)	2.7 (3.8)	8.5 (9.9)	1.1 (1.2)	3.0 (3.5)	8.2 (3.3)
% CD3+	mean (SD)	0.4 (0.9)	1.8 (4.4)	2.8 (3.2)	7.5 (6.2)	18.4 (8.1)

hCD45+ as % of h+mCD45+; hCD19+, hCD33+, hCD3+ as % of hCD45+

P015

Pre-transplant risk stratification for development of post transplant diabetes mellitus (PTDM) in kidney transplant patients.

Maximilian Wood[1], Holly Mabillard[2], Caroline Wroe[2], Ali Aldibbiat[2,3]

[1]Milton Keynes University Hospital, Milton Keynes, United Kingdom. [2]James Cook University Hospital, Middlesbrough, United Kingdom. [3]Institute for Cellular Medicine, Newcastle University, Newcastle, United Kingdom

Introduction:

Post transplant diabetes mellitus (PTDM) is a serious and common complication following solid organ transplantation that affects 4-25% of kidney transplant recipients. Its complication includes increased graft failure rate and mortality as well as macro-vascular and micro-vascular complications associate with diabetes. A number of modifiable risk factors for PTDM have been identified. This study aims to develop a reliable risk stratification scoring system for PTDM.

Methods: We conducted a retrospective cohort study of 137 patients of the James Cook University Hospital. Development of PTDM between 45 and 365 days post transplant was considered in the study. The diagnosis criteria used for PTDM were any two of: 1) A random glucose 11.1 mmol/L taken on two or more occasions, 2) A fasting glucose 7.9 mmol/L on two or more occasions 3) A HbA1C of 48 mmol/L. Known risk factors of developing PTDM were identified. Univariative analysis of risk factors were done where appropriate using unpaired T- tests with a confidence interval of 5% ($P < 0.05$). A scoring system was developed using grid analysis. Predictive power was tested by determining the area under curve (AUC) for the receiver operating curves (ROC) of each predictive model.

Results: 16% of patients developed PTDM between 45 to 365 days post transplant. Risk factors for PTDM identified included Age 50, BMI random glucose, use of maintenance steroids, triglycerides, CMV and HLA mismatch status, cadaveric donor and use of gout medication pre-transplant. Our initial risk stratification model demonstrated an AUC of 0.78.

Discussion: An AUC of 0.78 demonstrates good predictive power for the model proposed. However, the model needs to be validated on another cohort of patients. Risk stratification of patients will allow for the development of a structured diabetes prevention program.

P016

Emergency laparoscopic nephrectomy and autologous renal transplant following ureteric avulsion in a 70 year old patient with a single-functioning kidney

Aravind Mootiem[1], John Black[1], Rosemary Johns[1], Peter Grice[2], Mohamed Morsy[1], Tahir Doughman[1], Anna Rizzello[1], John Beatty[2], Atul Bagul[1]

[1]Department of Renal Transplantation, Leicester General Hospital, University Hospitals of Leicester, Leicestershire, United Kingdom. [2]Department of Urology, University Hospitals of Leicester, Leicestershire, United Kingdom

Introduction: The purpose of this case is to highlight outcomes of autologous transplant in patients with a single-functioning kidney sustaining a high ureteric injury during routine renal calculi retrieval surgery. We discuss the acute surgical management, post-operative morbidity and length of hospital stay.

Methods: Proximal ureteric injury is a rare (0.06-0.45%) yet recognised complication associated with ureteric stone surgery, of which 0.2% of patients require major surgical intervention. A 70 year old patient was transferred to renal transplant after sustaining a high right PUJ avulsion following rigid URS for a pelvico-ureteric stone. An on table intravenous urogram demonstrated no contrast excretion from the remaining left atrophic kidney. Autologous transplant was performed following laparoscopic donor nephrectomy.

Discussion: Imaging revealed complete avulsion of the right ureter. Past medical history included an atrophic left kidney, which was unlikely to provide a dialysis-free existence. Initial management involved insertion of a transurethral urinary catheter and an attempt at nephrostomy insertion under radiological guidance. However, due to extravasation of urine into the retroperitoneum, the collecting system was not dilated. Nephrostomy attempts were abandoned. Following assessment, the decision was made to perform laparoscopic donor nephrectomy and autologous transplant in an attempt to preserve native renal function and avoid the need for dialysis. Surgical intervention was uncomplicated. The patient experienced primary graft function. Post-operative recovery period was complicated by pneumonia and acute kidney injury, which resolved.

Conclusion: The patient was successfully discharged from hospital on day 51. Creatinine at discharge was 100µmol/l, with an EGFR of 62. Follow up at 4 months revealed a creatinine of 84µmol/l. High ureteric injury in patients with a single functioning kidney is rare. This case highlights that urgent laparoscopic nephrectomy and autologous transplant is a credible method of preserving native renal function and avoiding long-term renal replacement therapy in the elderly population with a single-functioning kidney.

P017

Training of non-medics to operate the Organ Care System for lung retrieval

Clair Ellis, Jennifer Baxter, Marius Berman, Catherine Sudarshan, Jas Parmar, Pedro Catarino, Katie Morley

Royal Papworth hospital, Cambridge, United Kingdom

Introduction: The Organ Care System (OCS) is currently being used at one centre in the UK. It is felt by sharing our experience that lessons can be learnt to benefit other transplant centres. The advantages of using the OCS lung in DBD scenarios include reducing ischaemic time in cases of lengthy travel or complex implant process. The OCS advantages are more pronounced in the DCD donors whereby further physiological, anatomical and metabolic assessment of the lungs are feasible.

Methods: In June 2018 approval was granted to use the OCS lung. Through clinical training of this portable ex-vivo perfusion device and subsequent training sessions, medical and non-medical staff have maintained competency in OCS lung set up and use. Non –medical staff are developing an in house comprehensive training module. The stages of setting up the OCS lung including priming of the lines with OCS lung solution and packed RBC, adding antibiotics and additives as appropriate. Non-medics are running the console, performing blood gases, bronchoscopy and adjusting metabolic goals.

Results: Two sets of donor lungs have been placed on the OCS. The first didn't proceed to transplantation due to left lower lobe consolidation. The second set of lungs were successfully implanted. The OCS lung session files have been sent to the Medical company in order to receive feedback and discuss lessons learned.

Discussion: OCS lung will hopefully increase the number of lung transplants that proceed. In particular among DCD donors which have at present a very low yield in translating an offer to actual transplant. Training non-medics to control the OCS is a way forward to maintain prolonged, sustainable service and competency.

P018

The contribution of the organ care system training manual in facilitating 50 successful heart transplant from hearts donated after circulatory death

Clair Ellis, Jennifer Baxter, Simon Messer, Aravinda Page, Evgeny Pavlushkov, Stephen Large, Steven Tsui, Pedro Catarino, Marius Berman, Katie Morley

Royal Papworth Hospital, Cambridge, United Kingdom

Introduction: A group of non-medical practitioners have been trained as part of the National Organ Retrieval Services (NORS) to use the Organ Care System (OCS). This means that donor hearts can be retrieved from donation after circulatory death (DCD) donors. To complete the education an OCS training manual has been designed for the non-medical practitioner to ensure competency and as an aide memoir due to DCD heart retrieval being sporadic. The aim is use this document as a benchmark for gold standard practice and has been created through the experience of the first UK centre to have an established DCD heart program.

Methods: Training of this portable ex-vivo perfusion device consisted of formal teaching sessions and in-house practice. The competency pack was developed through reflection of practice after each DCD donor run and consists of; question and answers, a troubleshooting guide, pictures to aid correct positioning of equipment and competencies to facilitate consistent practice.

Results: Between March 2015 and October 2018 50 DCD heart transplants have occurred. In addition, NORS team have also attended 17 potential DCD donors of which 5 were placed on the OCS but did not proceed to transplant. Through this experience lessons have been learnt with regards managing transport logistics, trouble-shooting during retrieval, ensuring safety of equipment, managing drug stocks and supply.

Discussion: The OCS Training Manual has ensured consistency in practice, facilitated confidence in a specialist NORS team and established uniformity with the completion of national and local documentation. The OCS training manual has been an essential element in ensuring gold standard practice. The use of non-medical practitioners will hopefully ensure continuity of practice for this specialised piece of equipment.

P020

Social media use among transplant professionals in Europe: a cross-sectional study from the European Society of Organ Transplantation

Maria Irene Bellini[1], Chiara Parisotto[2], Frank Dor[1], Nicos Kessaris[3]

[1]Imperial College NHS Trust, London, United Kingdom. [2]ESOT, Padova, Italy. [3]Guy's & St Thomas' NHS Foundation Trust, London, United Kingdom

Introduction: Social media (SoMe) are internet-based tools to gather and communicate information. The aim of this study was to survey transplant professionals in their attitude towards the use of SoMe, for a better understanding of these technologies and their impact on health communication.

Methods: Voluntary, confidential, online survey distributed through the European Society for Organ Transplantation social media platforms.

Results: A total of 190 participants answered the survey. The 37% (n=70) of the respondents was aged 35-44 years; the 55% (n=105) were male and 81% (n=154) Caucasians. The main training background was transplant nephrology (n=42; 22%) and 61% (n=115) were working in an Academic Centre. More than half of the respondents (54%; n=102) used SoMe multiple times per day, utilising equally twitter or Facebook to connect with patients (34%; n=65), or WhatsApp in 28% (n=53). To communicate about non-work-related information, the majority (65% n=124) chose WhatsApp, with the 52% (n=98) connecting through Facebook and Instagram (28%; n=54). The 41% (n=77) actively used web-based technologies for educational purposes. The main described risks associated with SoMe use were: breach of anonymity and confidentiality (84%; n=159); lack of authenticity (41%; n=77); lack of standard informed consent (41%; n=77); organ trafficking (37%; n=71).

Discussion: Transplant healthcare professionals recognise the role played by SoMe platforms in promotion of organ donation, sharing information and providing knowledge for trainees or for research's purpose. Future studies will aim to investigate how health care institutions and professional organizations could prevent risks related to the breach of confidentiality.

P021

The right message from the right messenger? An innovative communication approach to achieve community outreach awareness in addressing barriers to organ donation and "opting out"

Peter Storey[1], Linda White [2], Bushra Riaz[1], Neerja Jain[1]

[1]Kidney Research UK, Peterborough, United Kingdom. [2]Scottish Government, Edinburgh, United Kingdom

Introduction: Registration onto the NHS Organ Donation Register (ODR) from the BAME community was low in one of the UK countries. It is known that the BAME communities are more likely to need a transplant, less likely to donate and more likely to wait longer for a donation. One of the major barriers to organ donation was education and engagement with the so called "hard to reach". We aim to demonstrate how important, communication, (the theme of the conference), was used to address these issues in a novel way as well as go onto form a fruitful partnership among various agencies.

Methods: A government department funded and supported a Charity who delivered a peer to peer kidney disease and organ donation project, and community outreach to address the issue of unmet need and raise awareness. Ten volunteers were selected because of their passion for "giving back" to their communities on a health matter, specifically, organ donation as well as their natural empathy with the targeted communities. Accredited training and ongoing support/mentorship further enabled outreach awareness in their community settings. Hence, the right messenger deployed with the right message.

Results: The project engaged many thousands of people about kidney disease and organ donation, leading to a greater understanding and willingness to sign up onto the NHS ODR. Monthly figures from NHS BT confirms significantly increased numbers of people registering. Following initial funding, encouragingly, the government department is now funding the project into its 5th year.

Discussion: The model has been easily adapted to other areas and/or "hard to reach" communities. The adoption of this innovative and effective approach is an added benefit to addressing barriers to organ donation in the local communities, by the government department, bodes well to continue educating and empowering people who may be likely to "opt out".

P022

A general practice intervention targeting registration on the NHS Organ Donor Register

Catrin Jones[1], Chris Papadopoulos[1], Gurch Randhawa[1], Zeeshan Asghar[2]

[1]Institute for Health Research, University of Bedfordshire, Luton, United Kingdom. [2]NHS Blood and Transplant, London, United Kingdom

Introduction: Registration on the NHS Organ Donor Register (NHS ODR) facilitates family decision making to donate their loved one's organs. However, only 36% of the U.K. population are currently members and as such intervention is required to increase membership. Previous research has found that there is an expectation by the public and clinician of organ donation being discussed in clinical settings yet the feasibility and appropriateness of an organ donation intervention set within the context of general practice has yet to be assessed. Therefore, the present study investigated the feasibility, acceptability and fidelity of an intervention targeting NHS ODR sign-up in general practice.

Methods: Using Intervention Mapping, an intervention underpinned by the IIFF Model of organ donation registration was designed. The intervention involves prompted-choice (asking patients if they would like to join the NHS ODR in consultations), staff training and leaflets and posters. A single GP practice hosted the intervention for 3 months with feasibility assessed through registration data, focus groups with staff and online surveys for staff and patients.

Results: The intervention led to 12.6% of practice patients (n=812) being asked if they would like to join the NHS ODR during the three-month period. Nurses and healthcare assistants asked more patients than doctors (23.4%, 17.1%, 1.6% respectively). Staff positively reviewed the training session and reported engagement with the need to increase NHS ODR sign-up rates. Barriers to asking patients included limited time in consultations and it not being appropriate for some patients.

Discussion: These results show that although barriers to prompted-choice exist in general practice; some staff are able to routinely ask their patients if they would like to join the NHS ODR.

P023

The prevalence of adverse childhood experiences (ACEs) in live kidney donors

Catherine O'Leary, Katherine Fitzgerald, Michael Stephens, Siân Griffin

Nephrology and Transplant Directorate, University Hospital Wales, Cardiff, United Kingdom

Introduction: The relationship between ACEs (including physical and sexual abuse, witnessing domestic violence or growing up with household substance abuse) and poorer health outcomes is well established. A history of ACEs increases risks of health-harming behaviours and affects neurological, immunological and hormonal development but is not routinely considered in a live donor population. We have begun to measure ACEs as part of the psychological assessment of people offering a directed and non-directed kidney donation.

Methods: All potential live kidney donors attending the Renal Psychology Service for a pre-donation assessment completed the GP ACE questionnaire (developed by Public Health Wales, 2015), alongside measures of psychological well-being and a semi-structured interview.

Results: To date 11 donors (6 Male/5 female; mean age 49) have completed the ACE questionnaire. Scores ranged from 0 to 8 (median 1). Of these, 8 people had experienced at least 1 ACE and 5 had scores ≥ 4.

Table 1. Prevalence of Individual ACEs

ACE	**Prevalence (%)**
Child Maltreatment:	
Verbal abuse	27
Physical abuse	18
Sexual abuse	18
Neglect	18
Childhood Household Included:	
Parental sep/divorce	36
Domestic Violence	18
Mental Illness	36
Alcohol abuse	36
Drug use	9
Incarceration	9

Discussion: ACEs were prevalent and higher than those previously found in the general population in Wales (Public Health Wales, 2015); 45% scored ≥ 4 compared with 13.6% in the general population. Currently there is no evidence to exclude donors on the basis of a high ACE score but renal psychologists are well placed to counsel donors with a history of trauma and offer appropriate psycho-education. Further research into the long term health outcomes of donors with high ACE scores may contribute to an understanding of a potential link between childhood trauma and subsequent risk in live kidney donors.

P024

Who's opting-in? A demographic analysis of the UK NHS Organ Donor Register

Catrin Jones, Chris Papadopoulos, Gurch Randhawa

Institute for Health Research, University of Bedfordshire, Luton, United Kingdom

Introduction: The NHS Organ Donor Register (NHS ODR) is a centralised database where people can express their wish to become an organ donor after death in the U.K. Prior expression of wishes has found to be a key element in positive donation decisions by family members. The aim of the present research is to understand the demographic breakdown of the register to better target campaigns to underrepresented groups.

Methods: The NHS ODR (as of March 2017) was analysed using Chi^2 Goodness of Fit and Chi^2 Test of Independence on SPSS v23. The variables investigated were gender, nation of residency at time of registration, ethnicity, organ preference, current age and registration age, which were compared to both the U.K. population and to each other to explore intra-demographic patterns.

Results: Significant Chi^2 values were found for all analyses. To account for the impact of large sample size on Chi^2 analyses, Cramer's V was used to measure Chi^2 strength. Cramer's V was of note (above 1) for only age and ethnicity when comparing registrants on the NHS ODR to the general population. Older people, younger people and those of Black, Asian, Mixed and Other ethnic groups were underrepresented on the NHS ODR. Cramer's V was of note when comparing age to cornea donation preference, with older people more likely to register to donate their corneas than younger people.

Discussion: The results of these analyses can help guide future campaigns to encourage registration on the NHS ODR. Black, Asian, Mixed and Other ethnic groups, younger and older age groups should be targeted, as well as specifically campaigning to younger people to encourage cornea donation.

P025
Organ donation and Islam

Sara Wasim

Keele Medical School, Newcastle under Lyme, United Kingdom

Background: On the current organ waiting list 28% are Black and Ethnic Minority (BAEM) patients with only 3% of BAEM patients being deceased organ donors. Religious beliefs have found to be the major barrier to organ procurement, with the vast majority of BAEM patients being Muslims.

Aim: To facilitate discussion and gain a greater understanding of the underlying factors for BAEM participants which influences organ donation. This includes highlighting Islamic rulings driving forward the debate.

Method: A research survey was conducted on 207 Muslims within the United Kingdom (UK) aged between 16-60+ during May 2018. The data collected included: knowledge and attitudes on organ donation and where these arose from, the definition of death (circulatory and brainstem death (BSD)) and organs considered donating whilst living or deceased.

Results: The study revealed 57% of participants had considered organ donation, the majority promoted by the media or within their profession. Predominantly 64% of the outlook stemmed from an Islamic viewpoint with 39% indifferent to whom their organs were donated to. For living organ donation 16% of participants stated they would not donate an organ whilst alive yet deceased this figure rose to 55%. Death was defined as BSD in 22% of participants with 85% of participants unclear on BSD. To elaborate, 43% of participants stated it would be unacceptable using willing donors' organs if declared BSD.

Conclusion: If attitudes are to change within the BAEM community more educational campaigns ought to occur, including information on BSD. This is as many people are unaware of BSD, despite it being the major source of deceased organ donation within the UK.

P026

The use of forum theatre and non-clinical scenarios to enhance advanced communication skills for specialist nurses in organ donation

Nicola Newbound[1,2], James Van Der Walt[1]

[1]NHSBT, Birmingham, United Kingdom. [2]Education and Governance Team, Organ Donation Services Team, Birmingham, United Kingdom

Introduction: Historically, Specialist Nurses in Organ Donation (SNOD) have undergone annual refresher training on skills around donation conversations, consent, authorisation and hospital development. This took the format of a 1-day training delivered by the Professional Development Team, medical actors and role play. Feedback from SNODs included an expression of anxieties around the performance aspect of role play, and a loss of learning and development opportunities as a result.

Methods: Scoping and feedback was sought from the SNOD workforce, management teams and other key stakeholders on the benefits and restrictions of role play in challenging scenarios. Research was undertaken around alternative strategies to facilitate the practice of advanced communication skills and challenging conversations, and included time spent at Southampton University, J.Wilson (2012), where Forum Theatre, A.Boal (1985), is used. Collaboration also included work with medical actor teams and script writers, as well as input from a course redesign working group.

Results: A course redesign was undertaken, with an increase from a 1-day to 3-day course, the Shared Professional Practice Course (year 1). A full day was dedicated to Forum Theatre. The opening scenario was written to be non-clinical and allowed the group to understand the format of working in Forum Theatre style, rather than traditional role play. The rest of the scenarios to follow were given over to prepared clinical scenarios, and challenging communication encounters brought by delegates. Year 2 the same format was maintained, with an opening non-clinical scenario again, exploring communication issues and anxieties commonly encountered in donation conversations.

Discussion: Feedback Year 1 - 250+ SNODs overwhelming positive to new Forum Theatre challenging scenario work. Comments included being able to absorb, learn and try alternative communication tools. Consent and authorisation rates for Organ Donation have increased. Year 2 - Further work underway to improve exploration of advanced communication skills using Forum style theatre techniques.

P027

2, 4, 6, 8 how do we appreciate?

Rachel Clare[1], Hannah Bartlett-Syree[2]

[1]NHS Blood & Transplant, Southampton, United Kingdom. [2]NHS Blood & Transplant, Oxford, United Kingdom

Introduction: Our Specialist Nurse – Organ Donation team historically held ad-hoc shared practice sessions, but reflections focused predominantly on negative experiences. We adopted an Appreciative Inquiry (AI) framework to guide practice development and learning from excellence. This took place in the format of monthly face-to-face facilitated sessions. Our initial focus was family conversations, aiming to improve organ donation consent in accordance with NHS Blood & Transplant strategic objectives, however excellent team engagement inspired focus on other parts of the donation process too.

Methods: We have developed frameworks to help facilitate structured questioning depending on narrative theme. These maintain the '5D' approach but specific questions may differ e.g. if the experience is consent-focused as opposed to reflecting on clinician engagement. Our aim is to focus on specific themes each month e.g. consent, theatres but also allowing opportunity for sharing of narratives outside of this agenda.

Results: Managerial support has given AI internal credibility, although we have experienced logistical challenges associated with a geographically widespread team. A trial using Skype was not particularly successful – the use of technology affected the supportive 'feel' of the group. Time is now allocated within our monthly performance meeting for AI, eliminating the need for additional travel to participate. Learning points are collated and emailed as an action log and also discussed during our weekly team teleconference, enabling those who could not attend sessions to still benefit.

Discussion: To date AI has initiated teaching sessions, safer moving and handling practices, process streamlining and better family care. Members of the team have been invited to share experiences nationally and demonstrate the ways AI has shaped our practice development. We aim to fully embed an AI culture within our team, resulting in a comprehensive understanding of excellence in practice and influencing the way we approach challenges.

P028

Supporting the recipient coordinator representative within the solid organ advisory group

Laura Stamp

NHSBT, Sheffield, United Kingdom

Introduction: Each Solid Organ Advisory Group (SOAG) has 2 Recipient Coordinator (RC) representatives, many of whom currently feel more could be made of the role. This was explored with an Improvement Event (IE) utilising key stakeholders.

Method:

Stakeholders:

- Current RC representatives
- RCs
- Lay and patient representatives.

IE Structure:

- Gap Analysis
- Fishbone diagram
- Kano Model
- Ideal State Thinking

An action plan was then generated to implement solutions.

Results: 3 key themes emerged:

1. Terms of Reference
2. Development of wider Recipient Coordinator network
3. Communication

Discussion:

1. The period of tenure needed defining as was ambiguous and inconsistent. 5 years was agreed to be optimal by the group and the AG Chairs. A robust and consistent appointment process was needed for clarity and transparency and to address some existing vacancies. Future appointments would involve a written application, followed by a shortlisting and scoring process by a combination of the SOAG Chair, a SOAG Lay Member, and a professional nursing lead. A 'role outline' document was produced and distributed, so as to provide a tangible reference for future and current representatives.

2. All Recipient Coordinators (RCs) should be afforded the opportunity to input into the agenda and hear meeting outcomes directly. A guidance document to encourage suitable agenda items was circulated to RCs, so that representatives could speak on behalf of national colleagues. Post meeting, the RC representative will compile the key points for RCs, then secure approval from the Chair prior to circulating more widely, as not to wait for official minutes ratification.

3. Communication could most certainly improve out with the SOAG, so as to inform relevant parties of decisions made. RC representatives have been provided with contact databases for national colleagues, and have been urged to interact regularly to maintain open communication and bring credibility to the RC representative role within the SOAG.

P029

Influencing good working relationships between SNODs and recipient coordinators

Laura Stamp

NHSBT, Sheffield, United Kingdom

Introduction: Good working relationships between SNODs and Recipient Coordinators (RCs) is a fundamental element to establishing and maintaining good communication, minimising risk in common tasks and fostering better outcomes for donors and transplant recipients.

Method: The Lead Nurse for Recipient Coordination and a SNOD Team Manager (TM) planned a meeting entitled 'SNOD and RC Professional Nursing Forum'. There was good attendance from local SNODs and RCs. A case study of a DBD donor was presented by the SNODs, and the relevant RC presented the heart, lung, liver and kidney recipient case.

Results: Discussions developed, and topics included:
·Importance of maintaining the clinical conversation
·Appreciating the impact of even routine practice
·Relationships with Hub Operations require equal consideration as the SNOD/RC relationship.

Discussion: Since Hub Operations have undertaken organ offering, telephone interactions between SNODs and RCs have somewhat decreased from what they had been previously. Discussion with fellow clinical colleagues was lost, with the process of organ offering and acceptance becoming longer, because information was being passed through a third party. Once an organ is accepted, there is no reason why a direct SNOD-RC conversation cannot take place in the interest of clarifying clinical information, so long as the Hub are made aware of any change to organ acceptance decisions. Interestingly, SNODs felt the donor case presented was 'routine' as did RCs about the recipient journey. However, the opposite group benefitted greatly from learning how even the minor details on the other side impact the bigger picture and on their part of the donor/organ journey. It provided explanations, insight and understanding, and fostered tolerance and respect for the respective roles. SNODs and RCs need to be mindful of including Hub Staff in a 'triangle' of communication and afford them the same esteem as their clinical colleagues.

P030

"Which service is best for me?" reducing avoidable emergency admissions for renal transplant recipients

Linda Boorer, Richard Powell

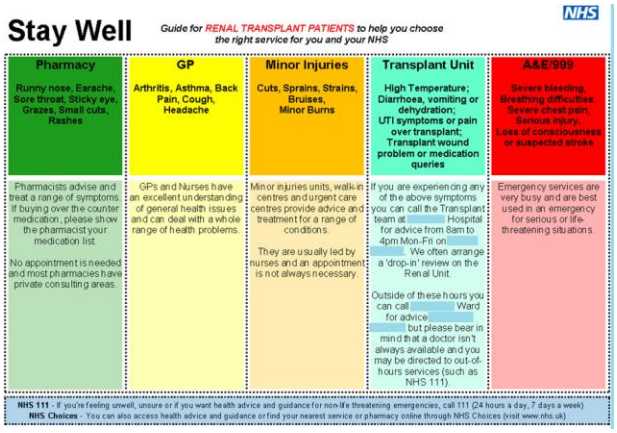
University Hospitals Plymouth, Plymouth, United Kingdom

Introduction: With mounting pressures on emergency services, strategies to reduce unnecessary hospital admissions are becoming increasingly important. In 2017 we introduced a real-time automated patient alert (RAPPA) system in our transplant unit, notifying the nursing team of patient admissions. It became evident that renal transplant recipients were frequently attending the emergency department (ED). We conducted an audit to quantify the scale of the problem, leading to the development of patient education resources and a transplant unit telephone triage tool.

Methods: Data was collected over a three-month period. Case notes were reviewed to determine the reason for attendance and whether it could have been avoided. Each patient was contacted to ascertain the circumstances of their attendance and why they chose to attend ED.

Results: 49 renal transplant recipients attended ED. The majority (57%) self-referred, and the remainder attended by ambulance or via primary care services. Interestingly 82% attended during normal working hours. Presenting complaints ranged from minor injury to major illness, with sepsis (26%) and cardiovascular/respiratory problems (20%) commonest. Case analysis showed that half of ED attendances were potentially avoidable.

Discussion: Renal transplant recipients have complex health needs and often attend ED with emergent medical problems. Patient and staff education are key to avoiding unnecessary ED attendances. With input from a local transplant patient group we developed a leaflet entitled "Which service is best for me?" (adapted from a local commissioning service publication) with advice regarding which local service is most appropriate for a range of health complaints. We have also sought to improve telephone assessments made by staff when patients ring the renal ward, by developing a triage tool to aid decision making for transplant-specific problems. To our knowledge these are the first such resources designed in a transplant setting. Further results and feedback will be available in time for the BTS congress.



Stay Well — *Guide for RENAL TRANSPLANT PATIENTS to help you choose the right service for you and your NHS*

Pharmacy	GP	Minor Injuries	Transplant Unit	A&E/999
Runny nose, Earache, Sore throat, Sticky eye, Grazes, Small cuts, Rashes	Arthritis, Asthma, Back Pain, Cough, Headache	Cuts, Sprains, Strains, Bruises, Minor Burns	High Temperature; Diarrhoea, vomiting or dehydration; UTI symptoms or pain over transplant; Transplant wound problem or medication queries	Severe bleeding, Breathing difficulties, Severe chest pain, Serious injury, Loss of consciousness or suspected stroke
Pharmacists advise and treat a range of symptoms. If buying over the counter medication, please show the pharmacist your medication list. No appointment is needed and most pharmacies have private consulting areas.	GPs and Nurses have an excellent understanding of general health issues and can deal with a whole range of health problems.	Minor injuries units, walk-in centres and urgent care centres provide advice and treatment for a range of conditions. They are usually led by nurses and an appointment is not always necessary	If you are experiencing any of the above symptoms you can call the Transplant team at [redacted] Hospital for advice from 8am to 4pm Mon-Fri on [redacted]. We often arrange a 'drop-in' review on the Renal Unit. Outside of these hours you can call [redacted] Ward for advice [redacted] but please bear in mind that a doctor isn't always available and you may be directed to out-of-hours services (such as NHS 111).	Emergency services are very busy and are best used in an emergency for serious or life-threatening situations.

NHS 111 - If you're feeling unwell, unsure or if you want health advice and guidance for non-life threatening emergencies, call 111 (24 hours a day, 7 days a week)
NHS Choices - You can also access health advice and guidance or find your nearest service or pharmacy online through NHS Choices (visit www.nhs.uk)

	GREEN	AMBER	RED
	Inform transplant nursing team Out of hours: ring at 08.00hrs	Telephone review +/- face to face assessment Normal working hours: inform transplant team Out of hours: discuss with SpR/consultant in morning	Urgent assessment +/- admission Discuss with SpR/consultant immediately
	In an emergency (e.g. serious injury, severe bleeding, breathing difficulties or chest pain, loss of consciousness or suspected stroke), advise patient to call 999 immediately or attend Emergency Department		
Temperature	36°C – 37.4°C	37.5°C - 37.9°C Repeat in an hour and patient call back.	38°C or above
	Immunosuppressed patients may have an infection without being pyrexial. Hypothermia (<36°C) can also be an indicator of sepsis		
Diarrhoea/vomiting, dehydration	Able to take medications & fluids normally	Unable to take medications or fluids < 12 hours Reduced urine volume	Unable to take medications or fluids > 12 hours Not passed urine in >12 hours
Urinary tract infection symptoms (e.g. dysuria, pain over transplant)	No fevers No abdominal pain Eating & drinking normally	37.5°C - 37.9°C Mild abdominal pain Reduced oral intake	38°C or above Severe abdominal pain Unable to take medications or fluids > 12 hours
Transplant wound problem	Minor wound problem e.g. dressing change, retained sutures/clips	Wound dehiscence Suspected wound infection (e.g. pain, redness, discharge)	Active bleeding from wound
Transplant medication queries	Inform transplant team or pharmacist. Can come to ward for emergency supply if run out of transplant medications		
	IF IN ANY DOUBT ORGANISE URGENT FACE TO FACE ASSESSMENT		

P031

Deceased organ donation retrieval: a review of health care practitioners practice in a local theatre setting

Vanessa Pritchard, Sarah Box

NHSBT, Bristol, United Kingdom

Introduction: In the financial year of 2017-2018 NHS Blood and Transplant reported that deceased donation of individuals reached 1594. This is compared to 2003-2004 where approximately 770 deceased donation proceeded to successful organ retrieval.[1] The facilitation of organ donation requires skilled multi-disciplinary health care professionals (HCP's) to enable the safe transition of organs to allocated recipients.[2] Local Theatre HCP's are vital to multidisciplinary working and supporting deceased organ donation. A local survey conducted by Specialist Nurses in Organ Donation aimed to highlight the need for further education and support for Theatre HCP's in the organ donation retrieval process.

Method:

- A literature search was undertaken on the benefits of simulation.
- A questionnaire was distributed to 43 local Theatre HCP's
- 22 local regional hospitals were asked whether theatre simulation programmes for organ retrieval had been implemented.

Results: 37% of the Theatre HCP's did not feel competent in supporting organ donation retrieval, 35% participants stressed they were also not competent assisting with end of life care. 88% of Theatre HCP's agreed that simulation based teaching would benefit their educational needs, resulting in competence and knowledge of the organ donation retrieval process. Simulation based education could enable Theatre HCP's to gain knowledge and understanding in a safe learning environment.[3,4,5] 100% of hospitals interviewed do not have a simulation programme implemented for organ retrieval education.

Discussion: Whilst this is a small local case study, evidence highlights educational needs among Theatre HCP's in supporting the organ donation retrieval. A literature review has demonstrated the benefits of simulation style learning. In conclusion a simulation programme will be utilised locally to develop knowledge, understanding and improve multi-disciplinary working of an organ donation retrieval in the theatre setting.

P032

Pre-emptive live donor kidney transplantation: moving barriers to opportunities. An ELPAT view

David van Dellen[1,2], Lisa Burnapp[3], Franco Citterio[4], Nizam Mamode[3], Gregory Moorlock[5], Kristof van Assche[6], Willij Zuidema[7], Annette Lennerling[8,9], Frank Dor[10]

[1]Manchester Royal Infirmary, Manchester, United Kingdom. [2]University of Manchester, Manchester, United Kingdom. [3]Guy's & St. Thomas' NHS Foundation Trust, London, United Kingdom. [4]Catholic University, Rome, Italy. [5]Warwick University, Coventry, United Kingdom. [6]Antwerp University, Antwerp, Belgium. [7]Erasmus Medical Centre, Rotterdam, Netherlands. [8]Sahlgrenska University Hospital, Gothenburg, Sweden. [9]University of Gothenburg, Gothenburg, Sweden. [10]Hammersmith Hospital, London, United Kingdom

Live donor kidney transplantation (LDKT) is the optimal treatment modality for end stage renal disease (ESRD), enhancing patient and graft survival. Pre-emptive LDKT, prior to renal replacement therapy (RRT) requirement, provides further advantages, due to uraemia and dialysis avoidance. There are a number of potential barriers and opportunities to promoting pre-emptive LDKT:

1) National frameworks: Significant infrastructure is needed to deliver robust programmes, which varies based on socio-economic standards. This can impact on national prioritisation of pre-emptive LDKT and supporting education programmes. Focus on other programme's components, including deceased kidney transplantation and RRT, also hampers uptake.
2) Health care providers and transplant programmes: LDKT programmes are designed to provide maximal benefit to the recipient, which is specifically true for pre-emptive transplantation. Health care providers need to be educated to maximise early LDKT referral.
3) Societal norms/cultural expectations: Equitable access for varying population groups, without socio-economic bias, needs prioritisation. Cultural barriers, including religious influence, also need consideration in developing successful outcomes.
4) LKDT donors: The benefit of pre-emptive LDKT needs to be emphasised, and opportunities provided to potential donors, to ensure timely and safe work-up processes.
5) Patients with ESRD: Recipient education and preparation for pre-emptive LDKT needs to ensure increased uptake. Awareness of the benefits of pre-emptive transplantation require prioritisation for this population group.

We recommend an approach where:

- Patients approaching ESRD are referred early to pre-transplant clinics facilitating early discussion regarding pre-emptive LDKT.
- Potential donors for LDKT are prioritised for work-up to ensure success.
- Education regarding pre-emptive LDKT should be the norm for patients approaching ESRD, appropriate for the patient's cultural needs and physical status.

Pre-emptive transplantation maximises benefit to potential recipients, with the potential to occur within successful service delivery. To ensure preemptive transplantation as the norm, investment in infrastructure, increased awareness, and donor and recipient support is required.

P033

School's transplant education programme (STEP): a paradigm shift in transplant education

Hussein Khambalia, Angela Summers, Iestyn Shapey, Giuseppe Giuffrida, Zia Moinuddin, David van Dellen, Titus Augustine

Manchester Royal Infirmary, Manchester, United Kingdom

Introduction: The first aim of the NHSBT paper "Taking Organ Transplantation to 2020: a UK Strategy" is to create an ethos in society where organ donation is seen as the norm, leading to consent rates beyond 80%. The delivery of this ambitious target requires a paradigm shift in societal attitudes to organ donation, beyond simple legislative change. This is highlighted by the lack of a significant increase in organ donation rates in Wales following the introduction of the soft-opt-out model. With this in mind, the authors introduced the School's Transplant Education Programme (STEP) in the North West of England. The programme introduces the concepts of organ donation to school-aged children, in line with the Personal, Social and Health Education national curriculum.

Methods: Transplant professionals delivered one-off, interactive teaching sessions using resources provided online by NHSBT. Parents were asked to consent prior to the session and were invited to complete a pre- and post-session questionnaire, examining their attitudes towards organ donation.

Results: STEP has been delivered to 505 pupils (9 declined consent), median age 11 years (10-16), mixed religious beliefs and ethnic origins. Prior to the teaching session, 4% had discussed organ donation at home and 12% of respondents had at least one family member on the organ donor register (ODR). Within 2 weeks of the teaching session 73% had discussed organ donation ($p<0.001$) and 24% of respondents had at least one family member on the ODR ($p<0.001$). In addition, subjective feedback was consistently rated as excellent.

Discussion: Educating children at an early age about these sensitive and emotive issues leads to a significant increase in awareness of organ donation. The long-term benefits of educational programmes such as STEP in improving donation rates require clarification, but these preliminary data suggest early positive interventions may have dramatic effects on the organ donor shortage.

P034

Tackling missed and late referrals of potential organ donors: an 'EASY' tool to refer

Alice Workman[1,2], Sarah Mason[1]

[1]NHS Blood and Transplant, London, United Kingdom. [2]Royal Free London NHS Foundation Trust, London, United Kingdom

Introduction: Every year there are missed and/or late referrals of potential organ donors. There has been a reduction in missed referrals across the UK over the last 5 years there were still 691 patients not referred to the Specialist Nurse – Organ Donation (SNOD) in 2017-2018. London specifically had 13% missed referrals for Donation after Circulatory Death (DCD) and 26% of those referred were not referred within a timely manner.

Method: A cluster of SNODs within the London team cover 6 trusts with multiple intensive care units, both adult and paediatric and Emergency Departments. Each SNOD has a responsibility to educate and promote organ donation within their embedded hospitals and with the ever transient rotation of nurses and medical team this tool would hopefully embed standard practice. The tool was designed as a pocket size guide that could be an aid post education to prompt, promote and summaries the process for medical professionals.

Result: The tool is an 8-page guide based on the acronym ’EASY’ and elaborated per page.

E arly
A ssessment
S uitability
Y es/No to approaching

The tool is currently with NHS Blood and Transplant branding ensuring correct design and format. It will be printed with agreement with the Royal Free London NHS Foundation Trust Organ Donation Committee. We plan to print 2,000 copies to start and this will firstly be given out in the cluster that designed this leaflet.

Discussion: The design and format ensures that it does not have to be changed per hospital or region. The tool has had a positive response during the design stage from other SNODs in region. After cluster review, if this is received well and reflected positively in the Key Performance Indicators then we would hope to expand to the other hospitals within the London region and potentially nationally.

P035

Cross regional shared practice: donor management & optimising organs: ABCDE

Sarah Mason[1], Gordon Turpie[2], Teressa Tymkewycz[1]

[1]NHS Blood & Transplant, London, United Kingdom. [2]NHS Blood & Transplant, South East, United Kingdom

Introduction: Specialist Nurses – Organ Donation (SNODs) are fortunate to have a structured training pathway. An essential part of their role involves organ optimisation of the deceased organ donor. However, it has been noted that there is minimal training around this in their pathway currently. A working group from the Eastern, London and South East Organ Donation Services Team developed a one-day training package.

Method: Donor optimisation is often taught informally, and the content depends on the knowledge and confidence of the trainer. SNODs come from a range of critical care backgrounds and knowledge of organ optimisation is variable. It is often reliant on previous education and experience and therefore a training need was identified. A survey was sent to the three teams to determine their level of confidence in this area and to ascertain their knowledge deficit. From this feedback a training package was created. The structure of the package would comprise of a physiology refresher, taught clinical skills and knowledge sharing in the morning. The afternoon comprising of practicing clinical skills in a simulation laboratory with three role play scenarios based in the critical care setting.

Results: Following each day the delegates were asked to complete an anonymous survey to give their feedback. So far feedback has demonstrated that those that have attended have benefited from an increase in knowledge and that delegates feel that their donor management will be improved because of the day.

Discussion: It became clear that there are variances in the way we practice form region to region including variance in requirements from cardiothoracic centres and this training day allowed a platform for practice sharing and knowledge building. However, it has highlighted the need and desire from SNODs for this training package to be made available to all regional SNOD teams.

P036

Development of a novel multidisciplinary team meeting model: providing excellence in patient care

David van Dellen[1,2], Hussein Khambalia[3,2], Giuseppe Giuffrida[1], Titus Augustine[1,2], William Stephens[1]

[1]Manchester University NHS Foundation Trust, Manchester, United Kingdom. [2]University of Manchester, Manchester, United Kingdom. [3]Manchester University Foundation NHS Trust, Manchester, United Kingdom

Background: Transplant is at the forefront of providing team-based care, replacing the traditional model of an individual clinician working in isolation. However, in contentious decision-making, personal interactions may impact on clarity of process and outcome. There is currently no competency-based training preceding a consultant chairing a multidisciplinary team meeting (MDT). Optimal outcomes may be protected by development of a model of an independent external chair, ensuring patient centred decisions. We present our experience in this development,

Methods: A recently retired diabetologist has chaired the departmental transplant MDT for 4 years. This has incorporated clinical and radiology meetings, as well as departmental morbidity and mortality meetings. The methods utilised included to:

·Encourage a robust and frank exchange of views: ensure patient focused care.
·Ensure that a resolved position will always be reached.
·Protect the meeting from immediate external distractions and influences.
·Provide training opportunities.

This was done pro bono, impartially and with the express aim of not providing a clinical opinion.

Results: The independent chair has:

·Provided a transformative effect on morale and behaviours as well as afforded a role model for trainees
·Ensured a convivial atmosphere for a robust exchange of differing views to ensure optimal decision making.
·Become a valued neutral ‘sounding board’ for other issues within the clinical team.

Conclusions: Transplantation is almost unique in that clinical practice occurs within the context of an informed patient population where major surgery can be carried out by a surgeon who has not built the initial patient rapport that pre-operative work-up provides. This is in the context of the significant pressures of published outcome data and stresses any team structure. A functional collaborative MDT aiming for optimal patient opportunities and outcomes is enhanced by independent decision-making.

P037

Developing & maintaining a successful memorandum of understanding between NHSBT & Mohan Foundation India

Angela Ditchfield[1], Satya Sharma[2], Sunil Shroff[3]

[1]NHS Blood & Transplant, United Kingdom, United Kingdom. [2]Deputy Lieutenant, West Midlands, United Kingdom. [3]MOHAN Foundation, Chennai, India

Introduction: In January 2015 a landmark Memorandum of Understanding (MoU) was signed between NHS Blood & Transplant and MOHAN Foundation, Chennai, India. The objectives of the MoU was to cultivate collaboration and knowledge sharing between the two organisations with the aim of increasing the organ donation consent rate in India and the UK. Since this momentous partnership was formed both organisations have worked collectively to share experiences and practice, gain new knowledge and support the growth of each organisation.

MoU Achievements

- Members meet twice yearly to discuss ideas and plan activities for the year. The activities aim to help raise awareness of organ donation amongst Black, Asian and Minority Ethnic (BAME) communities in the UK and also improve the donation rates in India.
- 'Flesh & Blood' initiative raising awareness amongst BAME communities supported by Bishop of Lichfield & Archbishop of Canterbury
- UK consultant surgeon currently on secondment in India sharing knowledge and expertise.
- Donor Optimisation App developed by former Regional Clinical Lead Organ Donor who is now Consultant in India. The App is shared among healthcare professional in both UK & India and is used to support the management of potential donors.
- Several members of MoU from both countries have attended events and training courses in UK & India learning and sharing practice.
- Development of a proposal to form a Commonwealth organ donation forum.

Discussion: The MoU will continue to progress and grow, strengthening the partnership between the UK and India. We learn from each other and help support our organisations to succeed and become the best they can be, improving donation rates and saving lives. There may be an opportunity to share practice with other commonwealth countries and develop a collaborative membership, sharing experiences of exceptional practice, working to save lives.

P038

Medical student delivered organ donation teaching in secondary schools – the experience in Torbay

Ben Ivory, Camilla Notley

Torbay and South Devon NHS Foundation Trust, Torquay, United Kingdom

Introduction: It is recognised that previously discussed wishes are a predictor of a positive response when families are approached to consent to organ donation. We designed a program in South Devon to provide education about OD to students of a local college and encourage them to discuss their wishes with their families.

Methods: A one-hour education package was devised between the local CLOD and SNOD at Torbay hospital. This involved 30-40 minutes of small group work and PowerPoint slides, followed by 10 minutes for students to design and draw promotional posters for OD and 5-10 minutes for questions. An initial pilot afternoon was well received and we were asked to provide further sessions .To minimise the time impact on the SNOD and CLOD we invited medical students to volunteer to provide the sessions. The students attended an initial training session and then observed a session at the college. The next session was delivered by the students with support from the CLOD and SNOD. All subsequent sessions were delivered by the medical students, with experienced providers mentoring the novices. Data was collected to enquire about attitudes to signing the ODR and likelihood of discussing wishes with family members.

Results: In the 6-month pilot, 8 sessions were delivered to around 320 pupils. The following year, with a new group of 20 medical students, more than 800 college students received the education package. Of those surveyed, 57% of those not on the ODR were more likely to sign up, 34% no difference and 9% less likely. 72% of students stated they would definitely or likely discuss their wishes with their families.

Discussion: Our project delivered a structured program of education to school age students, delivered by medical students that appears to meet the stated aims. The use of medical students minimised the time impacts on clinical staff.

P039

Collaborative communication: an innovative, partnership approach between community, local authority & charity addresses barriers to organ donation and "opting out"

Brenda Scotland [1], Peter Storey[2], Magdi Yaqoob[3], Helen Rainey[3], Surma Begum[2], Neerja Jain[2]

[1]Tower Hamlets Public Health, London, United Kingdom. [2]Kidney Research UK, Peterborough, United Kingdom. [3]Barts Health NHS, London, United Kingdom

Introduction: Registration onto the NHS Organ Donation Register (ODR) from the BAME community in one deprived area is low. We know that the BAME communities are more likely to need a transplant, wait longer for a donation and are less likely to donate.One of the major barriers to organ donation within this community is the permissibility of donation within Islamic ruling. Anecdotal evidence suggests this will be more challenging to overcome if deemed consent becomes law. We aim to demonstrate how, culturally-sensitive communication was used to address these issues and led to a further partnership approach to aid sustainability.

Methods: The local Public Health Team and a Charity delivered a peer to peer organ donation pilot project, a faith leaders seminar, focus groups, a Ramadan campaign and community outreach to address the issue of permissibility and raise awareness of kidney disease and need for increased organ donation. Ten volunteers were selected to deliver the project because of their lived experience, passion for organ donation and natural empathy with the targeted community. Accredited training further enabled outreach awareness in their community settings.

Results: The project engaged key Muslim faith leaders in conversation about the permissibility of organ donation, leading to a greater understanding and willingness to support the project than prior to this engagement. Monthly figures from NHS BT confirms increased numbers of people registering, having engaged thousands. Following initial seed funding, encouragingly, the local authority is now funding the follow- on work.

Discussion: The model has been easily adapted to any other areas and/or "hard to reach" community. The adoption of this innovative and effective approach to addressing barriers to organ donation in this community, by the local public health, bodes well to continue educating and empowering people who may be likely to "opt out".

P040

National organ donation ambassador programme: empowering volunteers to increase the impact of localised organ donation promotion in UK communities

Katy Portell

NHS Blood & Transplant, National, United Kingdom

Introduction: A national volunteer scheme has been launched which aims, by empowering volunteers, to deliver impactful messaging about organ donation across UK communities. Initial pilots have led to the development of practices and processes that will inform this new model of volunteer activation and support national behaviour change initiatives.

Methods: Two regional pilots were developed to trial three aspects of the programme: recruitment, training, and operations. The first phase tested the organisation's existing recruitment process when applied to the volunteer scheme. Initial training was delivered in the form of an all-day interactive workshop. Operationally, ambassadors have been sharing how organ donation has impacted on them personally through speaking engagements, manning organ donation promotion stands at a variety of events, and providing feedback on the impact of these activities. Feedback on each element of the programme has been used to further develop the scheme.

Results: 31 Ambassadors were recruited with various connections to donation and transplantation and with > 50% from a BAME background. From August to October 2018, Ambassadors have volunteered approximately 165 hours at 31 promotional activities in two regions. These volunteers have reported 1,512 meaningful conversation with members of public, 727 commitments to converse with families, 39 living donation conversations, and 489 sign-ups to the NHS Organ Donor Register. Pilot feedback suggested the recruitment process was too complex for a volunteer role but that the training workshop format was well received and effective.

Discussion: The pilots established a model for a national volunteer scheme to promote organ donation by engaging and empowering individuals to share their personal experiences with their communities in forums the organisation might not otherwise have access to, all the while alleviating pressure on the current workforce. These pilots set a foundation for utilising volunteers to increase message reach and impact, and established proof of concept.

P041

Online course on organ donation; a journey from concept to implementation

Shibu Chacko, Gordon Turpie, Julie Booth

NHS Blood and Transplant, London, United Kingdom

Introduction: The United Kingdom Organ Donation Taskforce (2008) recommended that all clinical staff likely to be involved in the treatment of potential organ donors should have mandatory training in the principles of organ donation (OD), but to date, there has been little progress in this area. Although there are some educational activities and courses available in the UK, these are mostly aimed at nurses who are already working in the donation and transplantation field and not available to the wider healthcare community or the public.

Methods: To help address this, an online course was designed which aimed to increase the knowledge and awareness of current and future healthcare professionals (HCP). The intention is to give the HCP a clear understanding of the basic principles and processes involved in OD. It was developed as a two week, (level 6) course with collaboration between NHSBT and St George's University London (SGUL). The working group consisted of professionals from both organisations. The course which covers all aspects of the OD process was developed over the period of one year and is hosted on Future Learn.

Results: The first cohort of the course went live on 20th September 2018 and was offered to candidates around the globe. The course attracted over 1200 learners from over 73 countries and has received favourable feedback from the learners. It has also attracted several members of the public who were interested to learn more about the OD process. The organ donor register (ODR) sign up link provided in the course platform allowed the individuals to make an informed decision on joining the ODR.

Discussion: This new course was aimed at multidisciplinary teams in hospitals to ensure that OD becomes part of the normal end of life care within the acute hospitals whilst supporting HCP's who are involved with the donation process.

P042

Standardising the diagnosis & confirmation of death following irreversible cardiorespiratory arrest in an intensive care setting

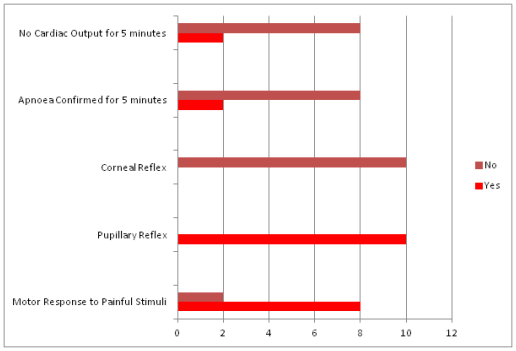
Aaron Johnston

Belfast Trust, Belfast, United Kingdom

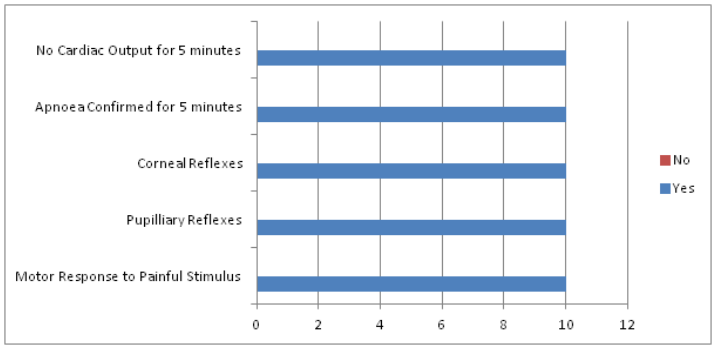
Introduction: Unlike the process to confirm brain stem death, we currently have no standardisation to identify death following irreversible cardio-respiratory arrest. The current practice varies widely in our I.C.U. As the incidence of non-heart beating organ donation increases, standardising the confirmation of cardio-respiratory arrest will allow this to be done effectively in time critical situations.

Methods: A retrospective study was used in a single centre I.C.U. Notes were gathered from the ten previous deaths in the unit and assessed if the criteria used in the confirmation of death met guidelines set by the Academy of Medical Royal Colleges.

Results: Overall it was noted that the current practice of confirmation death in irreversible cardio-respiratory arrest varies widely. Checking papillary reflexes and motor response to painful stimuli was performed well. Corneal reflexes were not checked on any patient. Checking for cardiac output and apnoea was performed in all patients; however the length of time varied from 60 seconds to 5 minutes. In some charts the time was not documented at all.



Discussion: Following these results, we worked with the IT department to create a checklist on our electronic ICCA system which met the guidelines set by the Royal Academy of Medical Colleges. This is a simple 'tick-box' exercise which must be completed prior to transferring the patient to the morgue. The same should also be documented accurately in the patients' notes. The checklist on ICCA system, alongside current guidelines were discussed with all colleagues at weekly meetings and via email. The same data was then collected 6 months later so assess response, with the following results:



As the table highlights, we are now confirming irreversible cardio-respiratory arrest in accordance with guidelines set by the Royal Academy of Medical Colleges in all notes belonging to recently deceased patients.

P043

What do primary school children really think about organ donation & transplantation (ODT)? Results of a focus group study

Rachel Hung, Roberta Bullingham, Bimbi Fernando

Royal Free Hospital, London, United Kingdom

Introduction: 'Taking organ transplantation to 2020' includes education to improve the willingness to donate. We previously reported that educating primary school children successfully led to discussions of ODT with their family and peers. We subsequently sought to understand the views of primary school children on this topic via focus groups.

Method: Three workshops were conducted by a team consisting of a consultant transplant surgeon, 2 junior doctors and 2 transplant recipients at 2 primary schools in north London. Only year 5 and 6 primary school students were included. 4 weeks after the workshop, students that attended were invited to participate in a focus group where 6 activities were conducted to investigate the following themes; barriers to OD, their understanding and emotions towards OD, their preferred way about learning about OD, dealing with death and acculturation of BAME students.

Results: A total of 30 students took part across 3 focus groups. The median age was 11 years old (range 9 – 11), 12 males (40%), 16 white (53%), 8 south Asian (27%), 3 black (10%) and 3 others (10%). Data analysis reveals overwhelmingly positive reactions to the workshop. The top barrier to ODT was identified as religion followed by fear. Feelings of sadness but also happiness of helping give life to someone else via ODT were discussed. Students felt that learning about ODT via movies or video games was more effective. Interestingly, not one student felt uncomfortable talking about death and their understanding of death were realistic and appropriate. BAME students had also acculturated well into the UK.

Discussion: This qualitative study describes the views, emotions and understanding of primary school children towards ODT. Education of ODT should be done from a young age to maximise success of behavioural change towards ODT and this becomes relevant as opt-out legislation progresses in the UK.

P044

Organ donation simulation training in the critical care; driving forward to improve the care of potential donors and their families

Katherine Hurley[1], Leanne Fare[1], Mark Haslam[2], Rebecca Offord[3], Elizabeth Partridge[2], Maria Hunt[3]

[1]NHSBT, Gloucester, United Kingdom. [2]GHNHSFT, Cheltenham, United Kingdom. [3]GHNHSFT, Gloucester, United Kingdom

Introduction: The Nice Organ Donation and Transplantation guidance (2011) recommend that the multi-disciplinary team involved in the initial approach should have the necessary skills and knowledge to provide to those close to the patient appropriate support and accurate information about organ donation. With the introduction of the national competency framework for registered nurses (2015), we realised there was a gap in the training we were offering both to enable staff to fulfill their competencies but also to give them the confidence in caring for patients who have devastating brain injuries (DBI) that may become organ donors.

Methods: Simulation as a training method has been shown to stimulate, engage and inspire nurses and is used throughout medical and healthcare training. Collaboratively the trust specialist nurses and clinical lead for organ donation, worked alongside the senior sisters and link nurses to formulate a DBI day where we combine theory and simulation to journey through the experience of a patient with a DBI in the ITU from admission, management, coning, neuro death testing, family conversations and approaching for organ donation.

Results: Over twelve months we have successfully run three days which have been fully attended and supported, we actually have a waiting list of staff who wish to attend. The feedback has shown we are offering a positive, informative day which has revitalised the passion for organ donation within the nursing team driving referrals and ensuring the best practice guidance is followed.

Discussion: The day has enabled our staff to feel more confident and **subsequently** enhanced the care our potential donors and families receive which has enable them to make decisions about donation in a supportive environment at a time that is right for them. Our next steps is to following a patient to donation after cardiac death to include theater staff.

P045

Assessing the effect of education on medical students' knowledge and perceptions of organ donation and donor family perspectives

Julian Sonksen[1], Rachelle Schofield[2]

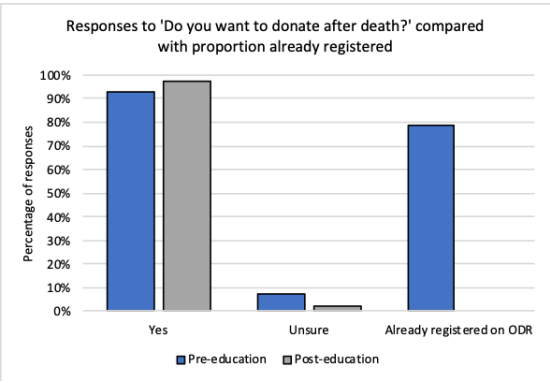
[1]The Dudley Group NHS Foundation Trust, Dudley, United Kingdom. [2]University of Birmingham, Birmingham, United Kingdom

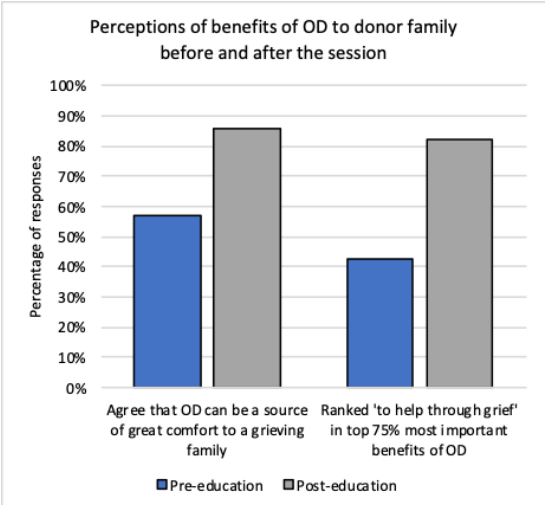
Introduction: Engagement of healthcare professionals is a vital part of the Organ Donation (OD) process. However, there is evidence that nurses and junior doctors lack good knowledge about the topic and educational needs have been identified (McGlade *et al*., 2014; Hakeem *et al*., 2015). Barriers to approaching families of potential donors include uncertainty around details of the process, influence of cultural beliefs and fear of increasing distress (Jawoniyi *et al*., 2018). We assessed the impact of an educational package focused on understanding the potential benefits of OD to the donor family.

Methods: Educational sessions were delivered to 42 medical students in their final year of study. A lecture included positive donor family quotes and addressed myths, religious and cultural concerns. A short film was shown, following the OD process from the family perspective. Participants completed a confidential questionnaire prior to and following the session, assessing personal attitudes, opinions, knowledge and willingness to donate.

Results: Following the session, 78% of students agreed that their knowledge, opinions or beliefs about OD had changed. 93% wanted to donate at baseline. Of the remaining three 'unsure' students, two wanted to donate post-education. 79% of students were already registered on the ODR. Knowledge in several categories was improved following education. The number of students initially ranking 'to help through grief' in the top three of four most important benefits of OD increased from 43% to 83%. Regarding overall opinion of OD, 86% of students chose a statement including 'to help grieving families' post-session, compared with 57% before.

Discussion: This sample of medical students showed high levels of willingness to donate. A higher proportion were already registered than reported in the literature. The session succeeded in improving knowledge of OD and understanding of the real benefit to donor families. It is hoped this will impact discussions when working as doctors.





P046

Assessing the effect of education on perceptions and knowledge of organ donation in a lay population

Julian Sonksen[1], Rachelle Schofield[2]

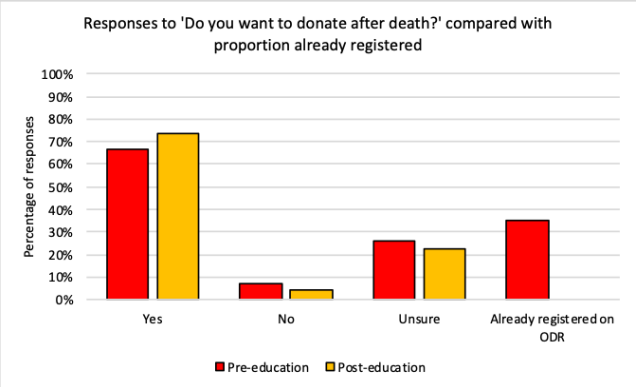
[1]The Dudley Group NHS Foundation Trust, Dudley, United Kingdom. [2]University of Birmingham, Birmingham, United Kingdom

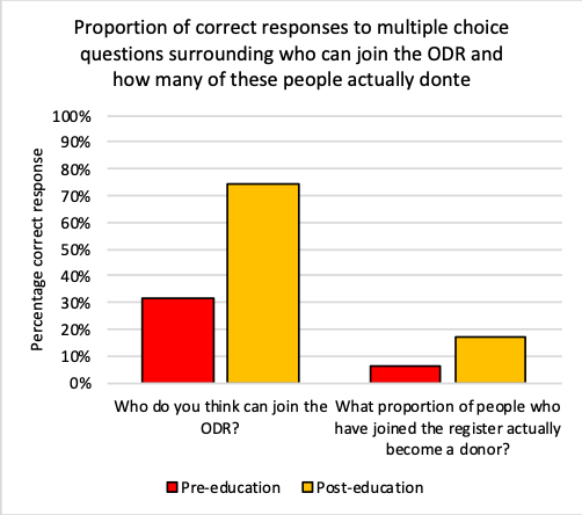
Introduction: Studies have identified several themes for why families refuse Organ Donation (OD) (Vincent and Logan, 2012); including concerns about disfigurement, use of organs and religious/cultural beliefs. Family refusal is common in our local population. We assessed how education and sharing positive experiences from a donor family impacts opinions and perceptions in a lay population.

Methods: Educational sessions were delivered to 54 participants at local Healthwatch or community group meetings. The population was predominantly female (89%), over 60 (81%) and Christian (83%). A lecture included positive donor family quotes and addressed myths, religious and cultural concerns. A short film was shown, following the OD process from the perspective of the donor family. Participants completed a confidential questionnaire prior to and following the session assessing personal attitudes, opinions, knowledge and willingness to donate.

Results: Only 35% of participants were already registered on the ODR, but 67% expressed a wish to donate (increasing to 74% after education). Half (48%) of participants had not previously discussed their decision with family, however 88% stated they planned to post-session. 13% were unsure if their religion allowed donation pre-session, and nobody said no. After education, 4% were still unsure, whilst 'no' responses increased to 8%. Knowledge of who can join the ODR and how many actually donate increased, but correct responses in the latter were still low (17%). 6% of participants still had concerns about the process post-session. Overall, 55% of participants agreed that their knowledge, opinions or beliefs about organ donation had changed.

Discussion: Prior knowledge of OD amongst participants was relatively poor. This study showed that improving knowledge and awareness of the OD process has a positive impact on willingness to donate and discuss decisions with family. Some uncertainty remained around religious viewpoints on organ donation; this may be something that could be targeted in future work.





P047

Impact of ethnic disparity between renal donor and recipient populations in the West Yorkshire and Humber Muslim community: doing the right thing project

Zarqa Younis[1], Mohammed Nasar[1], Lyndsey Harrington[2], Brendan Clark[2], Sunil Daga[3]

[1]Transplant Immunology, St James's University Hospital, Leeds, United Kingdom. [2]Transplant Immunology, St James's University Hospital, Leeds, United Kingdom. [3]Renal and Transplantation, St James's University Hospital, Leeds, United Kingdom

Introduction: A large gap exists between the requirement for kidney transplantation (34% of waitlist) and the number of donors (6%) from the BAMEcommunity. The rate of living donor kidney transplantation is also low compared to Caucasians. Arising from this situation Patients from the BAME community not only have to wait longer for transplantation but also receive less well matched grafts; with implications for outcome and subsequent transplantation.

Methods: We reviewed local data for deceased donorsand recipients and compared trends between patients from the Muslim and Caucasian communities.

Results:

a) Recipients from the Muslim community comprised 25% of our wait-listed cohort for deceased donor renal transplantation whereas only 0.8% of donors processed by the centre were of Muslim descent. Accordingly in 2017 only 1/25 received kidney from a matched ethnicity donor. HLA-A and B mismatch grades in this group were poorer than amongst Caucasian recipients (1.2 vs. 1.1 and 1.13 vs. 0.98 respectively) p=n.s).

b) HLA antigen frequency composition of the local wait listed Muslim community patients is distinct from that of the national donor pool.

c) Patients from within the Muslim community group returned to the active wait list following a failed transplant at higher percentage than their Caucasian counterparts (36 vs 27%) but there was no distinction between the groups in regard to their level of sensitisation (cRF) at re-registration(median values 97 Vs 97; p-value ns)

Discussions: These data provide cause for concern to the local Muslim community. In seeking to address this we are opening a holistic dialogue: The NBTA funded 'Doing the Right Thing project' will involve focus groups, community events, and engage with local Imams and community leaders. The aim is to provide high-confidence, authoritative information on the 'right thing' to do in the context of the decision to become a living donor.

P048

A comparison of knowledge and perceptions of organ donation between medical students and a lay population – pre- and post-education

Julian Sonksen[1], Rachelle Schofield[2]

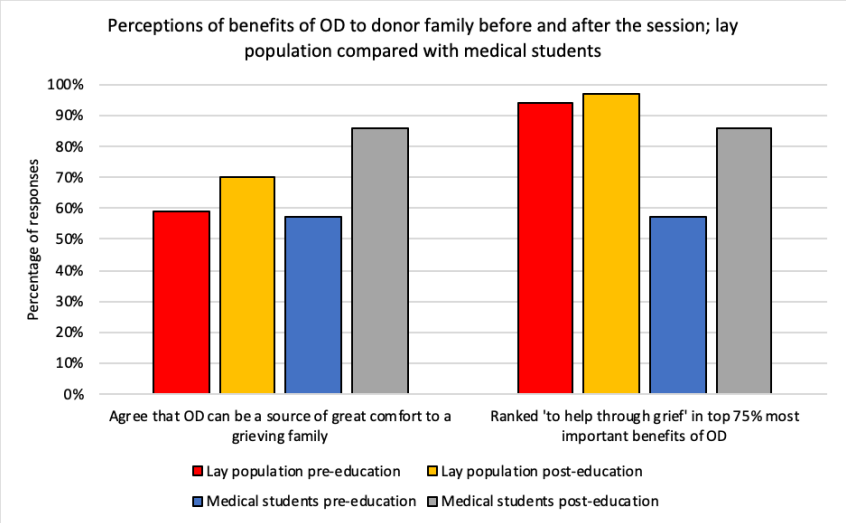
[1]The Dudley Group NHS Foundation Trust, Dudley, United Kingdom. [2]University of Birmingham, Birmingham, United Kingdom

Introduction: Relationships between healthcare professionals and lay families is crucial in the Organ Donation (OD) process. However, little is known about how perceptions in these populations compare. Understanding differences is valuable in improving the consent process. We used results from a questionnaire previously used in both populations to explore this.

Methods: Educational sessions were previously delivered to medical students (n=42) and lay people (n=54). These included a lecture exploring common misconceptions and concerns and a short film with positive donor family experiences. Questionnaires were completed before and after educational sessions.

Results: 93% of medical students (MS) expressed willingness to donate and 79% were registered on the ODR at baseline; this compared to 67% and 35% respectively of the lay population (LP). Knowledge improved in both groups following education. The proportional change was greater in the LP, but interestingly they perceived this as less than MS. Initially, 26% of the LP (71% of MS) considered brain death as dead; increasing to 64% post-education (86% for MS). Nearly all the LP ranked 'to help through grief' in the top 75% most important benefits of OD pre- and post-education (94%, 97%), compared with 43% and 83% of MS respectively. 55% of the LP agreed their knowledge, opinions or beliefs about OD changed, compared with 78% of MS.

Discussion: Unsurprisingly at baseline, medical students were more knowledgable about the OD process. Their higher willingness to donate could be related to better understanding. However, they ranked 'to help through grief' much lower when considering benefits of OD. Healthcare professionals have expressed concern about increasing relatives' distress when approaching OD conversations. Paradoxically, this study suggests the comfort brought by OD in allowing a belief that 'some good has come from this tragedy' is of paramount importance and is well understood by the lay population. Healthcare professionals should learn from this.



P049

NHSBT ODT medical education: the national deceased donation simulation course as a change agent

Jill Featherstone

NHSBT, National, United Kingdom

Introduction: Originating in the Task Force (2008) recommendations, a requirement for 'training in the principles of donation' for 'all clinical staff likely to be involved in the treatment of potential organ donors', was identified. Subsequent strategy recommendation was to 'sustain and increase clinicians' organ donation understanding and expertise', the National Deceased Donation ICM training was designed to address this need.

Methods: Aimed at ICM trainees from paediatric and adult areas, a range of delivery techniques are employed including lectures, interactive group work, donor family and recipient guest storytelling alongside a day dedicated to 8 simulation stations using actors as family members, this two-day multidisciplinary course guides delegates through 2 patient donation journeys**.** The principles and practices of donation care are explored with an emphasis on ethical decision making, supported by a growing faculty. Additional observers allow a range of invited guests to be immersed in a realistic donation experience.

Results: Consistently and excellently evaluated, since the pilot in 2013, 13 courses of 18 ICM delegates with 6 observers, alongside ITU nurses and SNODs have been supported. Plans to increase to 6 courses this coming year, the course has built momentum, offers an opportunity for each ICM trainee in a given cohort to attend, and now has a faculty of over 50 members with a range of expertise.

Discussion: Whilst the primary objective was equipping the next generation of consultants with donation education, a burgeoning cultural change picture is emerging. Several new CLODs and faculty cite the motivation for their post arose from their own delegate course experience. The expanded faculty is allowing an opportunity to model excellence, motivate and strengthen locally delivered courses with a greater consistency and quality assurance overview. Use of observer places have enabled the UK model of donation practice to be showcased, widening the course's reach of influence.

P050

Overcoming barriers to transplantation in the UK – current opinions in clinical practice

Swati Bhagat[1], Katie Vinen[2], Lisa Burnapp[3], Paul Cockwell [4], Kerry Tomlinson[5], Aisling Courtney [6], Caroline Wroe [1]

[1]South Tees Hospitals NHS Foundation Trust, Middlesbrough, United Kingdom. [2]King's College Hospital NHS Foundation Trust, London, United Kingdom. [3]NHS Blood and Transplant, London, United Kingdom. [4]University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom. [5]University Hospital of North Midlands, Stoke on Trent, United Kingdom. [6]Regional Nephrology and Transplant Unit, Belfast City Hospital, Belfast, Ireland

Introduction: Pre-emptive transplantation is the best form of renal replacement therapy. For patients with a living donor there is even more benefit. However there is significant variation in access to the transplant list and living donation. To explore professional opinions a questionnaire was drawn up by KQUIP Transplant First and the UK Living Kidney donation Network, to survey current opinion of access and barriers to transplantation in the UK.

Methods: Delegates at UKKW who agreed to receive email correspondence were sent an online survey with 20 questions about transplantation.

Results: The questionnaire was sent to 342 delegates, 77 replied (22%). Of those who responded:

- 45% were from transplant centres, 55% from referral centres
- 51% were Consultants, 49% represented the MDT
- 20% worked in low clearance clinic but 83% regularly were asked about transplantation by patients during routine clinical care across all clinical areas
- 93.4% supported pre-emptive living over pre-emptive deceased donor kidney transplant
- Responders were confident at talking in general terms about both living and deceased donor transplantation, confidence fell when it came to explaining the kidney sharing scheme, the difference in outcomes between living and deceased donation and how to support a recipient in approaching a potential donor.
- The most significant factors identified as having the potential to improve pre-emptive transplantation was improved donor and recipient pathway and improved education of potential recipients.

Discussion: All Renal healthcare staff need to be able to sign post patients and their potential recipients to work up in a timely fashion. Despite the wide spread agreement with pre-emptive living kidney donation and confidence in discussing general principles, concerns remains about how to equip recipients to talk to potential donors. The responsibility falls on us as a clinical community to provide high quality, easily accessible information for staff, patients, families and potential donors.

P051

Pre-transplant nurse led education clinic

Susan Dean, Sourabh Chand

Shrewsbury and Telford NHS Trust, Shrewsbury, United Kingdom

Introduction: Locally, there is a 40% pre-emptive renal transplant listing rate, between 2013-2016; and 22% for living donor pre-emptive 2014-2017. Thus we needed to revise our processes. After returning from the tertiary transplant centre, patient feedback including their shock of what was required and their follow-up arrangements, and they felt under-prepared from their local education.

Methods: By creating a separate renal pre-transplant education clinic, we aim to improve the education and experience of potential recipients and donors in order to improve or transplantation rates. This clinic was started in August 2016. It was also important to rationalise the time of the single transplant nurse more effectively.

Results: The nurse was able to stop time wasted travelling between individual consultant clinics, catching patients in an ad-hoc manner, and time wasted travelling between hospital sites. There was an increase of 20% over a 18 months period of patients transplant listed. Patients feedback has been qualitatively positive after their tertiary centre assessments, with no-one reporting feeling under-prepared or shocked from the information and requirements if transplanted.

Discussion: The nurse led clinic has been successful and we would like to share this model with other units. Other surprising benefits have included patients being better prepared for their transplantation clinic assessment at the tertiary assessment. Potential living donor assessments and any initial investigations have been identified and performed in a more timely manner. The clinic has also allowed to unmask and address unmet psychological and social needs prior to being assessed for transplantation and thus reducing the psychological burden post-transplantation.

P052

To test the hypothesis that the current curriculum for Specialist Nurses in Organ Donation pertaining to consent/authorisation for organ donation is emancipatory?

Cathy Miller

NHS Blood and Transplant, London, United Kingdom

Problem statement: Organ donation by its very nature is a complex and emotive process. Broaching organ donation during such tragic circumstances requires expertise in communication, as consent/authorisation is key to the donation process. It is imperative, that the curriculum for Specialist Nurses Organ Donation helps develop expertise in sensitive communication.

Emancipatory education has been gaining momentum in nursing since the 1980's (Allen 1990, Bevis and Watson 1989, Cohen 1993) and differs from traditional nursing education. Rather than rely on a context-based structure built around content. An emancipatory curriculum revolves around the learner and the teacher who together co-create the learning (Bevis and Watson 1989, Friere 1989, Hooks, 1994, Schon 1987). An emancipatory facilitator provides opportunities for students to engage in dialogue, reflect and create their own meaning. In doing so the facilitator enables the learner to recall their experiences and create insight, with the aim of transforming the learners perspectives toward a wider, contextualised understanding (Mezirow, 1991).

The current curriculum uses a variety of methods to teach this complex part of the donation process e.g. case studies-built around regulatory processes, practical sessions for completing the consent form and opportunities to practice the donation conversation with professional actors.

Methods: Using a curriculum map the findings in the paper aim to identify where emancipatory elements of curriculum exist and/or where gaps exist.

Findings: Aim to identify the emancipatory content of the current consent/authorisation curriculum.

Conclusion and recommendations: The findings in this paper will unpick what the emancipatory elements i.e. reflection, shared practice, are engaging in dialogue, create their own meaning of the consent/authorisation conversation and how the teaching methods currently adopted may/may not be enhanced.

P053

Improving donor conversation rates in Wales: the role of children, young people and their families in increasing organ donation rates

Bethan Moss

NHSBT, South Wales, United Kingdom

Educating young people about organ donation is found to improve communication as they tend to take discussions home to their families to who additional information can be supplied at the time. A study undertaken in Singapore by Truong TTH et al (2016) found that some students discussed the topic of organ and tissue donation with their friends and families post the teaching session. They concluded that if their loved ones continued to learn more about organ and tissue donation, the awareness among the public could be raised indirectly.

All 4 UK countries have developed a portfolio of teaching resources to be used in school to educate the students. Uptake of the resources is dependent on teacher's interest and as such is not necessarily reaching the number of children that it could. In Wales, the pick-up of teaching packs from March 2018 to present, has been low.

In 2005, Scotland launched a national organ donation schools pack, which has been made available to all secondary schools across Scotland. This pack, which also addresses tissue donation, was updated and re-launched in 2010 and a recent independent evaluation showed that 98% of teachers who have used the pack say it is relevant and engaging for students, while 88% of pupils recognised the importance of organ donation and would recommend its continued use in schools.

In order to engage young people as change makers and encourage discussion within families, it is proposed that:

· A one-year pilot programme be set up in South East Wales to develop a proactive schools educational programme to deliver the current schools resource by a clinical expert in organ donation.

· For one of the Team Managers from the S. Wales Organ Donation Services team to undertake the project lead role.

· To utilise medical students to assist with the education of the school students

P054

'Deep dive' reviews - a different way of learning from incident reports

Jeanette Foley

NHS Blood and Transplant, London, United Kingdom

Introduction: Incidents relating to Organ Donation and Transplantation are hugely diverse and often complex and multi-factorial. It was found that some reports that were 'investigated' in the traditional sense highlighted no real learning or actions, simply increased workload for all, and potentially took individuals away from clinical care for no benefit; an unsatisfactory outcome for all. To be more effective, it was decided to explore a new method of reviewing these.

Method: Learning from other areas, the concept of 'deep dive' or 'thematic review' has been developed for certain reports. The overarching aim of each deep dive is to strengthen current processes and highlight areas that need further focus. Details and facts are still collated, however by stepping back from the individuals involved it takes away any option of blame as the focus is on the wider learning; the 'why' rather than the 'who'. Due to the nature of Organ Donation and Transplantation it was agreed that for the deep dives to be of benefit, all key stakeholders needed to be involved. Each deep dive is led by Clinical Governance and has a representative from Commissioning, NORS/clinician input, SNODs and Hub Operations; this is crucial as the aim is to ensure things are seen through the eyes of all those involved. A deep dive occurs every two months and the cases are mapped through bringing out key questions, further 'diving', suggestions for operational or process improvements and recommendations to take forward.

Results: So far there have been 4 deep dive meetings. The learning from these has far exceeded, not only what would have been gained from the previous way of reviewing, but also the expectations of those involved. There have been a number of significant actions taken forward and some of the findings have been truly unexpected, highlighting the benefits of the change.

P055

Saying thank you – a single centre approach

Pamela Stronge, Dolores Elliott, Sharon McCarron

Belfast City Hospital, Belfast, United Kingdom

Introduction: It is well recognised that donor families gain some comfort in receiving a letter of thanks from recipients who have been given an organ from their loved ones. Our Centre has found that recipients are willing to write but need guidance. We as Transplant Coordinators believe it is our role to assist in this important part of the transplant journey.

Method: Patients who receive an organ from a deceased donor are informed they can write to their donor families. Writing is explained as a positive way in which recipients can communicate their gratitude and thanks. Guidance is given on a one to one basis prior to discharge, with a locally written leaflet provided as a guide. For recipients who find starting a letter difficult support is given and previously written letters are available for them to review. It is recognised that some recipients may not be able to write personally; therefore we developed and printed some generic cards which give thanks to donor families. These are given to recipients who want to send them allowing them to personalise if wished.

Results: Transplant Recipients state they are grateful to have the chance to write and find it comforting in their recovery to be given the opportunity. Locally, within our population transplanted from a deceased donor 40% have written to express thanks to donor families. Nationally Belfast had the most first time correspondence to donor families throughout 2017 (DRD records).

Conclusion: Writing to donor families provides completeness for recipients on their transplant journey. Making the opportunity to write as easy as possible for recipients has allowed this centre to have the greatest response. The development of a pre-printed card removes restrictions on who can write and given equal opportunity to all recipients to say Thank you.

P056

How can we attract registered nurses into the Specialist Nurse Organ Donation role? Developing a pre-application 'open day'

Angela Ditchfield

NHS Blood & Transplant, United Kingdom, United Kingdom

Introduction: The role of specialist nurse organ donation is unique, diverse and unlike any other nursing role. With the introduction of the specialist requestors and donor family carer into various regions, an additional recruitment drive was planned. The idea was to run positive action open day allowing potential applicants to attend and gain insight into the role of Specialist Nurse Organ Donation (SNOD).

Goals:

- Encourage potential applicants to attend and gain insight into the unique role
- Showcase NHSBT as an excellent employer
- Provide potential applicants with pre-application support, assessment day taster sessions, information about NHSBT as an employer, overview of the roles available
- Encourage more nurses from Black and Asian communities to apply for the position of Specialist Nurse Organ Donation

The SNOD role is unique and rewarding, it is important to attract suitable applicants and provide them with information about our impressive organisation whilst ensuring they fully understand the requirements of the position.

Methods: The idea of the day was to give applicants insight into the role of the SNOD allowing them to ask any questions. We also wanted them to appreciate the many different opportunities NHSBT has to offer and showcase the support, development and training opportunities available. With this in mind several team members with various job roles where invited to attend

- SNODs
- SRs
- Clinical Lead Organ Donation
- Practice Development Team
- Team Managers
- Lead Nurse Paediatric/Neonatal
- Lead Nurse Family Aftercare
- Donor Family Network

Results: It was a very positive day with over 70 attendees. It allowed us as a potential employee to meet applicants and learn about their experiences and see them interacting with the team and other attendees. We had over 130 applicants.

Discussion: Recruitment is currently a huge challenge and there is a need to implement new initiatives to support future recruitment into this unique role.

P057

A national survey on post-transplant blood transfusion practices in adult renal transplant units

Sevda Hassan

on behalf of The HLA Matched Red Cell Working Group, London, United Kingdom

Introduction: Post-transplant blood transfusions are associated with allosensitisation and inferior allograft outcomes. By assessing blood component use and policies across the transplant units within the UK, we aimed to help inform national guidelines on blood transfusion avoidance. The study is in collaboration with NHSBT, BTS and a national working group.

Methods: An electronic survey was sent to all 23 adult renal transplant units in the UK

Results: The questionnaire assessed three domains:

[1] Current guidelines: only 9/23 (39%) found the current post-transplant anaemia guidelines useful, compared to 6/23 (26%) who did not and 8/23 (35%) who didn't know. 6/23 (26%) units had their own post-transplant anaemia protocols.

[2] Transfusion rates: all units believed that they transfused sparingly; with 16/23 (70%) estimated transfusing <10% of their cohort, 6/23 (26%) estimated 11-33% and 1/23 (4%) estimated 33-50%. The majority (18/23; 78%) believed that transfusions commonly occurred in the peri-operative phase.

[3] Transfusion practices: 7/23 (30%) units had an agreed minimum acceptable haemoglobin (Hb) acutely post-transplant (median 70g/l). 14/23 (61%) had a minimum acceptable Hb prior to an invasive procedure (median 80g/l).

There was no consistent use of EPO. Only 17/23 used it: 9 for all patients who were anaemic and 8 only in circumstances such as suboptimal function.

Discussion: Differences in practice suggest the absence of a strong evidence base for optimal management and scope for reduction/avoidance. Peer review may help inform management in units with higher transfusion rates and the development of more robust guidelines.

P058

Pregnancy in renal transplant recipients: a single center retrospective study

Oana Piscoran[1], Kailash Bhatia[2], Titus Augustine[1], S Kopargaonkar[2], J Gillham[2]

[1]Department of Renal Transplantation, Manchester, United Kingdom. [2]Manchester Royal Infirmary, Manchester, United Kingdom

Background and objectives: Pregnancies after renal transplantation (RT) are classified as high risk and are reported to generate maternal and foetal complications. The aim of this study is to collect information about the characteristics of renal transplant recipients who underwent a pregnancy after transplantation.

Design: Data on the transplant recipients who underwent a pregnancy between September 2006 and February 2017 was collected using the UK Obstetric Surveillance System (UKOSS) forms. Results were compared with the general pregnancy outcomes reported by Public Health England (GOV.UK)

Results: From twenty pregnancies monitored after RT, one resulted in stillbirth (5%) there were no miscarriages reported. One patient developed eclampsia (5%), two gestational diabetes (10%) and 30% hypertension. Graft dysfunction was seen 15% of parturients. More than 65% of the patients required caesarean section (LSCS) and 15 %. The most frequent surgical complication was peripartum haemorrhage. Also 25% of the patients required escalation to critical care post-delivery. Pre-term delivery (<37 weeks) was seen in 65%. When compared to general pregnancy outcomes published on Public Health England, the infant mortality rate appears similar, the stillborn incidence is the same 5% however other complications are more predominant in the transplant population. The LSCS is expected to be 29% in the general whereas in our group it raised to 65%. Low birthweight for all pregnancies was 8.7% compared to 45% in transplant recipients.

Conclusion: Pregnancy after RT remains a high risk pregnancy. Peripartum complications, caesarean section, induced labour, peripartum haemorrhage, and maternal critical care admission seem to be more frequent. Foetal outcome seem suboptimal as preterm and low birthweights are noticed more frequently when compared to the general population. This information could be utilised to inform mothers of the risk of undertaking pregnancy following RT. A multi-disciplinary team approach should be utilised when caring for parturient after RT to achieve best outcomes.

P059

Renal transplant assessment: a coordinator led service development

Alison Glover[1], Lorna Marson[2], Sonia Wakelin[2], Laura Pairman[2], Kath Brown[2]

[1]Victoria Hospital, Kirkcaldy, United Kingdom. [2]Royal Infirmary of Edinburgh, Edinburgh, United Kingdom

Introduction: The process from transplant referral to assessment outcome is varied in complexity and timings leading to unrealistic expectations for all. We decided to pilot an improved transplant assessment process for 6 months, developed and led by the co-ordinators. This new process aimed to utilise the initial referral to clinic period and categorised patients into 3 pathways enabling a better estimate of process timings. The pathways could be audited to highlight any faults within each pathway and allow improvement in practice. We hoped this would lead to standard setting, service development long term outcome statistics in relation to patient pathways and co-ordinators professional development.

Method: Questionnaires were sent to 30 consultants and co-ordinators who were involved in the referral and assessment of patients. The aim was to identify common concerns, frustrations and also ideas for improvement. Feedback was analysed highlighting a need to triage surgical appointments and ensure relevant information was available before clinics. The co-ordinators would request relevant tests and make formal referrals. The process was introduced at the consultants monthly meetings a few changes were made and the final version was e-mailed to all involved.

Results: The audit highlighted deficiencies in the transplant assessment process which were shown to be linked to delays in the activation of patients. Notable examples are patients referred with insufficient baseline data e.g. HLA, blood groups and virology. Analysing deficiencies led to better referral processes, communication with other specialities and agree on more timely interventions.

Discussion: The assessment process enables further autonomy and professional development for transplant co-ordinator's. We can look at setting local standards enabling patients and medical staff to have realistic and positive expectations. The long term data will allow us to analyse pathways and co-morbidities in relation to long term outcomes.

P060

The development of a communication tool for use during retrieval to aid better transplant outcomes

Dan White, Richard Quigley, Ann Thompson, Sadie Von Joel, David Moule, Adi Robb, Irene Cardella, Marius Berman, Jen Baxter, Katie Morley

Royal Papworth Hospital, Cambridge, United Kingdom

Objective: We have developed a communication tool to aid more efficient and accurate transference of information between the National Organ Retrieval Services (NORS) and recipient co-ordinator during the retrieval of organs. Inaccurate provision of information has led to prolonged ischemic times, incorrect offering of organs, confusion between teams as to who is taking responsibility for conveying information and overall disgruntlement.

Method: A questionnaire was shared amongst one team of cardiothoracic recipient transplant co-ordinators. This highlighted issues specific to the communication that takes place during the retrieval of organs. The feedback received has led to the development of a communication tool which has been established as a local standard operating procedure (SOP).

Results: The entire group were dissatisfied with the level of communication and identified that there are inconsistencies throughout the NORS team. 86% felt that communication could be improved and that this would expedite the decision making. 83% felt that information was relayed too infrequently. 84% acknowledged that communication was vital in assisting with transplant co-ordination. 33% stated that they did not feel fully informed about the condition of the donor organs.

Conclusion: A standardised communication tool will help improve the flow of information between the NORS team and the transplant co-ordinator. This will improve patient outcomes and experience. Efficient communication will facilitate concise transference of information, ensure that up to date and relevant information is relayed in a prompt manner. This will prevent delays during the retrieval process reducing protracted ischemic times and lengthy retrievals with NORS teams mobilised. The main format of communication during retrieval is verbal so it is vital that we improve this. The aim is to standardise this tool and have all NORS teams implement this to achieve gold standard communication.

P061

A move towards collaborative education within ODT

Helen Bentley

NHSBT, Newcastle, United Kingdom

Introduction: The Professional Development (PDT) team came into being in January 2013 to educate and further develop Specialist Nurses Organ Donation (SNOD). Medical Education came within the PDT remit in early 2017 utilising SNODs within training of Intensive Care Medicine to encourage collaborative working. At the beginning of 2017 there was a request for Recipient Co-ordinators (RC) throughout the UK to join up with the SNOD Cohort training to establish joint training and foster improved role understanding

Methods: The National Lead for Cohort training PDT manager, Lead Nurse Recipient co-ordinator and a living donor co-ordinator came together to scope what components of the SNOD training would benefit RCs and to plan a 2 day course that would benefit both. RC training requirements taken into account and the need for them to understand the processes that SNODs undertook to facilitate donation and how best they could communicate together on the night of donation

Results: A concensus was gained for a day and a half together with a networking opportunity between the days would improve understanding of each other's roles and would improve the vital communication between them to improve the safety of transplantation. Topics covered were Donor characterisation including the importance of microbiological testing. An overview of Donation following circulatory death and a forum to give insight into the communication requirements of each role. Breakout sessions were timetabled for the RCs to cover some role specific training for both living and deceased donor co-ordinators. The RCs also attended a whole further day on Negotiating skills to further develop their advanced communication skills

Discussion: Evaluation was positive with nn % in favour of continuing after the pilot. The pilot showed that it worked well and funding has been requested to continue with joint training to further improve collaboration.

P062

HLA antibody profile changes post pregnancy in renal transplant recipients. A single center study

Oana Piscoran[1], Kailash Bhatia[2], Titus Augustine[1], Shiv Bhutani[2]

[1]Department of renal transplantation, Manchester, United Kingdom. [2]Manchester Royal Infirmary, Manchester, United Kingdom

Background and objectives: Transplantation and pregnancy are known to be major sensitizing events. The aim of this study is to describe the changes in the HLA antibodies from pre transplantation to post delivery in transplant recipients who underwent one or multiple pregnancies post renal transplantation.

Design: Data regarding the HLA antibody profile was provided by the Histocompatibility laboratory. The patients we looked at were renal transplant recipients who were pregnant between September 2006 and February 2017 and data was collected using the UK Obstetric Surveillance System (UKOSS) forms.

Results: We identified 20 pregnancies from 16 patients. 4 patients were HLA antibody positive before their renal transplant, 9 were negative and 7 unknown. Post renal transplantation 5 out of 9 patients HLA Ab negative did not develop new antibodies. From the remaining 4 patients the increase in the calculated reaction frequency (cRF) was from 0 to 34%, 44%, 61% and 70%. We had 3 patients with pre transplant cRF of 20%, 75%, 60% and 50%. Post transplantation only one had an increase of 20% to her cRF. After the second sensitizing event, the pregnancy, the 4 patients with cRF of 0 % remained at 0 % and only one had an increase in her cRF from 0% to 97%. However, the patients who had pre pregnancy HLA antibodies have had a further increase to their cRF from 48% to 80%, 61% to 93%, 44% to 59%.

Conclusion: In this group of patients, the ones who had no HLA antibody after the renal transplantation tended to remain with cFR of 0% even after a pregnancy. 10% of the patients became highly sensitized after pregnancy.

#	HLA Abs Pre-Tpx	cRF Pre-Tpx	HLA Abs Post-tpx Pre-delivery	cRF Post-Tpx Pre-delivery	HLA Abs Post-Delivery	cRF Post Delivery
1	Positive	20%	Positive*	48%	Positive *	80%
3	Negative	0%	Positive *	61%	Positive *	92%
5	Negative	0%	Negative	0%	Negative	0%
8	Negative	0%	Negative	0%	Negative	0%
10	Negative	0%	Negative	0%	Negative	0%
10	Unknown	Unknown	Unknown	Unknown	Negative	Unknown
11	Negative	0%	Positive*	34%	Negative	0%
12	Positive	75%	Positive	75%	Positive *	75%
13	Negative	0%	Positive*	44%	Positive*	59%
14	Negative	0%	Negative	0%	no samples	no samples
15	Negative	0%	Negative	0%	Negative	0%
16	Positive	60%	Positive	60%	Positive	60%
17	Positive	56%	Negative	0%	Positive*	97%
18	Negative	0%	Positive*	70%	Positive	55%
21	Unknown	Unknown	Unknown	Unknown	Positive	35%
22	No Information	Unknown	Unknown	Unknown	Unknown	Unknown
23	Unknown	Unknown	Negative	0%	Negative	0%
24	Unknown	Unknown	Negative	0%	Negative	0%
25	Unknown	Unknown	Negative	0%	Negative	0%
26	Unknown	Unknown	Negative	0%	Negative	0%

P063

Everolimus-induced pneumonitis after renal transplantation: a case report

Chandrashekar Annamalai[1,2], Umesh Lingaraj[3], Ajay Sharma[2], Ahmed Halawa[2]

[1]Apollo Hospitals, Bilaspur, India. [2]University of Liverpool, Liverpool, United Kingdom. [3]Apollo Hospitals, Bangalore, India

Introduction: Everolimus causes pneumonitis, however, less is published about it. We report a case of pneumonitis in a renal transplant recipient on everolimus therapy. Though no definitive aetiology was discernible, pneumonitis resolved following suspension of everolimus, thereby implicating it as a potential cause. The objective of this case report is to highlight the importance of timely recognition and discontinuation of everolimus to avoid adverse outcomes.

Case presentation: A 22-year old male with end-stage kidney disease secondary to reflux nephropathy underwent living-donor, ABO-compatible renal transplantation with brother as the donor. Everolimus was used 3 months post-transplant as part of calcineurin-inhibitor (tacrolimus) sparing regimen with basiliximab induction. Renal allograft functions were excellent with no proteinuria or rejection episodes. 7 months later, he presented with shortness of breath, cough, and low-grade fever. There were wet crackles over lung base on auscultation. Chest X-ray showed reticular opacities and high-resolution chest CT imaging revealed crazy pavement pattern of interstitial thickening and bilateral diffuse ground glass opacities involving bilateral lower lobes (Fig.1)

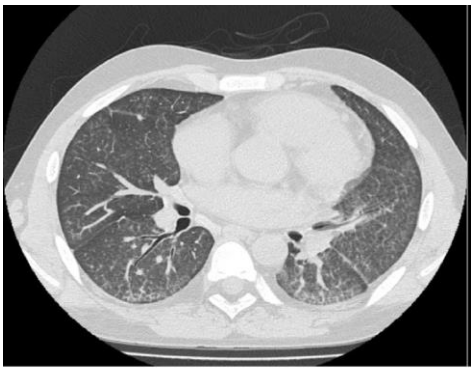
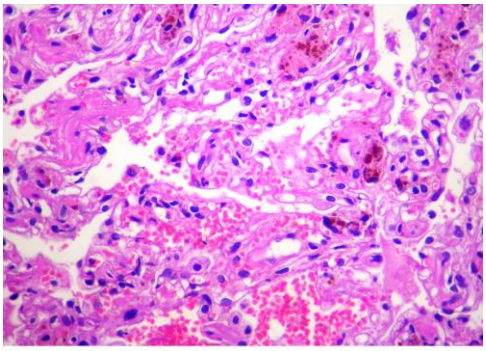


Fig. 1 High-resolution chest CT imaging showing crazy pavement pattern of interstitial thickening and bilateral diffuse ground glass opacities involving bilateral lower lobes



Empiric therapy with broad-spectrum antibiotics, antifungal and antiviral proved ineffective. Upon further evaluation, bronchoalveolar lavage (BAL) demonstrated lymphocyte predominance and BAL fluid culture for bacteria, virus, fungus and *Mycobacterium tuberculosis* was negative. Transbronchial biopsy indicated chronic non-specific interstitial pneumonitis (Fig 2). Everolimus trough level was 5 ng/mL.

Condition got complicated by severe type I respiratory failure necessitating assisted ventilation and intensive care. Drug-induced pneumonitis related to everolimus was suspected. Accordingly, everolimus was discontinued and replaced with tacrolimus. Remarkable clinical improvement was noted thereafter. Chest CT after 5 months showed resolution of pulmonary infiltrates and renal allograft functions remained stable.

Conclusions: This case report documents that everolimus induces pneumonitis at therapeutic blood levels and should be considered in transplant recipients presenting with respiratory symptoms. Early diagnosis and prompt discontinuation of everolimus are crucial to avoid irreversible pulmonary damage.

P064

Predictive value of renal resistive index in paediatric renal transplantation

Evgenia Preka[1], Saima Azam[2], George Harris[2], Tom Watson[3], Marina Easty[3], Patricia Costa Reis[4], Stephen D Marks[1,2]

[1]Department of Paediatric Nephrology, Great Ormond Street Hospital for Children NHS Foundation Trust, London, United Kingdom. [2]University College London Great Ormond Street Institute of Child Health, London, United Kingdom. [3]Department of Radiology, Great Ormond Street Hospital for Children, London, United Kingdom. [4]Division of Pediatric Nephrology and Kidney Transplantation, Department of Pediatrics, Hospital de Santa Maria, Lisbon, Portugal

Introduction: Intra-renal resistive index (RI) by Doppler ultrasound has been proven to predict short-term acute graft dysfunction and be related with acute and chronic changes in adult renal transplant recipients (RTR). The only randomized-control study in adults showed that the RI was not correlated with the estimated GFR (eGFR) at 3 or at 24 months follow-up. There is no long-term data in the paediatric population concerning this issue.

Methods: In a single-center, we assessed retrospective data on 105 paediatric RTR (pRTR) with RI at baseline (time 0 after transplant) and at the time of biopsies performed due to graft dysfunction. At each visit-point where ultrasound was performed, clinical and biochemical data were collected. Patients were divided into two groups according their RI (upper limit cut-off RI value of 0.65).

Results: The mean age of pRTR was 7.8±4.6 years at transplantation, of whom 54 were male (51.4%) with mean patient follow-up of 5.6±3.6 years. The maximum RI was 0.65-1.00 (median 0.73). Patient and renal allograft survival was 100% and 86.7% respectively at follow-up of 0.1-17.3 (median 5.1) years post-transplant. In the immediate recovery post-transplant ultrasound, only seventeen patients presented a RI> 0.65 and among them only 2 (11.8%) presented a failed graft. Nonetheless, in the group of patients with RI < 0.65 twelve patients (13.6%) presented with failing graft requiring dialysis or second transplant at the last follow-up visit. In a longitudinal analysis of all the patients having presented RI> 0.65 at any visit-point, there was no significant association between RI>0.65 and graft failure (p=0.46).

Conclusions: This is the first study according to the RI with short and long-term follow-up in a large paediatric cohort. The RI measured directly in the post-transplant period in pRTR and at every acute kidney injury time-point after transplantation does not represent a good indicator of renal allograft prognosis.

P065

A 22-year-renal graft survival for a patient with Denys-Drash syndrome and WT1 gene deletion - a case report

Fady Elias[1,2], Yaqoob Almaimani[1], M.K. Habeeb[1,2], Ahmed Halawa[2], Ajay Sharma[2]

[1]Bowsher renal center, Muscat, Oman. [2]Institute of teaching and live science, university of Liverpool, Liverpool, United Kingdom

Introduction: Denys-Drash syndrome (DDS) is a triad of congenital nephropathy, Wilm's tumor, and intersex disorders. Progression to end stage renal disease (ESRD) often occurs by the age of 3 years in most cases. The syndrome may present as an incomplete form by nephropathy with either intersex disorder or Wilm's tumor.

Case discussion: A 1-year-old boy presented with generalized anasarca, massive proteinuria, developmental delay, perineal hypospadias, oliguria, and progressive deterioration of renal function approaching ESRD before the age of 2 years. He suffered recurrent urinary tract infections as well. Excessive hair growth was noted especially on the face and both arms. Cytogenetic studies showed Wilms Tumor suppressor gene 1 (WT1) deletion. In 1994, kidney transplantation was performed in Oman from a cadaveric anencephalic newborn (both kidneys were harvested and transplanted) with simultaneous bilateral nephrectomy. Immunosuppressive therapy included prednisolone, azathioprine and cyclosporine. Urethroplasty was done to correct hypospadias in 2002. His graft function had been excellent until 2006 (s creatinine: 121 µmol/l), he was switched to mycophenolate mofetil and tacrolimus. Testicular biopsy showed bilateral immature testis with no ovarian tissue. His height was 127 cm, and body weight was 24.3 kg at the age of 13. DEXA scan showed Z score of -2.3 in A-P spine and left femur. In 2011, his renal graft function started to deteriorate gradually (s creatinine 184 µmol/l) due to interstitial fibrosis and tubular atrophy (IF/TA). In 2014, his creatinine was 301 µmol/l, and in 2016 it was 776 µmol/l when regular hemodialysis was initiated. The patient is now 25 years old and is planning for second renal transplantation from a living donor.

Conclusion: We presented our experience of managing a patient with DDS and WT1 gene deletion; for whom simultaneous bilateral nephrectomy and kidney transplantation were successful. He had an excellent renal graft survival and better quality of life.

P066

Defining a threshold for tacrolimus intra-patient variability associated with late acute cellular rejection in paediatric kidney transplant recipients

Karmila Abu Bakar, Zsolt Hodi, Tom McCulloch, Alun Williams, Martin Christian, Jon Jin Kim

Nottingham University Hospitals, Nottingham, United Kingdom

Late acute cellular rejection (LACR), defined as rejection >12 months, is associated with poorer graft outcomes and non-adherence. Non-adherence to tacrolimus can be indirectly assessed by calculating the intra-patient variability (IPV) of tacrolimus trough levels. The level of IPV associated with rejection is not known.

We conducted a case-control study comparing 25 patients with LACR against 25 controls with no rejection matched to age, time post-transplant and cause of end-stage renal failure. Tacrolimus levels in the preceding 12 months were collected. IPV was calculated using coefficient of variance (CV) and mean absolute deviation (MAD). Receiver operating curves (ROC) were used to assess the IPV threshold for rejection. We also assessed the percentage time for tacrolimus levels

Patients had a mean age of 13.6 years. 18/25 (72%) had LACR within 3 years, 4/25 (16%) between 3-5 years and 3/25 (12%) after 5 years. LACR patients had higher CV (median, IQR: 0.44, 0.36-0.61 v 0.24, 0.19-0.35, p

MAD may be used as a clinical marker for LACR and is less affected by outlying tacrolimus results. A threshold IPV of 26% can potentially be used as a therapeutic target pending further validation studies.

Figure 1:

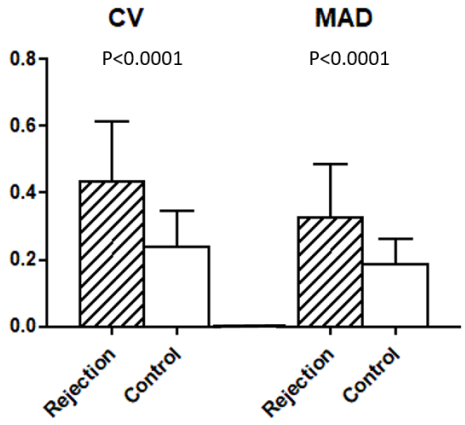
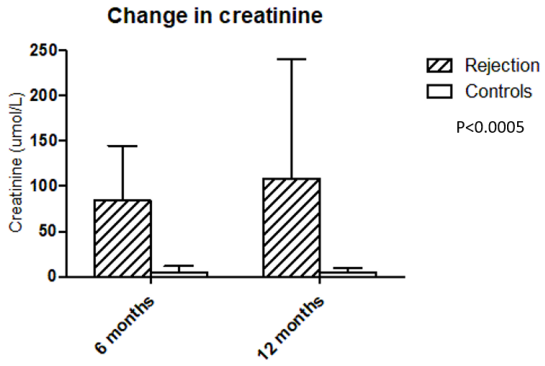


Figure 2:



P067

Is BKV carcinogenic?!

Ahmed Saleh[1,2], Ahmed Halawa[3,2]

[1]Sheffield Kidney Institute, Sheffield, United Kingdom. [2]University of Liverpool, Liverpool, United Kingdom. [3]Sheffield University, Sheffield, United Kingdom

Introduction: The role of polyomaviruses (PyV) in malignancy is controversial, this can be demonstrated in three ways. Firstly, hit and run mechanism where polyomaviruses contribute to the early phases of oncogenic progression. The second way, where PyV act as a passenger as polyomaviruses neither necessary nor contribute to the oncogenic progression. The third way, where PyV act as (bystander) as PyV are not related to the malignancy, but PyV could be detected in the anatomically connected sites or neighboring cells. BKV has been classified a possible carcinogenic to human (2b) as there is a sufficient evidence that it is carcinogenic to animals, however, BKV carcinogenicity evaluation to humans was inadequate. There are inconsistent data regarding the contribution of BKV to tumors occurrence in both animals and humans (1).

Methods: Retrospective analyses of 492 consecutive renal transplant recipients in a single center, 2010-2018. Data Source: prospectively managed electronic patient record. Malignancy data in both control and BKV infected groups were assessed.

Results: Total of 492 cases were studied, were categorized into 2 groups the BKV infected group (73) patients and BKV non-infected group (419) patients, then an assessment of different malignancies in both groups. The BKV infected group had 15 cases out of 73 who had malignancy, while the BKV non-infected group had 28 cases out of 419 totally. The association between malignancy in BKV was statistically significant (P-value of 0.038). There were about 13 different type of malignancy most common are skin malignancies

Association between malignancy and BKV status			
Malignancy	**BKV negative (n=419)**	**BKV positive (n=73)**	**p-value**
Present	28 (6.4)	15 (20.5)	**0.038***
Absent	391 (93.3)	58 (79.5)	

and least common were:

Malignancy types		
Malignancy	**BKV negative (n=419)**	**BKV positive (n=73)**
None	397 (94.7)	0 (58)
Skin Squamous Cell carcinoma	8 (1.9)	4 (5.5)
Skin Basal Cell Carcinoma	5 (1.2)	4 (5.5)
Mixed (Squamous + Basal Cell Carcinoma)	1(0.2)	2 (2.7)
PTLD	0	1 (1.4)
Lung Ca (Nsclc)	0	1 (1.4)
GIT (Malignancy)	0	1 (1.4)
Melanoma	1 (0.2)	1 (1.4)
Renal Cell Ca	1 (0.2)	1 (1.4)
Breast Ca	2 (0.5)	1 (1.4)
B.Cell Lymphoma	1 (0.2)	0
Baltoma	1 (0.2)	0
Ovarian Adenocarcinoma	1 (0.2)	0
Urothelial Ca	1 (0.2)	0

Conclusion: The potential oncogenic role of BKV is unclear, however, there is increased reporting of malignancy in patients infected with BKV. Increased vigilance is required for early detection of malignancy in patients infected with BKV not only the patients who are heavily immunosuppressed.

P068

The outcome of BKV infection in renal transplant recipients; a single centre experience

Ahmed Saleh[1,2], Ahmed Halawa[1,2]

[1]Sheffield Kidney Institute, Sheffield, United Kingdom. [2]University of Liverpool, Liverpool, United Kingdom

Introduction: BKV infection is one of the most common infections in renal transplant patients causing allograft failure. The main part of treatment is immunosuppression reduction once viremia is detected, which makes the balance between rejection and BKV infection difficult. BKV infection can lead to BKV nephropathy in about 10% of the renal transplant recipients.

Methods: A single-center retrospective analyses of 492 patients who received their renal transplant between 2010-2018. Data Source: electronic patient record.

Results: Total of 492 patients (337 male, 155 female) with a mean age of 54.1 years +/- 13.7. 73 (17.4%) patients had BK Viruria out of which 33 patients developed BK viremia. 10 patients were biopsy-proven BKVN and 3 of them had graft loss. The duration between transplantation and viruria, viremia, BKVN, and graft failure is shown in the next figure. There was no statistically significant difference between the overall graft survival or patient survival for patients with positive BKV infection and that of negative BKV infection. No statistically significant difference in the incidence of acute rejection between both BKV infected group and the non- infected group. Surprisingly, the pre-transplant sensitization history was significantly less the BKV infected group than the non- infected group.

Table 1. Baseline characteristics of patients in both groups

Variables	Total (n= 492)	BKV negative (n= 419)	BKV positive (n= 73)	p-value
Gender, n (%)				
Male	337 (68.5)	286 (68.3)	51 (69.9)	0.89
Female	155 (31.5)	133 (31.7)	22 (30.1)	
Age (year), mean ± SD	54.1 ± 13.7	53.9 ± 13.8	55.3 ± 12.9	0.41
Race, n (%)				
White	444 (90.2)	377 (90)	67 (91.7)	0.71
Asian	8 (1.6)	8 (1.9)	0 (0)	
Pakistani	18 (3.7)	15 (3.6)	3 (4.1)	
Black	8 (1.6)	6 (1.4)	2 (2.7)	
Mixed	3 (0.6)	3 (0.3)	0 (0)	
Others [a]	11 (2.2)	10 (2.4)	1 (1.4)	
Diabetes Mellitus, n (%)	95 (19.3)	79 (18.9)	16 (21.9)	0.54
Malignancy	37 (7.5)	28 (5.3)	15 (20.5)	**0.038***
Number of renal transplantations, n (%)				
One time	416 (84.6)	355 (84.7)	61 (83.6)	0.78
two time	62 (12.6)	53 (12.6)	9 (12.3)	
Three times	14 (2.8)	11 (2.6)	3 (4.1)	
Type of Transplant, n (%)				
DBD	250 (50.8)	209 (49.9)	41 (55.4)	0.55
DCD	92 (18.7)	81 (19.3)	11 (14.9)	
Alive	150 (30.5)	129 (30.8)	22 (29.7)	
Induction Immunosuppressant, n (%)				
Basiliximab	425 (86.4)	357 (89.2)	68 (93.2)	0.47
Campath	35 (7.1)	30 (7.5)	5 (6.8)	
ATG	10 (2)	10 (2.5)	0 (0)	
Rituximab	3 (0.6)	3 (0.8)	0 (0)	
Maintenance Immunosuppressant, n (%)				
TAC PRED MMF	404 (82.1)	340 (81.3)	64 (87.7)	0.727
Without MMF	44 (8.9)	40 (9.6)	4 (5.5)	
without prednisolone	22 (4.5)	20 (4.8)	2 (2.7)	
AZA	14 (2.8)	12 (2.9)	2 (1.4)	
Sirolimus	7 (1.4)	6 (1.4)	1 (2.7)	
DR mismatch, n (%)	266 (54.1)	224 (53.5)	42 (57.5)	0.52
Sensitization, n (%)	**203 (41.3)**	**189 (45.2)**	**14 (19.2)**	**0.001***
Acute rejection, n (%)	**43 (8.7)**	**33 (7.9)**	**10 (13.7)**	**0.104**
Delay graft function, n (%)	172 (35)	149 (35.6)	23 (30.7)	0.53
Graft failure, n (%)	48 (9.8)	39 (9.3)	9 (12.3)	0.42
Timing of graft failure post transplantation (years), mean ± SD	4.7 ± 2.25	3.4 ± 3.1	3.5 ± 2. 8	0.93

[a] others: Afro Carribean, Somali and Mixed White and Asian

1. Graft survival

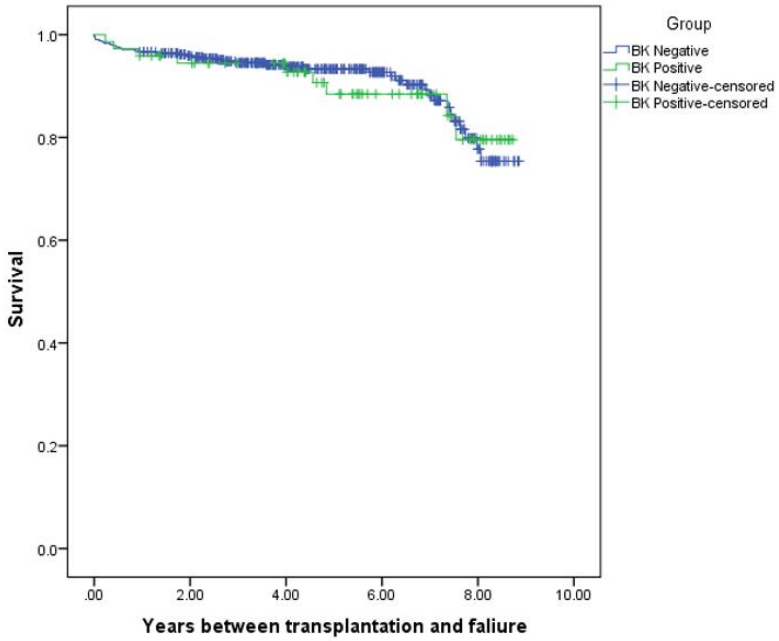


Figure1. Comparison of graft survival after kidney transplantation in patients with/without BK polyomavirus

2. Patients survival

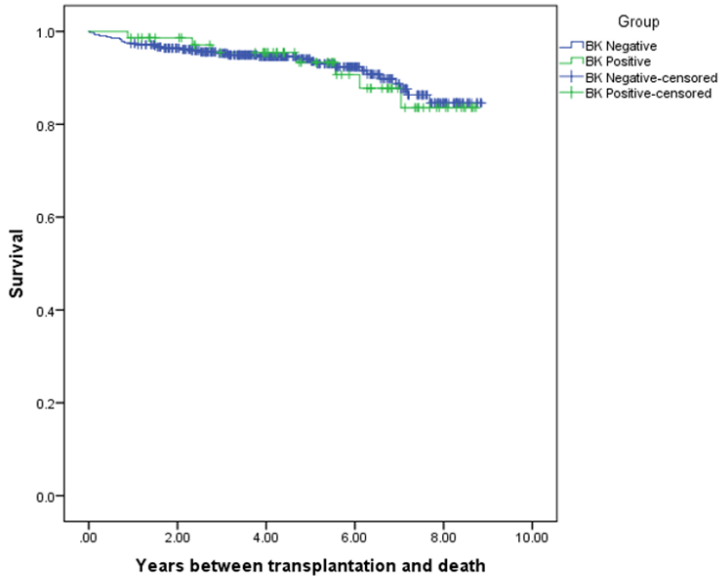


Figure 2. Comparison of patient survival after kidney transplantation in patients with/without BK polyomavirus

Conclusion: Despite that active surveillance against BKV has been prompt in the last years, it's apparent that patients who developed BKV infection have a poorer graft function as statistical analysis showed that especially on the short-term (1st and 3rd-year post-transplant). However, no significant statistical difference between both groups regarding graft or patient survival which is compatible with the published data.

P069

Therapeutic interventions for BK virus infection in renal transplant recipients; review of current evidence

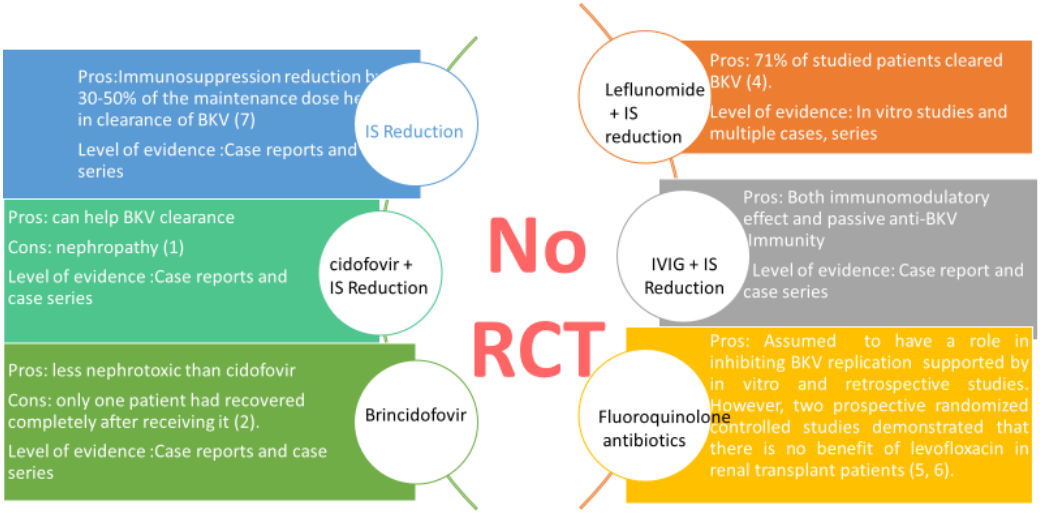
Ahmed Saleh[1,2], Ahmed Halawa[1,2]

[1]Sheffield Kidney Instituite, Sheffield, United Kingdom. [2]University of Liverpool, Liverpool, United Kingdom

Introduction: Currently, there are no available antiviral medications against BKV. However, potential anti-BKV agents have been reported by several reports. Concomitant administration of these agents with immunosuppression reduction and have been reported from uncontrolled retrospective observational studies, and therefore it is difficult to make firm conclusions about their therapeutic efficacy.

Methods: Case reports and case series have described the effect of cidofovir with immunosuppressive reduction, brincidofovir, Intravenous immunoglobulins (IVIG) in the management of BKV nephropathy. In vitro studies and multiple cases, series have described the role of Leflunomide, fluoroquinolone antibiotics in inhibiting BKV replication. The reduction of immunosuppression has been assessed by a Single-center prospective study. Immunotherapeutic approaches as adoptive T cell therapy to treat BKV-associated diseases are still in their early stages.

Results: Immunosuppression reduction by 30-50% of the maintenance dose helped in clearance of BKV. Cidofovir with immunosuppressive reduction can have a potential benefit, however limited use due to nephropathy. Brincidofovir appears to be less nephrotoxic than cidofovir, however, only one patient has recovered completely. Leflunomide with reduction of MMF by 50% has achieved 71% of studied patients cleared BKV. IVIG has both immunomodulatory effect and passive anti-BKV immunity, therefore 88% of patients with BKVN who had been treated with both immunosuppression reduction and IVIG had functioning grafts post-treatment. Fluoroquinolone antibiotics were assumed to have a role in inhibiting BKV replication by both In vitro and retrospective studies. However, two prospective randomized controlled studies demonstrated that there is no benefit of levofloxacin in renal transplant patients.



Conclusion: The management of BKV-associated diseases varies from center to center, and there is a need for further randomized controlled trials to define the optimal treatment strategy for Kidney Transplant Recipients with BKV reactivation. There is an urgent need to develop more specific anti-viral therapies for BKV nephropathy.

P070

Transport medium fluid cultures in paediatric renal transplantation: are we ready to make a consensus on prophylaxis?

Danielle Furnell[1], Sheila Boyle[1], Nicos Kessaris[2], Stephen Marks[1], Jelena Stojanovic[1]

[1]Department of Nephrology, Great Ormond Street Hospital for Children, NHS Foundation Trust, London, United Kingdom. [2]Department of Transplantation, Guy's and St Thomas' NHS Foundation Trust, London, , London, United Kingdom

Introduction: Practice in sending transport medium fluid (TMF) cultures differs between paediatric renal transplant centres. There is no consensus on which prophylactic antibiotic, if any, should be used and lack of published data.

Methods: We analysed records of 125 renal transplant recipients transplanted at a single centre from 2013-2017. 36 had deceased donor transplants (DDTx) and 89 had living donor transplants (LDTx).50 patients were excluded as no culture was sent. We looked into TMF growth and sensitivity to antibiotic prophylaxis.

Results: 30% of DDTx recipients had a positive TMF culture. Table 1 shows culture and sensitivities. Coliforms grew most commonly (30%).Only 50% of the bacteria were sensitive to the prophylactic antibiotics used at the time (protocol revised from ciprofloxacin to co-amoxiclav in 2017). 60% of growths were sensitive to amikacin, 30% to co-amoxiclav and 27% to ciprofloxacin. 19% of LDTx recipients had a positive TMF culture. Coagulase negative staphylococcus grew most commonly (55%). 36% of bacteria were sensitive to prophylactic antibiotics. 64% of cultures were sensitive to amikacin, 9% to co-amoxiclav and 27% to ciprofloxacin.

Table 1: TMF cultures and sensitivities to prophylactic antibiotics

Bacterial growth	No of positive TMF cultures	Sensitive to prophylactic antibiotic used
DDTX		
Klebsiella oxytoca	1	Yes
Staphylococcus epidermidis	1	No
Staphylococcus warneri	2	No, Unknown
Staphylococcus hominis	1	Yes
Staphylococcus aureus	1	Yes
Enterococcus	1	No
Coliforms	3	Yes, Yes, No
LRTX		
Coagulase negative staph.	6	No, no, no, yes, yes, unknown
Staph. Warneri	1	Yes
Staph. Epidermidis	1	No
Staph. Sp	1	No
Staph. Haemoliticus	1	Yes
Bacillus species	1	No

Discussion: In our study 30% of TMF cultures were positive. Only one third were sensitive to the prophylactic antibiotics used. Amikacin was the antibiotic that most organisms were sensitive to in both groups although there are concerns using aminoglycosides in this patient cohort.

P071

Donor and recipient predictors of one year renal transplant outcomes

Ramyangshu Chakraborty[1,2], Esther Siaw Yong Yong[1], Sarah Mcgill[2], Olivia Unwin[2], Joyce Popoola[2], Clare Castledine[1]

[1]Sussex Kidney Unit, Royal Sussex County Hospital, Brighton, United Kingdom. [2]Department of Nephrology and Transplantation, St George's University Hospitals NHS Foundation Trust, London, United Kingdom

Introduction: With the increasing use of donors with advanced age, this study was designed to test how donor factors compare with peri-transplant and recipient factors at predicting kidney function at one year given one year eGFR is one of the strongest predictor of long term graft survival.

Method: Retrospective analysis of data collected from patient records for all incident renal transplants between 1.1.14 and 31.12.16 at the St George's hospital (SGH) with follow up at the Sussex Kidney Unit (SKU) and SGH. Statistical analysis was conducted using SPSS One year patient and graft survivals were the primary outcome measures and one year eGFR (CKD EPI) was the secondary outcome measure. The impacts of various variables on one year eGFR were compared using linear regression, variables with significant impact in univariate analyses were used in the multivariate regression analyses.

Results: There were 197 transplants in the study period. Patient survival was 97.5%, graft survival 93.4%. Mean one year eGFR was 57.39 ml/min (SD 19.62). In the deceased donor recipient population DGF, donor age, kidney type, and recipient age were all associated with one year eGFR, though, in multivariate analysis, only DGF & donor age remained independently associated. (Tables attached)

Results: Deceased donor recipient population

Variable	R_2	Regression coefficient (β)	P value
DGF	0.081	-9.468	0.008
Donor age	0.303	-0.675	0.000
Type of kidney	0.035	-6.701	0.048
Recipient age	0.112	-0.473	0.000

Univariate model

Variable	Regression coefficient	P value
DGF	-7.401	0.035
Donor age	-0.560	0.000
Type of kidney	-2.784	0.428
Recipient age	-0.069	0.648

Multivariate model

In the live donor cohort, pre-emptive transplants & donor age were highlighted as statistically significant predictors for one year eGFR, but once was adjusted for donor age; pre-emptive transplant type was no longer independently associated.

Conclusions: Donor age has been highlighted as a strong predictor for one year eGFR in both deceased and live donor kidney transplant recipients. Our study findings suggest that donor factors (age) may have a stronger influence on outcome of graft survival than recipient factors. Further study is required in larger populations over a longer timeframe in order to fully dissect the potential influence of donor age in transplant outcomes.

P072

Results of simultaneous pancreas and kidney transplantation after nearly 10 years of experience in our hospital

Guadalupe Tabernero[1], Miguel Sanchez-Jauregui[1], Anika Tyszkiewicz[1], Pilar Fraile[1], Josepa Sebastia[1], Rosa Ana Iglesias[2], Luis Muñoz[3], Carmen Esteban[3], Manuel Iglesias[3], Luis Gonzalez[3]

[1]University Hospital Nephrology Department, Salamanca, Spain. [2]University Hospital Endocrinology Department, Salamanca, Spain. [3]University Hospital Surgery Department, Salamanca, Spain

Introduction: Simultaneous Pancreas and Kidney (SPK) transplantation is the most suitable option for patients with Diabetes Mellitus (DM) and Chronic Renal Failure (CRF) and improves their quality of life.

Methods: evaluate the results of our SPK transplantation in our hospital. From 27/02/2009 to 20/11/2018, 70 patients received a pancreas transplantation. 68 SPK and 2 patients received a second pancreas after kidney (PAK) because of a failure of the pancreas graft surgery, (these two were excluded from the study)**.** Retrospective study where we analyzed demographic characteristics, evolution and grafts and patients survival. Kidney failure was restarting dialysis, and pancreas failure, need of insulin administration. Student t, X2 and Mann Whitney tests were done.

Results: in this period 68 SPK were carried out in the University Hospital of Salamanca, Spain. Recipient's average age was 40.6 +/- 7.75. 7 patients received a pre-emptive SPK (10.29%). 19 (27.94%) were in Peritoneal dialysis (PD) and 42 (61,76%) Hemodialysis (HD). Pancreas cold ischemia time (CIT) average 11 hours 20 minutes and renal CIT average 14 hours 10 minutes. Patient survival was 95.58%. 7 kidneys were lost (4 of those patients had already received a second kidney) transplantation. Renal survival was 85%, dead censored 93%. Pancreas survival 92%, dead censored 97 %. Renal function and glycosylate hemoglobin are shown in the table. We didn't find any association between the values studied and renal or pancreas failure.

Conclusions: After nearly 10 years we can say that the SPK transplantation is the most suitable treatment for patients with DM and CRF. We didn't find any statistical association between the reviewed values and the prognosis of this transplantation.

Creatinine (mg/dl) 1 year post-transplantation (post-tr)	1,15±0,31
HbA1C 1 year post-tr	5,33±0,48 %
Creatinine 5 years post-tr	1,22±0,29
HbA1C 5 years post-tr	5,41±037 %
Creatinine November 2018	1,19± 0,28
HbA1C November 2018	5,32± 0,37 %

P073

Outcomes of augmented immunosuppressive protocol to prevent recurrent FSGS in high risk kidney transplant recipients: regional audit

Yasser Ashraf[1], Ashley Hong[1], Thomas Stokes[1], Elizabeth Lindley[1], Keith McCullough[2], John Stoves[3], Richard Baker[1], Matthew Welberry-Smith[1], Sunil Daga[1]

[1]St James's University Hospital Leeds, Leeds, United Kingdom. [2]York Teaching Hospital, York, United Kingdom. [3]Bradford Teaching Hospital NHS Foundation Trust, Bradford, United Kingdom

Introduction: Recurrent focal segmental glomerulosclerosis (FSGS) following kidney transplantation is common (estimated around 30%) and results in high risk of graft failure. We share our experience of strategies to assess such a risk and a pre-emptive augmentation of immunosuppressive (IS) protocol in high risk cases immediately following kidney transplantation which may avoid recurrence. The high risk group for recurrent FSGS is defined as young age of onset, recurrence in previous transplant and rapidly progressive primary disease requiring renal replacement therapy within three years of onset.

Methods: 60 kidney transplant recipients with a diagnosis of FSGS were identified over the last 10 years at our center. Data from 55 cases were available from a range of sources (renal database- VitalData, PPM+ and other local databases). Analysis was conducted using Microsoft Excel and Graphpad quickcalcs.

Results: Out of 55, 37 patients were deemed to have primary FSGS. Out of 37 cases, eight were classified as high risk for recurrent FSGS and received peri-operative augmented IS protocol [Plasma exchange (N=3), Cyclophosphamide (N=1) and both (N=4)]. Baseline IS protocols and outcomes are shown in the table:

	Augmented Immunosuppressive protocol	
	No (N=29)	**Yes (N=8)**
Age at tx (Avg in yrs)	45.3	33.2
Induction		
Basilixumab	8	7
Alemtuzumab	21	1
Baseline IS drugs		
Tac/MMF/Pred	3	7
Tac/MMF	9	0
Tac monotherapy	17	1
Outcome		
Recurrence (N)**	6	6
Time to recurr from Tx (months)	29.4	2.8
Death	1	0
Failure*	5	5

** p value 0.0077 (Fisher exact 2-tail test) and * p = 0.021

In the group with augmented IS protocol, one graft failed due to chronic AMR, three with recurrent FSGS whilst one had primary non-function (PNF). In the other group, three failed due to chronic allograft nephropathy and two had PNF. One patient died secondary to small bowel obstruction.

Discussion: Analysis of patients with FSGS showed increased incidence of recurrence (75%) in a clinically defined high risk group despite an augmented immunosuppressive protocol. This audit highlights difficulty in managing risk in such cases and further studies are required to address this.

P074

Does body mass index affect the functional outcomes of renal transplantation in elderly recipients?

Vasileios K. Mavroeidis[1], Matthew Williams[2], James Hunter[2], Georgios Vrakas[1], Simon Knight[1], James Gilbert[2], Srikanth Reddy[2], Isabel Quiroga[2], Rutger Ploeg[2], Peter Friend[1], Sanjay Sinha[2]

[1]Oxford Transplant Centre, Oxford, United Kingdom. [2]Oxford Transplant Centre, Oxford, United Kingdom

Introduction: Elderly as well as overweight/obese patients gradually increase in Renal Transplant (RT) waiting lists. Obesity is associated with worse functional outcomes, however, RT in obese patients is known to prolong survival compared to remaining on dialysis. Elderly patients are considered high-risk candidates. However, there is no relevant literature exploring outcomes of RT in obese elderly patients. We sought to find if BMI categories correlate with different outcomes in our cohort of patients over the age of 65.

Methods: A retrospective study of 163 elderly patients who underwent RT between 01/01/2010-30/12/2016. Recipient and donor demographics were recorded, including 3-month and 12-month creatinine (Crea) and eGFR, delayed graft function (DGF), primary non-function (PNF), 12-month patient (PS) and graft survival (GS). Data were re-grouped via the WHO BMI classification [Underweight (n=5), Ideal (n=56), Overweight (n=62), Obese Class I (n=30), Obese Class II (n=10), Obese Class III (n=0)].

Results: Significant differences favoured the Ideal BMI category for both median Crea and eGFR at 3-months: Ideal (128 μmol/L and 46 ml/min) vs Obese Class II (216 and 25) (*p=0.005 and p=0.008, respectively)*, and at 12 months: Ideal (119.5 and 51) vs Overweight (160 and 38) (*p=0.014 and p=0.022, respectively*). No significant differences occurred for DGF, PNF, PS, GS. In the Ideal category, in the interval from 3 to 12 months post-transplant, a statistically significant improvement was recorded in eGFR (46 vs 51, *p=0.05*). This also occurred in the Obese Class II (25 vs 34.5, *p=0.03*), where Crea also improved significantly (216 vs 143.5, *p=0.04*).

Discussion: Our data indicate that even elderly patients with a BMI 25 – 39.9 can benefit satisfactory outcomes after RT. Obesity correlated with worse outcomes, while Ideal BMI was associated with better functional outcomes at 3 and 12 months. No Obese Class III elderly patients were RT recipients. Awareness of the importance of weight loss prior to RT including available methods, is essential.

P075

Cardiac complications in a kidney-only transplant recipient with methylmalonic acidaemia

Ji Soo Kim[1], Sheila Boyle[1], Elena Cervi[1], Stephanie Grunewald[1], Nicos Kessaris[2], Mel McSweeney[1], Jacob Simmonds[1], Jelena Stojanovic[1], Stephen D Marks[1]

[1]Great Ormond Street Hospital for Children NHS Foundation Trust, London, United Kingdom. [2]Guys' and St Thomas' NHS Foundation Trust, London, United Kingdom

Introduction: To report the outcome data of a paediatric renal transplant recipient with methylmalonic acidaemia (MMA) whose course was complicated by rapidly progressive cardiomyopathy secondary to MMA.

Methods: Retrospective 21-month post-transplant follow-up data of a 15-year-old female diagnosed with MMA at 10 days old. Pre-transplant history was marked by one severe metabolic decompensation event leading to cardiac arrest at 3 years of age, multiple episodes of pancreatitis, hypertension requiring three agents, chronic enteropathy with gastro-jejunal feeds, insulin-dependent diabetes mellitus and end-stage kidney disease requiring haemodialysis at 15-years-old. Echocardiogram revealed mild concentric left ventricular hypertrophy (LVH), Left Ventricular Ejection Fraction (LVEF) of 81% and an Interventricular Septum diastole (IVSd) z-score of +6.22. After extensive Multi-Disciplinary team (MDT) planning, she received a living related donor kidney (EBV D+R- CMV D+R-) with mismatch 1-0-1, anastomosis of the renal vessels to the external iliac vessels.

Results: 24 hours post-transplantation, her serum creatinine and MMA levels dropped from 423umol/l and 3670umol/l to 42umol/l and 287umol/l, respectively. Subsequently, she had multiple episodes of renal allograft dysfunction due to challenging fluid management and CMV viraemia. Renal allograft biopsies show no sign of antibody or T-cell mediated rejection. Her new baseline mean plasma creatinine was 200umol/l. 14 months post-transplantation, although asymptomatic, her LVEF (60%) deteriorated. Despite optimising antihypertensive agents and serum MMA, cardiomyopathy progression continued. 20 months post-transplantation her IVSd z-score was +18. Thereafter she was admitted to Intensive Care with severe pulmonary oedema and two cardiac arrests; care was withdrawn after MDT discussion.

Discussion: Concentric cardiomyopathy is a known complication in MMA and as evidenced here, can be challenging to manage post-transplantation. There is ongoing debate around organ transplantation in MMA (kidney only, liver only or combined / sequential liver-kidney transplantation) and timing (pre-emptive or symptomatic relief). Early transplantation could be considered in children with MMA to circumvent intractable cardiac complications.

P076

Detrimental impact of stenting transplant renal artery stenosis in the presence of donor specific antibodies

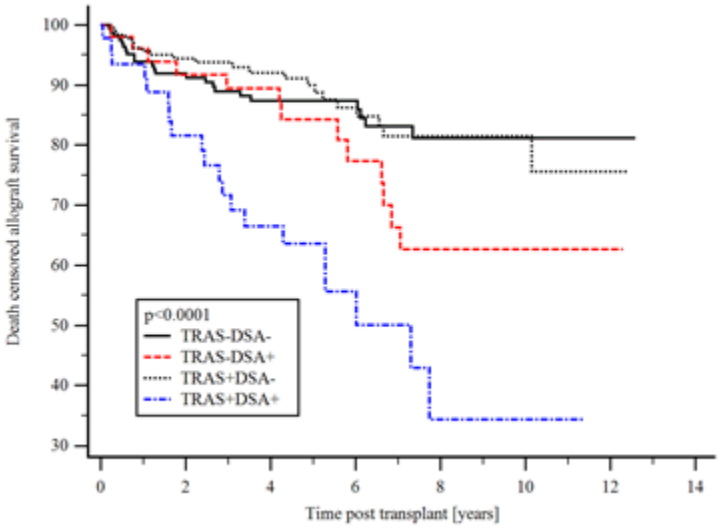
Salim Hammad, Na Hyun Kim, Richard Corbett, David Taube, Wady Gedroyc, Mo Hammady, Michelle Willicombe

Imperial College Healthcare NHS Trust, London, United Kingdom

Introduction: Donor specific antibodies (DSA) have been shown to be associated with micro- and macrovascular disease in both renal and cardiac transplants. Whether DSA driven macrovascular disease responds differently to traditional management is not known. In this study we aim to compare the outcomes following stenting of transplant renal artery stenosis (TRAS) by DSA status.

Methods: 234 TRAS+ cases, treated with PCI and stent placement were compared with 215 angiographically confirmed TRAS- cases. All patients were tested for the presence of DSA, and subsequent C1q binding when required.Clinical outcomes were analysed, with a median follow up of 5.78±3.16 years post angiogram.

Results: The median time to TRAS diagnosis was 2.76(2.52-3.24) months. TRAS was more common in recipients of deceased donors [117(75.5%), p<0.001]. Patient and unadjusted allograft survival was inferior in TRAS+ compared with TRAS- patients, at 61.7% versus 79.3% and 44.6 versus 62.7% respectively, p=0.028. There was no difference in death censored allograft survival, p=0.44, however survival was dependent upon DSA status. Whilst TRAS+DSA- cases had a comparable survival to TRAS-DSA- cases as shown below, p=0.66; TRAS+DSA+ patients had significantly inferior survival compared TRAS-DSA+ (p=0.012), TRAS+DSA- (p<0.001).



There was no difference in graft survival in C1q+ compared with C1q- TRAS+DSA+ cases with a survival of 28.1% and 36.7% respectively, p=0.86. However, C1q+ TRAS-DSA+ patients had significantly worse survival than C1q- TRAS-DSA+ patients, p=0.0025.

Discussion: This study highlights the heterogeneity of TRAS which has significant implications for its potential management. Whilst stenting DSA-TRAS is associated with favourable outcomes, it may be detrimental to stent DSA+TRAS, which may represent a more diffuse alloimmune process.

P077

Infections in the Alemtuzumab Era. Study in a centre with by-default use of Alemtuzumab as induction agent

Anna Garms[1,2], Luke Patterson[1,2], Niaz Ahmad[2], Adam Barlow[2], Lutz Hostert[2], Sonsoles Martinez-Lopez[2]

[1]Leeds University, Leeds, United Kingdom. [2]Leeds Teaching Hospitals, Leeds, United Kingdom

Introduction: Renal transplantation aims to improve the quality and quantity of life for patients with end stage renal disease. In order to prevent rejection, patients are given induction agents, such as Alemtuzumab, at the time of transplant.
Induction agents allow steroid avoidance protocols, thus removing the adverse effects of the steroids. Alemtuzumab induction allows a maintenance immunosuppression regime of tacrolimus monotherapy to be utilised. So in our centre is used for most transplants unless a contraindication is present. Previous studies have shown that induction agents can be associated with a higher incidence and severity of post-transplant infections. This study aimed to expose the rate and severity of infections post-transplant following Alemtuzumab induction when used in most of transplant patients.

Methods: Retrospective study of 231 renal transplant patients who received their transplant between 2011-14 using alemtuzumab induction therapy was conducted. Patient records were analysed for the incidence of severe bacterial infections, opportunistic infection and new malignancy. Severe bacterial infection was defined as an infection requiring hospitalisation or IV antibiotics. Patients were excluded if relevant follow-up data was not accessible or data was incomplete.

Results: Overall, 49.8% of the patients acquired an infection post-transplant. 38.5% acquired a severe bacterial infection, with the majority being from a urinary source. Considering opportunistic infections: 6.9% acquired CMV, 0.4% acquired EBV and 0.9% acquired PCP. In addition, 7.4% of patients developed some form of malignancy in the 3-year follow-up period.

Discussion: In comparison to relevant literature, where a different induction agent is used in combination with triple therapy, opportunistic and bacterial infection rates in our study were lower with Alemtuzumab induction. Furthermore, the incidence of new malignancies was as well lower with Alemtuzumab. Pending further study, we believe Alemtuzumab shows great promise as an effective induction agent which could replace conventional triple therapy regimes without increasing the infection rate

P078

HbA1c increases significantly post-transplant and is highest in overweight patients

Michelle Willicombe[1,2], Rakesh Dattani[1,2], Huma Alam[1,2]

[1] Imperial college transplant metabolic group, London, United Kingdom. [2]West London Renal Transplant Centre, London, United Kingdom

Introduction: The development of post-transplant diabetes [PTDM] has transplant specific risk factors related to immunotherapy alongside traditional risk factors. New diabetic therapies, SGLT2 inhibitors and GLP-1 agonists reduce weight and improve cardiovascular risk. This study aims to determine the prevalence of overweight transplant patients with diabetes and the impact BMI has on diabetic control, in order to assess the potential role for newer diabetic therapies.

Methods: We studied 333 ethnically diverse renal transplant patients for 1 year post-transplant and analysed the relationship between BMI and HbA1c. Type 1 diabetics were excluded. Low and high BMI was defined as

Results: 86/333(25.8.8%) people were diabetic at the time of transplantation. Diabetic patients were more likely to be male [70(81.4%),p=0.023], older [58.9±8.0 years,p<0.001. 25/247(10.1%) patients developed PTDM and had a higher BMI at the time of transplantation compared with the non-PTDM group, 29.8±6.5 versus 25.5±4.8, pHbA1c was significantly higher at 1 year independent of BMI with the greatest difference in the high BMI patients as shown below.

Group	Patient Number	HBA1c at tx	HbA1c at 1 year	P value
No DM, Low BMI	83(24.9%)	34.1±5.5	37.3±5.9	0.001
No DM, High BMI	164(49.2%)	34.7±5.9	40.8±11.9	<0.001
P value		0.43	0.013	
DM, Low BMI	10(3.0%)	57.1±18.16	78.9±25.3	0.06
DM, High BMI	76(22.8%)	53.9±15.9	67.7±18.8	<0.001
P value		0.58	0.11	

Discussion: The majority of transplant patients are overweight and should be offered appropriate lifestyle interventions. Diabetic patients may also benefit from newer pharmacological therapies associated with proven cardiovascular benefit, weight loss and improving glycaemic control.

P079

Significant weight gain is common post-transplantation and early intervention in the pre-transplant setting maybe beneficial

Michelle Willicombe[1,2], Rakesh Dattani[1,2], Huma Alam[1,2]

[1]Imperial College Transplant Metabolic Group, London, United Kingdom. [2]West London Renal Transplant Centre, London, United Kingdom

Introduction: Weight gain following renal transplantation is associated with increased cardiovascular risk and reduced allograft and patient survival. Sustainable interventions to minimise weight gain have yet to be proven. Immunosuppression, especially corticosteroids have been implicated, although other risk factors need to be considered. This study aims to determine the incidence, spectrum and risk factors for weight gain post renal transplantation in patients receiving a steroid sparing immunotherapy protocol.

Methods: We analysed changes in weight and BMI (mg/m2) of 338 transplant patients in the first year post-transplant. Clinical variables were analysed to determine those patients at risk of significant weight gain.

Results: 203(60%) of all patients were overweight at the time of transplant, which increased to 249(72.5%) 1 year post-transplant, as shown below.

BMI	**At transplant**	**1 year**
<18.5	15(4.4%)	3(0.9%)
18.5-24.9	120(35.5%)	90(26.6%)
25-29.9	135(39.9%)	149(44.1%)
>30	68(20.1%)	96(28.4%)

The median increase in body weight was 5.80%, with an interquartile range of ≤1.22% and ≥11.75%. Significant risk factors at the time of transplant for weight gain are shown below.

	<1.22 N=85(%)	1.22-5.79 N=84(%)	5.8-11.74 N=85(%)	≥11.75 N=84(%)	P value
Females	24(28.2%)	23(27.4%)	24(28.2%)	37(44.0%)	0.034
Age	55.2±12.6	54.0±10.6	51.6±13.1	45.6±13.7	<0.001
Pre-emptive	63(74.1%)	67(79.8%)	75(85.9%)	71(84.5%)	0.0496
Black ethnicity	12(14.1%)	13(15.5%)	11(12.9%)	23(27.4%)	0.0496
Sensitised	28(32.9%)	35(41.7%)	28(32.9%)	45(53.6%)	0.026
Rejection	11(12.9%)	18(21.4%)	11(12.9%)	21(25.05)	0.09

On logistic regression, younger age, OR: 0.96(0.95-0.98), p<0.0001 was a risk factor for weight gain, whilst pre-emptive transplantation was favourable, OR: 0.55(0.31-0.98), p=0.042.

Discussion: Weight gain is common post-transplant although a significant proportion of patients are overweight pre-transplant, and any intervention to curb weight should start in the pre-transplant setting.

P080

Low rate of participation in national cancer screening programmes in renal transplant recipients

Katie Tansey, Dawn Goodall, Jo Reed, Bakhiet Osman, Michelle Willicombe

Imperial healthcare NHS Trust, London, United Kingdom

Introduction: Malignancy is one of the leading causes of death in renal transplant patients. There is high vigilance for early symptoms and signs related to malignancy during routine transplant follow up, with specific monitoring for some cancers such as skin. The aim of this study is to determine the uptake of national cancer screening programmes by renal transplant patients at our centre.

Methods: In a newly established transplant surveillance clinic we asked consecutive patients whether they had participated in relevant national cancer screening programmes offered to them by their GP.

Results: 130 patients were questioned at a median time of 4 years post-transplant. 76/130(58.6%) were male and the mean age was 53.1(48.2-56.8 years).49(37.7%) were Caucasian, 40(30.8%) south Asian, 24(18.5%) afrocaribbean and 17 (13.1%) patients were of other ethnicities.

The percentage of eligible patients for the national screening programmes together with adherence is shown in the table below.

	Number of eligible patients	Number undergoing screening (%)
Breast	34	11 (32.4%)
Cervical Screening	32	9 (28.2%)
Bowel	53	10 (18.9%)

There is no screening programme for prostate cancer in the UK but there is an informed choice programme for men over 50 years. 39 male patients were over 50 years old of which 8/39(20.5%) had a raised PSA with no new onset of urinary symptoms. There was 1 known case of prostate cancer and 2 further diagnoses were made in this patient cohort following referral to urology.

Discussion: There was a low rate of participation in national cancer screening programmes in our patients.Reasons for this need to be explored and may relate to specific socio-demographic factors, which if identified will enable focused patient education.

P081

Risk factors for prolonged hospital stay immediately following kidney transplantation.

Duha Ilyas, Christopher Pearce, Sunil Daga, David Keane

Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom

Introduction: Prolong stay results in poor experience of patient, increased risk of hospital acquired infections and morbidities. The answer to why length of stay exceeds the optimum 7 days is likely to be multifactorial in nature. In this work, we looked at factors responsible for prolonged in-patient stay (over seven days) after kidney transplantation and intend to use our findings to inform future practice.

Methods: We interrogated the renal unit database between 01/09/16 and 01/09/18, and extracted data on recipient & donor demographics, focusing on length of hospital stay. Logistic regression was used to investigate which variables were associated with prolonged stay at baseline (time of transplantation) and post-transplantation events models (using MATLAB statistical software).

Results: Of the 367 patients who received kidney transplantation, 200 cases had prolonged hospital stay. Univariate analysis demonstrated a significant correlation amongst many of the variables that we had considered (Table 1), however, in multivariate analysis (baseline model) transplantation from donation after cardiac death (DCD) kidney donor, having previous renal replacement therapy (RRT) and induction with Basilixumab were independently associated with prolonged length of stay.The post-transplantation model revealed recipient from South Asian ethnicity, post-transplant surgical complications and delayed graft function (DGF) were additional independent factors resulting in prolonged hospital stay.

Table 1

		Univariate				Baseline Model				Post-Transplant Model			
		odds ratio	95% CI		p-value	odds ratio	95% CI		p-value	odds ratio	95% CI		p-value
Age		1.02	1.00	1.03	0.01	1.00	0.98	1.02	0.87	1.00	0.98	1.02	0.73
Gender (male)		1.98	1.29	3.05	0.00	1.52	0.89	2.62	0.12	1.39	0.77	2.50	0.27
Ethnicity (white)	Other	1.70	0.73	3.96	0.22	2.05	0.67	6.31	0.21	1.98	0.56	6.96	0.28
	South Asian	1.76	0.99	3.11	0.05	1.79	0.88	3.68	0.11	2.15	1.01	4.59	0.05
Transplant type (DBD)	DCD	2.25	1.35	3.76	0.00	3.04	1.61	5.74	0.00	-	-	-	-
	Live	0.34	0.19	0.59	0.00	0.55	0.20	1.52	0.25	-	-	-	-
BMI		1.06	1.02	1.11	0.01	1.06	1.00	1.13	0.05	1.04	0.97	1.11	0.28
CIT		1.09	1.05	1.14	0.00	1.02	0.94	1.10	0.65	1.05	0.99	1.10	0.11
Induction agent		1.67	1.01	2.76	0.05	2.05	1.11	3.78	0.02	2.29	1.18	4.46	0.01
Previous RRT		2.95	1.75	4.96	0.00	3.70	1.77	7.75	0.00	2.16	1.01	4.61	0.04
Comorbidity		2.35	1.14	4.84	0.02	1.76	0.79	3.91	0.16	1.34	0.56	3.22	0.51
Surgical complications		6.17	2.11	18.05	0.00	-	-	-	-	5.02	1.27	19.83	0.02
Sepsis		2.38	1.11	5.06	0.02	-	-	-	-	2.69	0.95	7.67	0.06
Delayed Graft Function		28.31	11.12	72.09	0.00	-	-	-	-	19.87	7.44	53.07	0.00

Discussion:

Using this data, we have identified several risk factors for prolonged hospital stay in this cohort of patients. This has stimulated work on enhanced recovery and ambulatory care pathways, including for managing patients with DGF.

P082

Utility of Newcastle score in determining prolong length of stay immediately following kidney transplantation

Duha Ilyas, Christopher Pearce, Sunil Daga, David Keane

Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom

Introduction: The optimum length of stay following kidney transplantation is 5-7 days. In the work up to transplantation, scoring systems can be used to identify suitable candidates for kidney transplantation. In this work, we looked at the utility of Newcastle Score in determining the length of stay in patients immediately after transplantation.

Methods: We looked at data from 01/09/16 to 01/09/18 for all transplant recipients. Out of 367 patients, a Newcastle score was available for 197 recipients in our database. We extracted data on recipient & donor demographics, focusing on length of hospital stay. Logistic regression was used to investigate which variables were associated with prolonged stay at baseline (time of transplantation) and post-transplantation events models (using MATLAB statistical software). We categorised the Newcastle score into two categories based on a cut off of 9.

Results: Using univariate analysis, a Newcastle score greater than 9 was significant when considering length of stay. However on, multivariate analysis (for both baseline and post-transplant models) Newcastle score did not demonstrate a statistically significant correlation.

Table 1

		Univariate				Baseline Model				Post-Transplant Model			
		odds ratio	95% CI		p-value	odds ratio	95% CI		p-value	odds ratio	95% CI		p-value
Age		1.02	1.00	1.03	0.01	-	-	-	-	-	-	-	-
Gender (male)		1.98	1.29	3.05	0.00	2.98	1.39	6.38	0.00	2.39	1.05	5.48	0.04
Ethnicity (white)	Other	1.70	0.73	3.96	0.22	1.02	0.24	4.42	0.98	0.99	0.17	5.82	0.99
	South Asian	1.76	0.99	3.11	0.05	1.28	0.49	3.34	0.61	1.46	0.52	4.10	0.47
Transplant type (DBD)	DCD	2.25	1.35	3.76	0.00	2.41	1.04	5.61	0.04	-	-	-	-
	Live	0.34	0.19	0.59	0.00	0.34	0.10	1.22	0.10	-	-	-	-
BMI		1.06	1.02	1.11	0.01	-	-	-	-	-	-	-	-
CIT		1.09	1.05	1.14	0.00	1.02	0.92	1.12	0.73	1.09	1.01	1.17	0.03
Induction agent		1.67	1.01	2.76	0.05	1.75	0.74	4.13	0.20	1.96	0.77	5.02	0.16
Previous RRT		2.95	1.75	4.96	0.00	3.25	1.39	7.62	0.01	2.23	0.87	5.71	0.09
Newcastle Score (>9)		13.34	1.72	103.15	0.01	8.10	0.93	70.89	0.06	7.84	0.86	71.59	0.07
Surgical complications		6.17	2.11	18.05	0.00	-	-	-	-	7.27	1.27	41.60	0.02
Sepsis		2.38	1.11	5.06	0.02	-	-	-	-	1.89	0.43	8.32	0.39
Delayed Graft Function		28.31	11.12	72.09	0.00	-	-	-	-	22.53	4.98	102.01	0.00

Discussion: Our findings suggest a Newcastle score greater than 9 had a trend towards significance; statistically this was not significant when considering length of stay post kidney transplantation. The total number of patients in our analysis is small and it is possible that a correlation would be seen in a larger cohort of patients.

P083

A retrospective observational analysis of tacrolimus metabolism rate: no evidence for impact on renal function

Alexandra Hughes, James Kimpton, Iain MacPhee

St George's, University of London, London, United Kingdom

Introduction: A greater understanding of the risk factors predicting tacrolimus nephrotoxicity after renal transplantation is required. A publication found that fast metabolisers of tacrolimus had inferior renal function compared to slow metabolisers in a Caucasian population (Thölking et al., 2014). This study aimed to assess if this could be replicated in an ethnically diverse renal transplant population.

Methods: We performed a retrospective observational analysis of 295 participants from previous genotyping studies who underwent renal transplantation between 1995 and 2017. Patients were assigned a tacrolimus metabolism rate as defined by the mean of their trough blood tacrolimus concentrations normalised by their tacrolimus doses (C/D ratios) at day 7, day 14 and 3 months post-transplantation. Participants were stratified into slow, intermediate or fast metaboliser groups (mean C/D ratio of ≥1.55, 1.05-1.54 or <1.05 respectively). Glomerular filtration rate was estimated using the CKD-EPI equation (eGFR). Groups were compared by the Kruskal-Wallis H test.

Results:

		Fast Metabolisers	Intermediate Metabolisers	Slow Metabolisers
Ethnicity	**Black**	38	3	3
	Caucasian	74	63	57
	South Asian	17	12	16
	Other	6	3	3

Table 1. Participant numbers by ethnicity.

Time	**Mean eGFR (ml/min/1.73m^2)**			**P value**
	Fast Metabolisers (n=135)	**Intermediate Metabolisers (n=81)**	**Slow Metabolisers (n=79)**	
Day 7	28.27±26.57	32.79±22.91	32.03±26.01	0.12
Day 14	33.73±25.94	39.42±22.68	38.94±26.81	0.07
3 months	46.46±21.40	49.44±17.57	50.24±21.52	0.23

Table 2. Renal function by metaboliser group.

Discussion: Tacrolimus metabolism rate did not influence renal function after renal transplantation at any time point (Table 2). This is in contrast to previously published data from a Caucasian population. Given the ethic heterogeneity in our population (Table 1), we analysed our Caucasian data separately (n=194) and remained unable to demonstrate an impact. These data do not support tacrolimus metabolism rate, defined as mean C/D ratio, as a suitable risk factor for predicting tacrolimus nephrotoxicity.

P084

***CYP3A5* genotype had no influence on renal function after renal transplantation**

James Kimpton, Alexandra Hughes, Iain MacPhee

St George's, University of London, London, United Kingdom

Background: Genetic polymorphisms in CYP3A5 enzyme expression influence tacrolimus metabolism. Functional CYP3A5 is encoded by the *CYP3A5*1* allele, whilst the most common non-functional variant is the *CYP3A5*3* allele. Tacrolimus metabolism rate has been reported to be associated with renal function after renal transplantation (Thölking et al., 2014). This study aimed to determine whether *CYP3A5* genotype is a contributory factor.

Methods: We performed a retrospective observational analysis of 295 patients who underwent renal transplantation between 1995 and 2017. *CYP3A5* genotypes of **1/*1*, **1/*3* or **1/*3* were determined. Serum creatinine, trough blood tacrolimus concentration and tacrolimus dose were recorded at day 7, day 14 and 3 months post-transplantation. Glomerular filtration rate was estimated using the CKD-EPI equation (eGFR). Groups were compared by the Kruskal-Wallis H test.

Results:

	****1/*1*** **(n=27)**	****1/*3*** **(n=81)**	****3/*3*** **(n=187)**	***P value***
Tacrolimus mean concentration (ng/ml)	10.94±4.66	11.73±4.29	13.94±6.05	<0.0001
Tacrolimus mean daily dose (mg)	19.33±6.20	15.41±5.81	11.00±4.93	<0.0001
Mean concentration/dose ratio (ng/mL*1/mg)	0.78±0.82	0.90±0.48	1.53±0.72	<0.0001

Table 1. Mean blood tacrolimus trough concentrations, tacrolimus doses and concentration/dose ratios by *CYP3A5* genotype across all time points.

Time	**Mean eGFR (ml/min/1.73m^2)**			**P value**
	****1/*1*** **(n=27)**	****1/*3*** **(n=81)**	****3/*3*** **(n=187)**	
Day 7	29.22±30.81	31.05±24.93	30.48±24.99	0.82
Day 14	36.41±29.41	37.05±25.81	36.57±24.73	0.91
3 months	52.67±21.12	50.53±23.01	46.69±19.07	0.31

Table 2. Renal function by *CYP3A5* genotype.

Discussion: As expected, individuals with CYP3A5 expressor genotypes (*CYP3A5*1/*1* and **1/*3*) were shown to require higher daily doses of tacrolimus and had lower tacrolimus trough concentrations than nonexpressors (*CYP3A5*3/3*) (Table 1). Despite this, *CYP3A5* genotype did not influence renal function at any time point (Table 2). *CYP3A5* genotype does not appear to be a risk factor for predicting the development of tacrolimus nephrotoxicity.

P085

Proteinuria independently predicts allograft failure in patients undergoing very late renal transplant biopsies

Bakhiet Osman, Huma Alam, Candice Roufosse, Michelle Willicombe

Imperial College Renal and Transplant Centre, London, United Kingdom

Introduction: Long term allograft survival has not improved over the past few decades. The aetiological cause of failure varies is dependent upon the time post-transplant. However, the utility of histological sampling of biopsies late after renal transplantation has not been extensively reported, which may reflect the perception of lack of treatment interventions. In this study we aim to describe the indications and outcomes of patients undergoing biopsies in the very late post-transplant period.

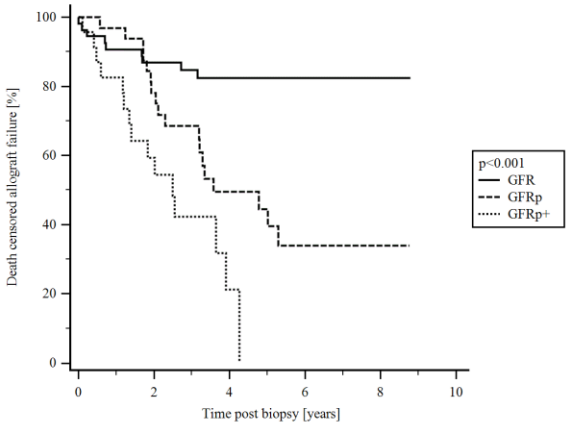
Methods: We reviewed the clinicopathological features and outcomes of 112 patients undergoing a renal transplant biopsy >10 years post-transplant [median time 14.8 (13.7-15.50) years].

Results: The indications for the biopsy were deteriorating eGFR alone (GFR), eGFR with non-nephrotic range proteinuria (GFRp) and eGFR with nephrotic range proteinuria (GFRp+). GFR was the most common indication.

	# of patients	**eGFR (mls/min)**	**UPCR**
GFR	54(48.2%)	32.96±12.10	31.31±28.34
GFRp	34(30.4%)	37.41±13.35	182.85±64.06
GFRp+	24(21.4%)	45.54±66.50	653.63±553.13
P value	0.002	0.30	<0.001

The predominant histological features were scarring (including glomerular, tubular atrophy and interstitial fibrosis, arteriolar hyalinosis) in 50(44.6%), de novo or recurrent glomerulonephritis in 27(24.1%), alloimmune in 31(27.7%) and other diagnoses in 4(3.6%). Change in immunotherapy occurred in 51(45.5%) of which 33(29.5%) involved augmentation in therapy.

With a median follow up post biopsy of 5.1(4.5-5.9) years, overall death censored allograft survival was 90.8%, 71.6% and 57.7% at 1, 3, and 5 years respectively. GFRp [3.31(1.47-7.44), p=0.004] and GFRp+ [7.08(3.00-16.54), p<0.001] patients had the worst survival as shown below, and on multivariate analysis, level proteinuria was the only independent risk factor for allograft loss.



Discussion: This study has shown that biopsies performed late post-transplant may result in a change in management, however independent of histological category, proteinuria and especially nephrotic range proteinuria is associated with poor outcome.

P086

Tacrolimus dosing in renal transplant patients should be adjusted for age and ethnicity

Christopher Uy, Dawn Goodall, Adam McLean, David Taube, Michelle Willicombe, Janet Lee (Senior)

Hammersmith Hospital - Imperial College Healthcare NHS Trust, London, United Kingdom

Introduction: Elderly patients are at increased risk of immunotherapy associated complications which is most likely due to a combination of factors including the effect of ageing on drug metabolism. Despite this, there are currently no formal recommendations that tacrolimus dosing should be adjusted for age. In this study we aim to determine the relationship between tacrolimus dose and age.

Methods: We analysed the tacrolimus dose by age, ethnicity and weight in 515 stable renal transplant patients at 1 year post renal transplantation. All patients had a target 12 hour FK trough level of 5-8ng/ml. Usual dosing starts at 0.1mg/kg/day with dose adjustments as per trough levels.

Results: The median tacrolimus dose in mg/kg/day is shown in the table below.

	Black ethnicity	South Asian	Caucasian
Number of patients	67	185	263
Median Age (years)	51.8 ± 11.7	50.4 ± 42	48.7 ± 7
Median FK dose (mg)	9 (8-10)	4.5 (4-5)	4.5 (4-5)
Range FK dose (mg)	2-24	1-18	1-19
Median FK dose (mg/kg/day)	0.11(0.10-0.13)	0.06 (0.05-0.07)	0.05 (0.05-0.06)

Black patients had significantly higher tacrolimus doses than either Caucasians or South Asians ($p<0.001$), but there was no difference between the dosing in the latter groups ($p=0.17$).

Younger patients had significantly higher doses of tacrolimus in all ethnic groups as shown in the table below, however the greatest correlation between age and dose was seen in Black patients ($r=-0.40$, $p=0.0009$).

Age group	Black ethnicity	South Asian	Caucasian
<40	0.15 ± 0.08	0.09 ± 0.06	0.08 ± 0.04
40-60	0.12 ± 0.05	0.07 ± 0.04	0.06 ± 0.04
>60	0.09 ± 0.05	0.07 ± 0.05	0.06 ± 0.03
P value	0.035	0.046	0.002

Discussion: This study shows that a standard set dosing by weight of tacrolimus will result in significant over and under dosing in an ethnically diverse adult transplant programme. Tailoring tacrolimus prescribing may help to achieve therapeutic targets more efficiently.

P087

Infective complications after renal transplantation - a single centre experience comparing alemtuzumab to basiliximab induction

Rachael Czajka, Matthew Welberry Smith, Matthew Gittus, Elizabeth Lindley, Madeleine Vernon

Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom

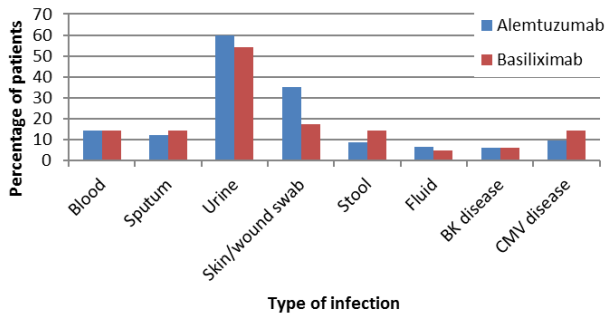
Introduction: Our centre predominantly uses alemtuzumab as induction immunosuppression for renal transplantation. We examined infective complications after renal transplantation, comparing different induction, and maintenance, immunosuppression regimens.

Methods: Retrospective analysis of all adult renal transplant patients followed up in our centre October 2013 to September 2016. Manual search of results systems for all microbiology results, with review of all admissions and documented infections, using electronic discharge summaries and clinic letters.

Results: 252 patients received a renal transplant in the analysis period (44.6% DBD, 33.5% DCD, and 21.9% LRD). M:F ratio was 159:93 and the average age at time of transplantation was 49.4 years. 12.8% of patients had a 2DR mismatch. 74% of patients received alemtuzumab vs. 26% basiliximab. 83.7% were steroid free at discharge, with the majority of patients (54%) receiving tacrolimus monotherapy maintenance immunosuppression. A similar incidence of positive culture results was identified when comparing the two induction agents (see Figure 1). There was a higher incidence of wound infection (p=0.0086) in the alemtuzumab group and early post-operative (p=0.031) infection in the basiliximab group. Patients taking MMF following alemtuzumab induction had a higher incidence of UTI than those not taking MMF (p=0.044). 114 patients (45.6%) had admissions with infections over 227 admissions and 2527 hospital days (estimated cost £631,750). Median length of stay was 7 days (IQR 3.75-14). 33 transplants were lost in the follow up period, 12 relating to infection (6 deaths with a functioning transplant secondary to infection and 6 transplant failure due to infection).

Discussion: Findings suggest minimal difference in infective complication rates when comparing the two induction agents, with a higher incidence of early post-operative infections in the basiliximab group. Overall, infection rates appear to be comparable to other centres, with alemtuzumab induction not conferring a higher risk of viral infections, or infective complications overall.

Figure 1: Microbiologically confirmed infection rates



P088

Tacrolimus metaboliser status is not associated with intra-patient variability of tacrolimus blood levels in renal transplant patients

Christopher Uy, Janet Lee, Adam McLean, David Taube, Michelle Willicombe, Dawn Goodall (Senior)

Hammersmith Hospital - Imperial College Healthcare NHS Trust, London, United Kingdom

Introduction: High intra-patient variability (IPV) of trough tacrolimus levels has been shown to be associated with rejection and allograft failure. The pharmacokinetic profile of tacrolimus is dependent upon CYP3A5 genotypes. Patient metaboliser status may affect their sensitivity to minor changes in timing of trough levels. The aim of this study is to determine if there is an association between fast metaboliser status and IPV.

Methods: We analysed 515 renal transplant patients who were clinically stable at 1-year post transplant with no rejection episodes or DSA, and who had 5 year follow up data. All patients had received alemtuzumab induction with tacrolimus monotherapy with a target 12hour trough level of 5-8ng/ml. Patient metaboliser status was defined by the overall median and interquartile range of the average tacrolimus doses (in mg/kg) prescribed between 6 and 12 months. IPV was determined by the SD/mean of FK levels between 6 and 12 months.

Results: The median tacrolimus dose was 0.061(0.058-0.064) ng/ml. The baseline characteristics are shown in the table below, and demonstrates that fast metabolisers were more likely to be younger and of Black ethnicity. There was no difference in IPV between the groups, p=0.57, which is also shown below.

	Very Slow	Slow	Fast	Very Fast	P value
Sample	123	134	128	130	-
Median dose	0.027 ± 0.01	0.048 ± 0.01	0.077 ± 0.01	0.14 ± 0.04	< 0.001
Black ethnicity	4 (3.3%)	6 (4.5%)	15 (11.7%)	42 (32.3%)	< 0.001
Age	52.4 ± 12.6	50.4 ± 13.5	48.9 ± 13.7	47.3 ± 13.4	0.016
Living donor	57 (23.0%)	68 (27.4%)	65 (26.2%)	58 (23.4%)	0.67
IPV	19.7 ± 11.0	20.6 ± 10.5	21.4 ± 11.6	21.4 ± 10.7	0.57

Very fast metaboliser status was not associated with DSA, p=0.44 or rejection, p=0.78. However, on univariate analysis it was associated with death censored allograft failure, p=0.022 as shown below. Very fast status was also associated with allograft failure on multivariate analysis, Exp (b) 1.89(1.14-3.15), p=0.015.

Discussion: No association was seen between IPV and metaboliser status, but long-term allograft survival was inferior in fast metabolisers, which appeared to be independent form alloimmune risk, and may relate to overall tacrolimus exposure.

P089

Outcomes of renal transplantation in recipients over the age of 65: the Oxford Transplant Centre experience

Matthew Williams[1], Vasileios K Mavroeidis[1], James Hunter[1], Georgios Vrakas[1], Simon Knight[1], James Gilbert[1], Srikanth Reddy[1], Isabel Quiroga[1], Rutger Ploeg [2], Peter Friend[1], Sanjay Sinha[1]

[1]Oxford Transplant Centre, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom. [2]Oxford Transplant Centre, Oxford University Hospitals NHS Foundation TrustOxford Transplant Centre, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom

Introduction: The proportion of elderly patients gradually increases in Kidney Transplant (KT) waiting lists. Patients over the age of 65 are considered high-risk candidates. We aimed to explore the outcomes of KT in this population at the Oxford Transplant Centre.

Methods: A retrospective study of 163 patients who had KT between 01/2010-12/2016.Recipient and donor demographics including donor type [living donors (LD), donation after circulatory death (DCD), donation after brain death (DBD)], were recorded. 3-month and 12-month creatinine (Crea) and eGFR, delayed graft function (DGF), primary non-function (PNF), 12-month patient (PS) and graft survival (GS), were accessed. We also collected 12-month unplanned readmission data for 125 Oxfordshire resident patients.

Results: Donor distribution [DCD/DBD/LD] was 51%/27%/22%, respectively; median donor age was 64 years and male recipients - 62.6%. Median 3-month Crea/eGFR: 139µmol/L / 43 ml/min and 12-month Crea/eGFR: 141/42. Rates of DGF/PNF: 34.4%/4.3%. 12-month GS/PS - 94.2%/94.4%; per donor type: DCD -94.2%/95.4%, DBD -95.1%/89.7%, LD-94.1%/100%. Significantly better outcomes were noted for LDs vs DCD/DBD, for 3-month/12-month variables [(3 month Crea - LD: 121, DBD: 138.5, DCD: 150, p = 0.001), (3-month eGFR - LD: 49, DBD: 43, DCD: 40, p = 0.003)], [(12-month Crea - LD: 113, DBD: 155.5, DCD: 147.5, p = 0.003), (12-month eGFR - LD: 54, DBD: 35, DCD: 40, p=0.005)], except from LD vs DCD 12-month eGFR. DGF rates - LD - 0%, DBD: 30.9%, DCD: 49.3%, were significantly lower in the LD group compared to DCD/DBD ($p < 0.0001$). 46.4% of patients required a median of 1.5 readmissions (n=109).

Discussion: The outcomes for this age group were satisfactory. Male recipient and DCD predominance reflect national/international standards. Good donor-recipient age matching was recorded. The proportion of LDs was higher compared to national standards. LD transplants result in better outcomes and should be encouraged in this age group.

P090

Admission to critical care after kidney transplantation

V R Latha Gullapudi, Ajay Raithatha, Joanne Pons, William McKane

Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, United Kingdom

Introduction: Critical Care (CC) support is an essential part of a renal transplant service but outcomes after admission to CC and an assessment of the demand for this resource are not well defined.

Methods: 334 consecutive renal transplants performed 2011-2015 in a single institution were analysed. Data on demography, co-morbidity, RRT history, graft number, APACHE score and Length of Stay (LoS) were extracted from renal and CC databases. Death censored graft and patient survival were analysed using Kaplan-Meier analysis.

Results: 46 (13.8%) patients were admitted to CC, 19 (41.3%) elective and 27 (58.6%) emergency. Baseline demographics are described in table 1:

Table 1	Non-CC (n=288)	CC (n=46)	p value
Median Age	51 (IQR: 22)	53 (IQR 20)	0.159
Male	65%	63%	0.834
First graft	84.70%	67.40%	0.005
Caucasian	90.60%	95.70%	0.754

In the CC group, median Charlson Co-morbidity Index was 4 (IQR 2) and 21.7% were diabetic. Mean APACHE score on admission was 17.85 (SD: 4.7). Median RRT vintage prior to transplant 4.78 years (IQR: 10.72) and 16% were on home HD. 10.8%, 58.6%, 28.2% and 4.6% required 0, 1, 2, 3 organ support respectively. Median follow up was 4.43 years (IQR: 2.5) and outcomes are summarised in table 2:

Table 2	Non-CC (n=288)	CC (n=46)	p value
1 year graft survival	96.50%	86.80%	<0.0001
3 year graft survival	94.70%	79.90%	<0.0001
1 year patient survival	97.90%	93.50%	0.2
3 year patient survival	95.80%	91.30%	0.211

Graft survival and patient survival were not significantly different between Emergency Elective CC admissions although there was a trend to poorer graft survival in the emergencies (77% v 100%, p=0.127). Median hospital length of stay (LoS) in patients admitted to CC was 9 days (IQR:5), compared to our HES reported LoS of 7 days for all transplants. The median utilisation of CC bed nights was 2 days (IQR 1) per CC admitted transplant, adding £2,422 to the overall cost of these cases.

Conclusions: We observed similar mortality between Non-CC and CC groups, despite the high levels of co-morbidity and long RRT vintage. Graft survival was significantly lower in the CC group, mainly due to graft losses in emergencies. CC contributes significantly to the cost of transplantation.

P091

Post-Transplant Diabetes Mellitus: establishing a service to improve quality of care and patient experience

Amy Riddell, Jason Moore, Tracey Courtney, Neil Walker

Royal Devon and Exeter Hospital, Exeter, United Kingdom

Introduction: Post-Transplant Diabetes Mellitus (PTDM) is a well-recognised complication following renal transplantation. There are very few centres in the UK with a focussed management service for this patient group. We also know that health related visits are frequent for transplant patients and changes to services need to be acceptable to the patient group without putting resources under extra stress.

Methods: A monthly Diabetes Transplant clinic was established in our hospital which runs parallel to the renal transplant clinic. This is consultant-led and supported by a diabetes specialist nurse. Transplant patients with either pre-existing diabetes (Type 1 or Type 2) or PTDM can be referred. Here we have assessed outcomes from the PTDM cohort.

Results: Outcomes from 45 patients with PTDM were reviewed; feedback was collected from 22 patients. Having a diabetes transplant clinic embedded within the renal transplant clinic enabled our patients to see a specialist Diabetologist without increasing the number of hospital visits. Feedback was excellent. When asked the question 'Do you find this Diabetes Transplant clinic beneficial?' the mean score was 9.39/10. This MDT approach has resulted in patients reporting increased confidence in care and better understanding of their conditions. 74% had improved HbA1c at 12months. Mean HbA1C at first appointment was 73mmol/mol, improving to 53mmol/mol at 12months. Other advantages included diabetic medications being rationalised in the context of an already high pill burden for the patient. Additionally 2 patients, both started on insulin soon after their transplant and had remained on this for a prolonged time, were successfully converted onto oral hypoglycaemic agents.

Conclusions: We have shown improved patient satisfaction and outcomes in our PTDM cohort. This has been achieved by offering specialist Diabetes care, without increasing hospital attendances. As a result the patients now have a better understanding of their condition and have seen notable improvements in their glycaemic control.

P092

Outcome of renal transplantation in systemic amyloidosis

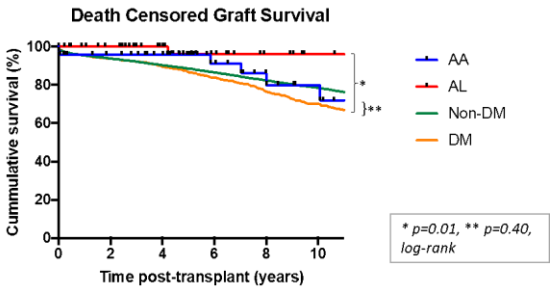
Steven Law[1], Helen Lachmann[2], Tamer Rezk[2], Ashutosh Wechalekar[2], Julian Gillmore[2], Reza Motallebzadeh [3]

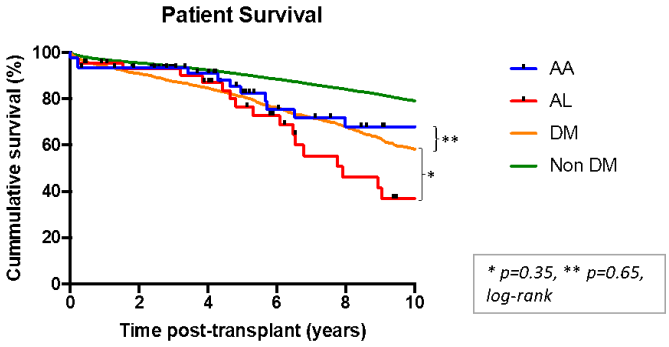
[1]Royal Free Hospital, Renal Department, London, United Kingdom. [2]National Amyloidosis Centre, University College London, London, United Kingdom. [3]Division of Surgery & Interventional Science and Institute of Immunity & Transplantation, University College London, London, United Kingdom

Introduction: Systemic amyloidosis accounts for approximately 0.8% of end stage renal disease (ESRD) in the UK. Outcomes following renal transplantation in systemic amyloidosis were historically poor, but there is a paucity of data on renal transplant outcomes following recent therapeutic advances which have benefited patients with systemic amyloidosis generally. We sought to determine renal allograft and patient survival in UK patients with ESRD from systemic amyloidosis.

Methods: Outcomes following renal transplantation among 94 patients with systemic AA and AL amyloidosis being followed at the UK National Amyloidosis Centre (NAC) who underwent renal transplantation between 1989 and 2018 were compared with those of age-matched renal transplant recipients with diabetic and non-diabetic nephropathy recipients held in the NHSBT database.

Results:





Death-censored graft survival was 96%, 96%, 96% and 81% in AA, and 98%, 98%, 93% and 93% in AL amyloidosis at 1,3, 5 and 10 years respectively. Overall patient survival was 92%, 92%, 81% and 68% in AA and 95%, 93%, 76%, 34% in AL amyloidosis at 1, 3, 5, and 10 years respectively. Twenty-five amyloidosis patients died with a functioning renal allograft and 9 suffered allograft loss, 3 within a month due to operative complications or rejection, 3 from recurrent amyloid (all AA) and 3 multifactorial but with recurrent amyloid (1AL, 2AA).

Discussion: Patient and renal allograft survival following renal transplantation in AA amyloidosis is similar to that in diabetic nephropathy. Despite excellent death-censored renal allograft survival in AL amyloidosis, reflecting prevention of recurrence of amyloid in renal allografts due to successful suppression of the underlying clonal dyscrasia with chemotherapy, patient survival following renal transplantation in this cohort was inferior to age-matched diabetic controls. This data indicates that carefully selected patients with systemic amyloidosis can achieve good outcomes following renal transplantation.

P093

Delayed graft function in live related renal transplant and its effect on graft function

Dhawal Arora[1], Ananthraman Jairam[2], A K Hooda[2]

[1]Army Hospital R&R, Delhi, India. [2]Army Hospital R&R, Delhi, India

Introduction: To find the incidence of and factors associated with delayed graft function in live donor renal transplant and its effect on short term graft outcome the study was under taken

Methodology: The study was prospective and retrospective observational study. All the living donor transplant recipients who underwent transplants from from Jan 2010 till March 2015 were included in the study. Total 260 patients were included in the study and 15 pateints were excluded as they had acute rejection in first week of renal transplant.

Results: 260 patients were studied. 35 patients were found to be having DGF as per predefined criteria. 225 patients served as controls. Most of the patients underwent open donor nephrectomies. We did not find that laparoscopic donor nephrectomies were associated with longer ischemia timings and they did not increased the incidence of DGF. The use CNI was not associated with delayed recovery of DGF in our study. The eGFR at day +7 calculated using MDRD formula was 35.46 ml/min/m^2among cases and 72.23 ml/min/m^2in control group. The difference was statistically significant. The eGFR was also calculated at day +90 and day +180 post transplant and at both the intervals the eGFR difference was found to be statistically significant. At the end of 1styear, the difference of eGFR among cases and controls was statiscally significant. The average eGFR at the end of 1styear calculated using MDRD formula was 46.5 ml/min/m^2in case population and among controls it was 68.87 ml/min/m^2.

Conclusions: This study highlightens the fact that those kidneys which are effected in early phase of post transplant due to I/R injury leading DGF tend to have poor graft outcomes. This finding is relevant even in living donor renal transpant .Univariate and multivariate analysis was applied but no single factor was among groups which could led to DGF in cases.

P094

Understanding the histological heterogeneity of allograft pyelonephritis is required if outcomes are to improve

Charlotte Seneschall, Anan Ghazi, Candice Roufosse, Michelle Willicombe

Imperial College Hospitals NHS Trust, London, United Kingdom

Introduction: Acute graft pyelonephritis (AGPN) is a common complication following renal transplantation. The diagnosis is usuallymade on clinical grounds rather than by histology. When biopsied, neutrophilic tubulitis is the pathognomonic feature of APGN, although lymphocytic and monocytic tubulitissuggestive of T-cell mediated rejection may co-exist. The pathogenesis leading to these diametric conditions is not well defined and poses a clinical conundrum of whether to treat infection, rejection or both. In this study we describe the clinicopathological correlation and outcomes of patients with histologically proven APGN.

Methods: We identified 48 patients with histological features of APGN, defined as the presence of neutrophil casts or neutrophilictubulitis. Patient biopsies were scored by the presence of concurrent lymphocytic tubulitis, t-score ≥2 (LT). A group of contemporaneously transplanted patients were used as controls. Mean follow up was 4.06±1.31 years.

Results: Of 48 APGN patients, 24(50.0%) were female, mean age was 52.1±12.8 years, 10(20.8%) received living donor transplants, 17(35.5%) were Caucasian, 17(35.4%) were diabetics. Mean time to diagnosis was 8.6(5.0-12.1) months. There were more females ($p<0.01$) and diabetics ($p=0.02$) in the APGN group. APGN was associated with inferior allograft survival, $p=0.046$ and increased risk of rejection, $p<0.01$. Only 21/48(43.85%) patients had bacteriuria at the time of biopsy. 15/48(31.3%) patients had concurrent LT. There was no difference in graft survival between the LT+ and LT- groups, $p=0.26$. There was also no difference in bacteriuria, creatinine or CRP ($p>0.05$). The proportion of LT+ patients who received immunotherapy and/or antibiotics was no different compared with the LT- group, $p=0.80$.

Discussion: APGN has heterogeneous features both clinically and histologically. Given its detrimental outcomes on allograft survival, a collaborative and systematic approach to understanding the histopathological pathogenesis is required in order to guide its appropriate management and optimise outcomes.

P095

Ferumoxytol MR angiography vs CT angiography for the assessment of potential kidney transplant recipients

Sokratis Stoumpos[1,2], Pauline Barrientos[3], Douglas Black[3], Karen Stevenson[1], Martin Hennessy[3], Alex Vesey[1], Ram Kasthuri[3], Aleksandra Radjenovic[2], David Kingsmore[1], Giles Roditi[3], Patrick Mark[1,2]

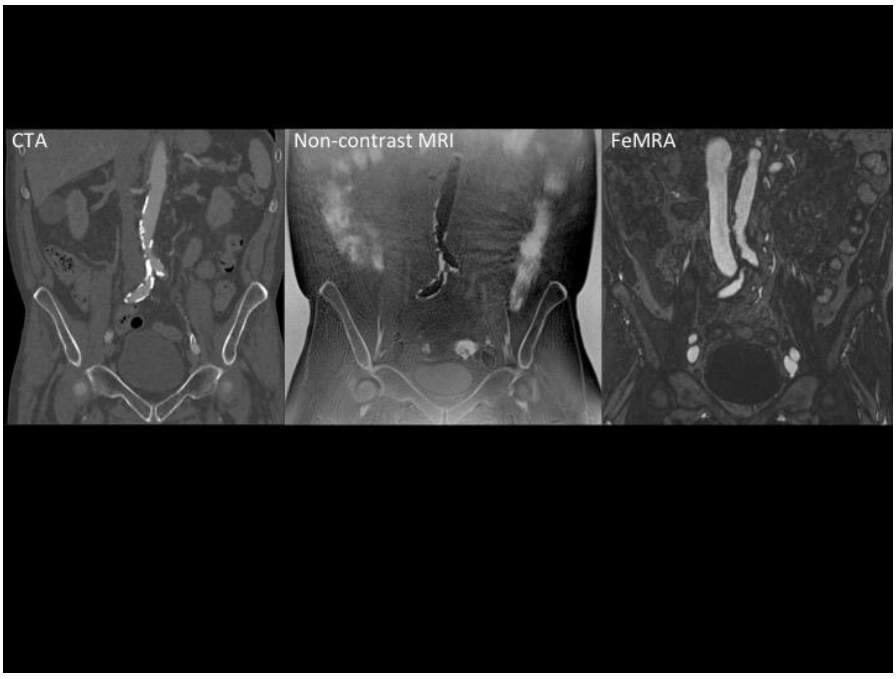
[1]Renal and Transplant Unit, Queen Elizabeth University Hospital, Glasgow, United Kingdom. [2]BHF Cardiovascular Research Centre, University of Glasgow, Glasgow, United Kingdom. [3]Department of Radiology, Queen Elizabeth University Hospital, Glasgow, United Kingdom

Introduction: CT angiography (CTA), routinely used to evaluate the vasculature of chronic kidney disease (CKD) patients before transplant listing is limited due to concerns of nephrotoxicity. Ferumoxytol is approved for parenteral treatment of iron deficiency anaemia, but can serve as an alternative to gadolinium based contrast agents for magnetic resonance imaging (MRI).

Methods: This was a prospective study comparing CTA with ferumoxytol-enhanced MRA (FeMRA) to assess the aortoiliac vasculature of kidney transplant candidates. As part of the FeMRA protocol, vascular calcification was determined using a contrast-free technique. Two independent readers analysed the FeMRA and a third reader the CTA (standard technique). Comparisons of arterial and vein lumen diameter, calcification, and signal intensity at predefined vascular sections were performed. Interclass correlation coefficients (ICC), mean differences (with 95% CI) and Bland-Altman plots were used to examine intra- and interobserver variability.

Results: Thirty-six patients (mean age 54 [SD 11] years; 61% men; 47% diabetics) were enrolled and had both CTA and FeMRA. Between the readers assessing the FeMRA, measurement of the arterial and vein diameter, area of calcification and signal intensity showed excellent intra- and inter-observer repeatability with ICC between 0.88–0.99 for all parameters. Between FeMRA and CTA there were no significant differences in estimation of the arterial diameter and calcification (mean differences 0.08-0.89mm and 0.003-0.01cm^2, respectively). Quantification of the vein diameter showed significant systematic difference (mean difference 1.59–2.1mm, p

Discussion: FeMRA is comparable to CTA for evaluation of arterial diameter and calcification in the abdominopelvic arterial vasculature of CKD patients due for transplant listing with the significant advantage of improved venous depiction with no nephrotoxicity. These findings favor FeMRA over CTA and have the potential to transform current clinical practice.



P096

BK viraemia rates post renal transplantation are not influenced by alemtuzumab induction in a single centre

Matthew Gittus[1], Natalie Reeves[2], Madeleine A. Vernon[2]

[1]Leeds Teaching Hospital Trust, Leeds, United Kingdom. [2]Leeds Renal Transplant Unit, Leeds, United Kingdom

Introduction: BK nephropathy is an important cause of graft loss associated with over-immunosuppression. Our centre predominantly uses Alemtuzumab at induction for renal transplantation. We examined BK viraemia and nephropathy rates in our transplant population.

Methods: A retrospective analysis of positive BK virus results in blood were obtained from all renal transplant patients between 01/08/16 and 10/07/18. We assessed patient casenotes, induction regimen, immunosuppression and clinical course.

Results: 215 positive BK virus PCR blood samples were obtained from 45 patients. 40% of positive BK titres were identified through the screening programme. Mean age of having a positive BK titre was 49.3 years with predominantly males affected (71%). Of the patients with positive BK titres there was no increased incidence of BK viraemia associated with Alemtuzumab induction compared to Basiliximab and viral titres were of the same log order (table 1 and 2). 37% of patients with positive BK titres were receiving MMF which was then stopped in 59% of patients. 11% of patients had an adjuvant added (Leflunomide). Higher viral titres were associated with an increased likelihood of biopsy (mean peak BK virus titre biopsy group $7.75x10^5$ v non-biopsy group $4.39x10^4$). 31% of patients underwent a transplant biopsy; 76.5% had BK nephropathy evident on histopathology. BK viraemia was associated with increased creatinine levels (177.1 at baseline v 231.7 at end of study period, $p > 0.05$). 4 patients returned to renal replacement therapy during the study period (8.7%, 1 caused by BK nephropathy). 41 patients have retained transplant function.

Table 1: Induction agent of patients receiving renal transplants

Induction agent	Positive BK patients Transplanted 01/08/16 – 10/07/18	Number of transplants 01/08/16 – 10/07/18	%
Alemtuzumab	22	129	17.1%
Basiliximab	8	49	16.3%
No record	0	10	-

Table 2: Mean BK blood titres for all transplanted patients who had a positive result (01/08/16 - 10/07/18)

Induction agent	Positive BK patient Transplanted Any time	Mean **INITIAL** titre Transplanted Any time	Mean **PEAK** titre Transplanted Any time
Alemtuzumab	32	$4.92x10^4$	$2.19x10^5$
Basiliximab	10	$2.79x10^4$	$3.09x10^5$
No record	3	$1.78x10^5$	$9.18x10^5$

Discussion: In our centre the incidence of BK viraemia is 16% and is not influenced by induction agent. There was 1 graft loss associated with BK nephropathy during the study period.

P097

Pregnancy-associated graft outcomes in renal transplant recipients in Northern Ireland

Jennifer O'Brien, Aisling Courtney

Belfast City Hospital, Belfast, United Kingdom

Introduction: Renal transplantation can rapidly restore fertility in women with end-stage renal disease and offers the best chance for successful pregnancy. Understanding of the likely graft outcome is important in pre-pregnancy counseling.

Methods: All female renal transplant recipients in Northern Ireland (NI) from 1994 to 2018 who had given birth were identified. Data on graft, obstetric, and maternal complications was collected using NI Renal Transplant Database, NI Electronic Care Record, a consultant questionnaire and telephone follow-up for identified patients to confirm additional details as required.

Results: There were 19 patients identified with 26 pregnancies in total, 2 of these were unplanned. There were an additional 3 stillbirths. One patient delivered within the past year, 12 month data was therefore unavailable. In 2 cases, data was limited to graft outcome. The average mean serum creatinine pre-pregnancy was 118umol/L, the majority were CKD stage 1-3a (Table 1). Overall 48% of patients had a sustained reduction in graft function as determined by a drop in chronic kidney disease (CKD) Stage at 12 months. This reduction occurred more frequently in those with poorer renal function and more proteinuria (0.63g vs. 0.12g) pre-pregnancy. There were no instances of graft lost, or dialysis-requirement, or rejection during pregnancy.

		Sustained drop in eGFR at 12 months
CKD Stage	Number	
		n (%)
1 or 2	7	2 (29)
3a	11	6 (55)
3b	6	4 (67)
4	1	0 (0)
Total	25	12 (48)

Discussion: Pregnancy commonly has a negative impact on renal graft outcome, and the risk is related to pre-pregnancy CKD stage. Sustained decline occurred in approximately a third with CKD stage 1 or 2, half with stage 3a, and two-thirds with stage 3b. This information should be available for pre-pregnancy counseling.

P098

Predictive factors for BKV nephropathy in renal transplant recipients with BK viruria

Inji Alshaer, Matthew Bottomley, Shweta Mehta, Joao Galante, Ian Roberts, Edward Sharples

Oxford University Hospitals, Oxford, United Kingdom

Introduction: Intensive monitoring of urine and serum for BK virus (BKV) during the first year post-transplant and pre-emptive reduction of immunosuppressive therapy are associated with resolution of viremia, avoidance of clinical BKV nephropathy (BKVN) and low risk of acute rejection. We investigated factors associated with development of BKVN following BKV screening.

Methods: All renal transplant patients in our unit are screened for BKVN by urine cytology, plus serum BKV PCR in those patients with positive urine cytology. Screening is performed fortnightly to 3 months, monthly to 6 months, then bimonthly up to a year. We retrospectively reviewed all patients (n=43) with biopsy-proven BKVN during the period 2005-2017 and a matched cohort (n=55) with BK viremia and no clinical evidence of BKVN.

Results: The median age of patients with and without BKVN was 51 and 49 years respectively. Diabetes was significantly associated with BKVN, with 16 (16%) developing BKN compared to 4 (7%) who cleared BKV ($p<0.001$). BK viruria was detected earlier in the BKVN group, with a median (IQR) time to positive screening of 60 (50-75) days, compared to 82 (56-121) days ($p<0.005$) for non-BKVN patients. Creatinine was higher in the BKVN group at the time of first positive screening, median (IQR) creatinine 164 (140-223) versus 121 (96-148) for non-BKVN patients ($p<0.005$). Tacrolimus trough levels were similar, but the median (IQR) immunosuppressive (IS) index at the time of first positivity was 7 (5.9-8.5) in the BKN group versus 5.5 (4.5-6.8) in those who cleared BKV ($p<0.005$). Median viral load was also higher in the BKVN group, 3125 copies (705-21500) versus 585 copies (134-6260) in non-BKVN patients.

Conclusions: BKVN occurred after developing BK viruria/viremia despite reduction in immunosuppression. Diabetes and high IS index at the time of first BKV detection are risk factors for progression from viraemia to clinical BKV nephropathy.

P099

A challenging start of death cardiac donor transplantation program. Results of the first year in our hospital

Guadalupe Tabernero[1], Anika Tyszkiewicz[1], Miguel Sanchez-Jauregui[1], Pilar Fraile[1], Jose Antonio Menacho[1], Tamara Garcia[1], Javier García[2], Oscar Heredero[2], Jesus Martin[1], Garcia Pedro[1]

[1]University Hospital, Nephrology Department, Salamanca, Spain. [2]University Hospital, Urology Department, Salamanca, Spain

Introduction: Spain is world leather in Kidney Transplantation. However, we still have many people in the waiting list. Death Cardiac donor (DCD) has become a new source of good donors for the patients.

Methods: Since 17/08/17 to 20/11/2018 we have made 13 DCD transplantation in our hospital. 12 out of 13 were made by ultra fast surgery, and only one donor had ECMO. We have realized a descriptive study of our beginning.

Results: Average donor age was 64+/-13. 5 (38%) were dead cause a brain traumatism, 6 (46%) because of a stroke, and 2 (15, 38%) because of a respiratory insufficiency. Average age of recipients was 58+/-7. All of donors got a biopsy and score was done by Seron et al. All the recipients were first transplant, induction was made with thymoglobulin and delayed start of tacrolimus. Warm ischemia time (WIT) average was 8.46 +/- 5 minutes, and cold ischemia time (CIT) average was 17h44 minutes +/- 10h 17 minutes. Missmatch average was 1.4. The incidence of delayed graft function (DGF) (considered as the need of dialysis in the first week) was 8 out of 13 patients (61%) and there were to rejections, one antibody mediated (ABM) and one that was not proved by biopsy and was treated with intravenous steroids. Renal function average at discharge was 3.1 mg/dl, at 1 month 1.8 mg/dl, and at 3 months 1.5 mg/dl.

Conclusions: even with the lack of a big number of patient, in the beginning of the program and watching the results of renal function, we could say that DCD is a good source of donors, getting similar results to deceased brain donor. In any case we need to improve the CIT to avoid high rate of DGF, and see the impact in the rejection.

P100

Comparison of alemtuzumab and IL2 monoclonal antibody induction in transplant recipients with lupus nephritis

Sarah Gleeson[1], Michelle Willicombe[1], Neeru Sharma[1], Hannah Wilson[2], Liz Lightstone[2]

[1]Imperial College Healthcare NHS Trust, London, United Kingdom. [2]Imperial College London, London, United Kingdom

Introduction: Optimal post-transplant immunotherapy for patients having received significant pre-transplant immunosuppression is not known. For patients with prior lupus nephritis (LN), the risk of rejection needs to be balanced against that of malignancy and infections. We compare the outcomes of a large cohort of transplant patients with prior LN who received induction with either alemtuzumab (anti-CD52) or an anti IL-2 receptor monoclonal antibody (IL2). Our centre favours IL2 in patients who previously received cyclophosphamide.

Methods: We identified 33 CD52 and 25 IL2 patients; median follow up was 6.12 years. All patients received tacrolimus maintenance immunotherapy; those who received IL2 were also on mycophenylate and prednisolone. All infections were microbiologically proven and cancers included intra-epithelial neoplasia grades 2 and 3.

Results: Patient characteristics at time of transplantation:

	CD52(N=33)	**IL2(N=25)**	**P value**
Female	28 (84.8%)	19 (76.0%)	0.40
Mean age	39.6±12.0	44.6±10.6	0.11
Living donor	22 (66.7%)	12 (48.0%)	0.16
Pre-emptive transplant	9 (27.3%)	3 (12.0%)	0.16
Pre-transplant cyclophosphamide	8/22(36.4%)	13/17(76.5%)	**0.014**
Pre-transplant malignancy	4 (12.1%)	0	0.07
MMF at time of transplant	5(13.2%)	24(96.0%)	**<0.0001**

There was no difference in patient [HR: 0.34(0.06-2.00), p=0.26] or allograft survival [HR: 0.91(0.33-2.51), p=0.85] between the groups. There was also no difference in rejection [HR: 0.87(0.29-2.60) p=0.79] and Donor Specific Antibody [HR: 0.50(0.16-1.46), p=0.61] free survival.

There were more de novo malignancies in the CD52 (n=6) than the IL2 (n=2) group, HR 2.50 (0.62-10.04, p=0.24). Rates of viral infections (BK, CMV, EBV), were similar in both groups, HR 0.97(0.22-4.35), p=0.93. Incidence of urosepsis, bacteraemia and fungal infection were also comparable.

Discussion: Despite a prior history of more potent immunosuppression, there was no difference in the clinical outcomes of LN patients receiving IL2 compared with CD52 induction, although rate of viral and malignancy complications was high in both groups.

P101

Outcomes and immunosuppression switches in children at one and three year's post-renal transplantation: one size does not fit all

Zainab Arslan, Sophie Dunn, Grainne Walsh, Nick Ware, Helen Jones

Evelina London Childrens Hospital, London, United Kingdom

Introduction: To review 1 and 3-year clinical outcomes and immunosuppression switches in children undergoing renal transplantation.

Methods: Retrospective case-note analysis of all children from single paediatric centre undergoing renal transplantation(Apr2012-Oct2015) with in-centre follow-up, receiving basiliximab induction and maintenance with; prednisolone, tacrolimus&azathioprine(Group A) or mycophenolate mofetil(MMF)(Group B) or tacrolimus, MMF with rapid steroid wean(Group C) over 3-year period.

Results: 41 patients (26 male). Mean age at transplant 10.9±2.2years.
Graft survival: 100% (41) at 1 and 3year post-transplant.
eGFR :1 and 3-year post-transplant; GroupA(32,78%) had an eGFR of 61.6±21.5 and 57.5±19.6, GroupB(6,15%) 65.3±14.4 and 57.2±19.6 and GroupC(3,7%)44±7.5 and 41.7±5.5mls/min/m^2 respectively.
Rejection Episodes (Banff classification):GroupA; 16%(5) significant(1A/1B) T-cell mediated rejection(TCMR) with 3%(1) antibody mediated rejection(ABMR) in first year post-transplant. 13(4) significant TCMR and 3 % (1) ABMR between first and third year post-transplant. GroupB and C; 50%(3) and 33%(1) respectively had borderline TCMR in first year post-transplant with no further episodes subsequently.
Viraemias (positive viral loads): GroupA; 69% (22) and 59% (19) had viraemias at the end of first and third year post-transplant. GroupB; 17 % (1) and 33% (2) children were positive for EBV at the end of first and third year respectively. GroupC; 33 % (1) were positive for EBV at first year with no viraemias at 3 years post-transplant.
Immunosuppressant switches: GroupA; 56 % (18) and 53% (17) on azathioprine at first year and 3rd years post-transplant respectively. GroupB; everyone remained on MMF at end of first year with 33 % (2) on Myfortic by end of third year. GroupC; 66% (2) and 33% (1) on Myfortic at end of first and third year follow-up respectively.

Discussion: Detailed analysis of our recent post-transplant cohort reinforces the need for individualising post-transplant care to enable good overall outcomes.

P102

A cost saving quality improvement project in solid organ transplant population following tacrolimus switch from Prograf® to Adoport ® immunosuppression - a single centre experience

Lisa Mulreid, Marc Vincent, Carol Bartley, Lisa Laycock, Angela Summers, Wayne Willott, Emma Lowe, Shiv Bhutani

Manchester Royal Infirmary, Manchester, United Kingdom

Introduction*:* Tacrolimus is a widely used immunosuppressive drug in transplantation. The use of generic medications is cost saving and economically advantageous for NHS. We describe our experience of implementing a switch from branded **Prograf® (BTac) to generic Adoport® (GTac)** in a large cohort of transplant recipients.

Methods: To select the eligible patients in a cohort, inclusion and exclusion criteria were devised based on current health, creatinine, eGFRs and Tacrolimus levels. Patients were approached by clinical care team and an agreed medication switch over date followed by repeat bloods 10-14 days later was set. Data was collected on demography, refusals, delayed switches, side effects, biochemistry & tacrolimus levels pre/post switch.

Results: The cohort of 524 patients (m=309, f=215) was identified on **BTac** at our transplant unit. n=43 (8.2%) were deemed unsuitable and 19 (3%) refused to switch from BTac to GTac. Mean Tacrolimus levels changed by >20% in n=147 (34%) patients. A dose adjustment post switch was needed in n = 74(17%) patients and n=13 had to switch back to Prograf® from Adoport® due to side effects. Until now n= 424 patients (80 %) have been switched to GTac. There were two graft losses and 4 (1%) deaths reported in 12-month switch over period related to other factors.

Conclusion: This is a quality improvement project carried out for the first time on a large scale in the United Kingdom which reported successful transition to the generic Tacrolimus preparation i.e Adoport and also demonstrated a safe alternative to branded Prograf. The majority of patients tolerated the switch over well with a relatively small number of side effects and overall no statistical difference in their renal function soon after switchover. This project enabled the extra saving of £540,000 per annum without impacting on clinical quality. The comparable outcome of both branded and generic version is currently underway.

P103

The effect of immunosuppression on pneumococcal specific immunoglobulin G levels in kidney transplant recipients

Rhys Evans, Stephanie Chong, Ciara Magee, Mark Harber

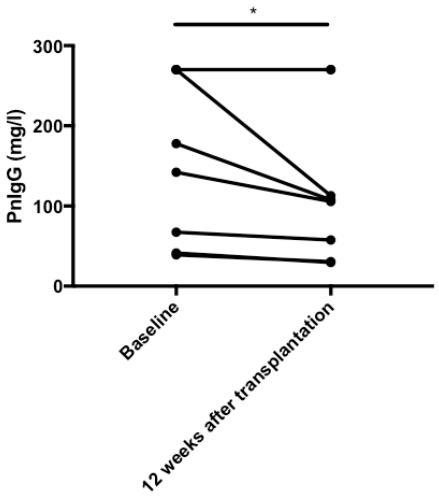
UCL Centre for Nephrology, London, United Kingdom

Introduction: Kidney transplant recipients (KTRs) are at increased risk of invasive pneumococcal disease, which may worsen allograft and patient survival. However, the effect of immunosuppression (IS) on pneumococcal specific immunity in KTRs is unknown. We investigated how IS affects pneumococcal specific immunoglobulin G (PnIgG) levels after kidney transplantation.

Methods: KTRs transplanted between June 2011 and 2014 at the UCL Centre for Nephrology were included. Serum PnIgG was measured using an ELISA (www.bindingsite.com) at the time of transplantation, and at 12 weeks thereafter. PnIgG levels at these time points were determined in patients who had standard IS (Basiliximab induction, pulsed methylprednisolone and rapid prednisolone taper to zero; maintenance tacrolimus and MMF) without augmentation, and in patients who had standard IS augmented for the management of early rejection.

Results: 30 KTRs were included (age 47 ± 13 years; 60% male). 8 (27%) patients had rejection within the first 12 weeks of transplantation, and IS augmented. All patients had detectable PnIgG at the time of transplantation (mean PnIgG 153 ± 83mg/l). In patients without augmented immunosuppression there was no significant difference in PnIgG levels at 12 weeks after transplantation compared to baseline (baseline 151 ± 77mg/l; 12 weeks 144 ± 81mg/l; p. = 0.19). However, in patients who had augmented immunosuppression for early rejection, there was a significant reduction in PnIgG levels at this time point (baseline 160 ± 102 mg/l; 12 weeks 123 ± 97mg/l; p = 0.03; **Figure 1**)

Figure 1: PnIgG levels at baseline and at 12 weeks after transplantation in KTRs who had IS augmented for early rejection.



Discussion: PnIgG levels were significantly lower at 3 months after transplantation compared to baseline in KTRs who had IS augmented due to early rejection. PnIgG maybe a useful biomarker for impaired immunity in this group and a guide to revaccination.

P104

Neonatal outcomes in renal transplant recipients in Northern Ireland

Jennifer O'Brien, Aisling Courtney

Belfast City Hospital, Belfast, United Kingdom

Introduction: Pregnancy in transplant recipients is associated with poor fetal outcomes compared to the general population. Accurate data is important in pre-pregnancy counseling.

Methods: All female renal transplant recipients in Northern Ireland (NI) from 1994 to 2018 who had given birth were identified. Data was collected using NI Renal Transplant Database, NI Electronic Care Record, a consultant questionnaire and telephone follow-up with patients to confirm additional details as required.

Results: There were 19 patients identified with 26 live births in total; data was unavailable for 2 as delivery was not in NI. Emergency delivery was required in 46%; 58% of deliveries were by Cesarean section. The mean gestation age was 34.5 weeks and birth weight 2.4 kg. Prematurity and low birth weight were more common with poorer pre-pregnancy renal function (Table).

CKD Stage	number of births	total <37 weeks n (%)	mean birth weight (kg)	total <2.5 kg n (%)
1 or 2	5	2 (40)	2.22	2 (40)
3a	12	8 (67)	2.66	5 (42)
3b	6	6 (100)	2.13	4 (67)
4	1	1 (100)	1.9	1 (100)
Total	24	17 (71)	2.41	12 (50)

Neonatal Intensive Care Unit (ICU) was required in 54% of babies. 4 had a congenital anomaly, accounting for the 1 perinatal mortality (at 3 days).

Discussion: There is a high rate of cesarean section and emergency delivery in pregnancies in renal transplant recipients. Although the chance of a successful live birth is high, approximately two-thirds are born prematurely, half have a low birth weight, and half require Neonatal ICU admission. These outcomes are almost universal when the pre-pregnancy function is CKD stage 3 or 4. This study will assist our region when counseling women with renal transplant considering pregnancy.

P105

Urinary tract infection antimicrobial resistance in renal transplant recipients: a single centre experience

Patrick Trotter, Kevin Loudon, Menna Clatworthy

University of Cambridge, Cambridge, United Kingdom

Introduction: The increasing incidence of antibiotic resistant organisms is a growing threat to public health and solid organ transplantation. Urinary tract infection (UTI) is the most common infection post-renal transplantation. We sought to quantify the incidence of UTI in our renal transplant recipients and establish the extent of antibiotic resistant UTIs at our transplant centre.

Methods: Urine culture data was extracted from electronic medical records on all renal transplant recipients at a single centre from 2014-2017. Information on the organism grown and its sensitivity to antibiotics (Ampicillin, Nitrofurantoin, Tazocin, Trimethoprim, Gentamicin, Co-amoxiclav, Ciprofloxacin, Cephalexin, Amikacin, Ertapenem) was assessed.

Results: Over the 3 year study period 1404 renal transplant recipients had a urine sample sent for bacterial/fungal culture, of which 307 (21.9%) had a positive urine culture. Culture positive UTI was most common in renal transplant recipients in the first year of transplantation, with up to 38.5% of recipients developing a UTI in the first year post transplant. Out of the 862 positive urine culture specimens from the 307 renal transplant recipients, 28 different organisms were grown (bacteria and fungi). The most common bacteria grown was Escherichia coli (E.coli) (n=292 (33.8%)), followed by mixed growth (n=129 (15.0%)) then enterococcus species (n=44 (5.1%)). Antibiotic resistance data demonstrated that 233 (79%) of the E.coli grown in renal transplant recipients were resistant to at least one antibiotic. Of the E.coli UTIs in the renal transplant recipients, 180 (61.6%) were resistant to Trimethoprim and 219 (79%) were resistant to Ampicillin. Of concern, 19% of the E.coli grown were resistant to gentamicin.

Discussion: Antibiotic resistance in UTI is common in renal transplant recipients, especially in the first year following transplantation. Further work on the impact these infections have on renal allograft function will be used to establish the morbidity associated with UTI post-transplant.

P106

Factors influencing hypophosphataemia after kidney transplantation

Maximilian Ralston[1,2], Patrick Mark[2,1], Colin Geddes[1]

[1]Glasgow Renal and Transplant Unit, Queen Elizabeth University Hospital, Glasgow, United Kingdom. [2]University of Glasgow, Glasgow, United Kingdom

Introduction: The mechanism by which hypophosphataemia develops following kidney transplantation remains debated. It has been proposed that pathophysiological humoral adaptations related to chronic kidney disease mineral bone disorder (CKD-MBD) are responsible, including persistent secondary hyperparathyroidism. No research exists that elucidates risk factors for developing post-transplant hypophosphataemia. This study aimed to assess the association between recipient and donor variables, and the severity of post-transplantation hypophosphataemia.

Methods: We performed a single-centre retrospective observational study, including patients receiving a transplant between 01/01/1999 and 01/02/2018 with at least one phosphate measurement in the 90 days following transplantation. We assessed association between lowest serum phosphate in the first 90 days after transplant and: age at transplant; sex; average pre-transplant serum phosphate, calcium, parathyroid hormone and alkaline phosphatase; live vs. deceased donor; donor age; donor sex; immunosuppression era of transplantation. We performed linear regression analysis to determine significant associations.

Results: 1900 episodes of kidney transplantation were included. 85.5% of patients developed hypophosphataemia within 90 days of transplantation. In simple linear regression analysis, receiving a live donor transplant ($p<0.001$), a lower donor age ($p<0.001$), higher pre-transplant average calcium ($p=0.010$), a shorter duration of renal replacement therapy ($p=0.003$), tacrolimus-based immunosuppression ($p=0.001$), and not having undergone a parathyroidectomy prior to transplantation ($p<0.001$) were all associated with a lower phosphate nadir. In multiple linear regression, live donor transplantation ($p<0.001$), lower donor age ($p<0.001$), higher average calcium ($p=0.033$), and not having undergone parathyroidectomy ($p<0.001$) maintained a significant association with a lower phosphate nadir.

Discussion: This analysis demonstrates a significant association between both live donor transplantation, and lower donor age, and phosphate nadir in the 90 days following transplantation. The link between post-transplant hypophosphataemia and CKD-MBD remains less clear, with an association between both pre-transplant calcium, and having undergone a parathyroidectomy, and phosphate nadir. However, there was no association with parathyroid hormone, alkaline phosphatase, or pre-transplantation phosphate.

P107

Use of Imlifidase (IdeS) in renal transplantation for high strength donor specific antibody/positive cross-match: UK's 1st case

John Black, Pete topham, Anna Rizzello, Paul Dunn, Mohamed Morsy, Os Iyasere, Tahir Doughman, Maria Martinez, Shafi Malik, Atul Bagul

University Hospitals of Leicester, Leicester, United Kingdom

Introduction: IdeS is an endopeptidase which has high specificity for human IgG resulting in its rapid cleavage, derived from *Streptococcus pyogenes*. High DSA with a positive cross-match is a contraindication to transplantation resulting in hyper-acute rejection.

Methods: Single centre experience with a highly sensitised (CRF 100%, match score 0; total MFI :> 160,000; 10 DSA against potential donors 11 HLA) potential renal transplant recipient (age 29). Recipient has failed access due to complete central vein stenosis, failing PD (sCr 1600) and potentially no lower limb options. Potential live donor 34, M normal renal function. Recipient received IdeS 2 doses within 48 hours of transplant.

Discussion: Pre-op cross-matches were positive while after second dose CDC cross-matches were negative and DSA reduced significantly to below cut off (total combined Class I MFI=6183 and Class II MFI=1653). Patient underwent transplant in LIF over a permcath, which was place I week prior with CIV and IVC plasty with a view to facilitate planned PEX. Clot in EIV vein around permacath had to be dealt with prior transplant. Patient developed immediate primary function with reduction of Sr Cr from 495 to 321. Around which urine output tailed off, USS kidney remained perfused and DSA rebounded and patient developed a TMA. Patient was immediately commenced with Standard therapies for AMR. As DSA titers continued to rise, Eculizumab therapy was commenced. Treatment remained on going day 7.

Conclusion: IdeS generated a potential window to facilitate a transplant avoiding hyperacute rejection. Ongoing AMR treatment continues, though IdeS may form a standard to allow desensitisation to allow a lifesaving transplant

P108

Benefits of a cardio-renal multi-disciplinary team meeting to manage high cardiac risk patients on kidney transplantation waitlist

Maria Fernandez, Ahmad Salha, Bayiha D. Klaud Francheska, Joey Junarta, Racquel Lowe-Jones, Sam Firoozi, Rajan Sharma, Debasish Banerjee

St George's University Hospitals NHS Foundation Trust, London, United Kingdom

Introduction: There is no established protocol to manage high-cardiac-risk patients on a kidney transplantation waitlist. The role of a joint cardio-renal MDT to maximise available resources, yet maintain patients safely on the waitlist is unknown, which this study investigated.

Methods: The study, approved by hospital Clinical Effectiveness and Audits Committee, included 164 episodes in 126 patients discussed in cardio-renal MDT, between 1-10-2014 to 30-09-2017 followed till 2-10-2017.

Results: Clinical characteristics of the 164 patient episodes were; age 61±8years, BMI 28±5kg/m^2, cholesterol 4.0±1.1mmol/L, 61% diabetes, 96% hypertension, 63% haemodialysis, 27% pre-dialysis. On discussion of cardiac/general health of 164 patient episodes, 66% were activated (n=19) or remained active (n=73). Seven patients were deemed unsuitable for transplantation due to poor cardiovascular/general health. 40% of the patient episodes resulted in further cardiovascular tests (Figure1A). There was no difference in age, diabetes or any other CV risk factors between patients who were removed from the list and remained active/activated patients. 96 cardiac procedures were requested following MDT including stress echocardiogram 66(68%), echocardiogram 9(9%), coronary angiogram 13(13%), PCI 4(4%), and coronary artery bypass graft 4(4%). Non-invasive tests resulted in further 19 angiograms, 10 PCI and 1 CABG (Figure1C). Over 604±345 days 40% of patients were transplanted (n=24) or remained active (n=26); 16% undergoing further work-up; 20% suspended temporarily; 24 %(n=31) removed from transplant work-up of various reasons, where 6%(n=8) died (Figure1B). 6% suffered cardiovascular events. There was no difference in age, diabetes or other CV risk factors between transplanted/active patients with patients who were removed from list, died or suffered CV events.

Discussion: The cardio-renal MDT was successful in maintaining majority of the patients active on the transplantation waitlist, utilising mainly (70%) non-invasive cardiac testing, and identifying patients unsuitable for transplantation who avoided further cardiac tests.

P109

Donor and recipient factors lead to invasive candida infection after renal transplantation

Ersong Shang[1], Colin Wilson[1], Daniel Weiand [1], Clare Pattenden[2], Adam Barlow[3], Daniel Ridgway[4], John Asher [5]

[1]The Newcastle upon Tyne NHS Foundation Trust, Newcastle upon Tyne, United Kingdom. [2]University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom. [3]Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom. [4]The Royal Liverpool University Hospital, Liverpool, United Kingdom. [5]NHS Greater Glasgow and Clyde, Glasgow, United Kingdom

Introduction: Fungal pseudoaneurysms after kidney transplant can rupture with devastating consequences. Whilst our experience suggests most bacterial transport perfusion fluid (TPF) contamination are inconsequential, there is uncertainty regarding fungal TPF isolates and in particular Candida. Management of Candida species isolated from TPF (CP-TPF) for renal transplants has ranged from elective transplant nephrectomy to systemic antifungals. We aim to review the outcomes of paired deceased donor kidneys to elucidate the effect of CP-TPF on post-transplant outcomes.

Methods: Deceased donor renal transplants recipients at our centre between Sept.2016 and Dec.2017 were identified using patient electronic records. For CP-TPF we identified the contralateral donor kidney (CDK) using the NHSBT database, liaising with local transplant coordinators.

Results: 11 pairs of deceased donor kidneys were identified in which the index case isolated Candida. In 3 pairs both kidneys were transplanted at our centre; rest of the CDK were transplanted in different locations. Information on 9 pairs of TPF were available for comparison (1 TPF was not cultured, 1 centre was uncontactable). When both kidneys were transplanted at our centre, there was 100% concordance for CP-TPF between the kidneys, however when the CDK was transplanted in another centre, 3/6 (50%) showed concordant CP-TPF. 3/17 CP-TPF (18%) had infective complications resulting in 2 graft nephrectomies and an evacuation of infected haematoma. We found no evidence of concordant complications between sister kidneys.

Discussion: There is a high CP-TPF concordance rate in paired kidneys; however there is variation between recipient outcomes, suggesting the prominence of recipient factors in development of complications. The high rate of CP-TPF related complications also raises the question what could be done to minimise the impact of candida infection in this group of patients. Our results also suggest there are inconsistencies regarding TPF culture methodology across the UK, highlighting the need for standardisation of TPF testing across centres.

P109

IgM-dominant glomerular immune complex deposition in renal transplant biopsies: recurrent disease or not?

Neeru Agarwal[1], Michelle Willicombe[1], Candice Roufosse[2]

[1]Imperial College Renal and Transplant Centre, London, United Kingdom. [2]Imperial College, London, United Kingdom

Background: IgM nephropathy is characterised by mesangial IgM deposition with electron dense deposits on electron microscopy (EM). This finding in transplant biopsies may represent recurrent or de novo disease but it has been described in infections and transplant glomerulopathy (TG). In this study, we describe the clinicopathological features associated with likely persistent compared with transient IgM deposition in transplant biopsies.

Methods: We identified 17 patients with ≥2 transplant biopsies (range 2-8), of which the index biopsy had dominant mesangial staining for IgM on immunofluorescence, mesangial electron dense deposits on EM, and excluded cases with systemic infection, autoimmune disease, thrombotic microangiopathy or TG. The median follow-up post index biopsy was 5.2±3.05 years.

Results: No patient had a native biopsy to confirm underlying cause of ESRD. Baseline patient demographics and clinical findings at presentation are shown below.

	Likely persistent IgM [n=9(%)]	**Transient IgM [n=8(%)]**	**p-value**
Male gender	5(55.6)	7(87.5)	0.29
Caucasian	3(33.3)	3(37.5)	0.99
Diabetes	5(55.6)	3(37.5)	0.63
Indication biopsy	6(66.7)	5(62.5)	0.99
Mean eGFR at biopsy(mls/min)	48.2 ±20.1	55.3 ± 13.6	0.42
UPCR	45(25.7-167.5)	77(17.9-620)	0.67
DSA at biopsy	3(33.3)	0	0.21
Biopsy findings			
Mesangial hypercellularity	8(88.9)	6(75.0)	0.58
IgM (>2+)	1(11.1)	2(25)	0.58
FSGS	4(44.4)	5(62.5)	
GBM thickening	8(88.9)	4(50)	0.13
Concurrent rejection	1(11.1)	0	0.99
Post-immunotherapy change	2(22.2)	3(37.5)	0.62

Death censored allograft survival was no different between the two groups, p=0.25. There was also no difference in patient survival, p=0.16. However, all cause graft loss was inferior in the transient IgM group, p=0.018.

Discussion: Likely persistent IgM did not have negative impact on outcomes compared with the transient group. The aetiology of transient IgM deposition was not determined in this study and requires a larger cohort.

P110

Quicker treatment for patients with re-occurring urinary tract infections in the renal transplant population

Lucy Griffiths, Angela Bailey

Salford Royal Foundation Trust, Manchester, United Kingdom

The aim is to reduce the time symptomatic patients receiving antibiotics to treat urine infections by self-testing at home using Healthy IO Diplo kits.

Patient group requirements:

- Smart phone that will enable app to be downloaded
- Patient with recurring UTIs that have resulted in urosepsis and/or hospital admission.

Once patients are identified they are contacted by phone and asked if they wish to take part in the quality improvement study. They will download the app during the initial phone call and asked to read through the instructions. Kits will be sent to patients in the post.

The current practice involves patients inform the team they have symptoms and have either dropped off a sample at their GP or ask to bring one the department. In both instances, a few days have lapsed before treatment is initiated. Advice is always given to patients to seek medical attention should their symptoms worsen but sometimes hospital admissions are unavoidable.

New practice involves a patient using the kit and an alert is sent to a specified email address with the result. This will enable the nursing team to discuss what treatment can be initiated using trust policy before culture and sensitivity result is received.

A prescription will be faxed to the patients GP allowing treatment to begin within 24 hrs of the patient having symptoms.

The result will be reviewed and if a different antibiotic is needed this can be authorised.

Follow up will be arranged with the patient informing them of when a repeat urine dip test will be require from the same urine sample to be sent for culture and sensitivity.

We are monitoring problems encountered, nursing time involved, results, treatment.

https://healthy.io/

P111

Horseshoe kidney transplantation: a literature review and case report of a high risk transplantation

Philippa Leighton, James Bushnell, David Mitchell, Sam Turner, Anusha Edwards, Justin Morgan, Shakeeb Khan

North Bristol NHS Trust, Bristol, United Kingdom

Introduction: The national shortage of donor kidneys has led to the development of novel surgical strategies for transplantation of structurally abnormal organs that would previously have been declined. The horseshoe kidney is the commonest structural malformation and its transplantation has been documented for some years, with increasingly complex cases performed.

Methods: This case report describes the en-bloc transplantation of a structurally complex cadaveric kidney into a high-risk recipient with a good clinical outcome. A literature review provides an update on current practice to emphasise the utility of horseshoe kidney transplantation.

Results: Twenty-one papers have reported horseshoe kidney transplantation over the past decade. Eighteen organs were used, the majority from DBD donors- 12 were split, 6 transplanted en-bloc. Half were transplanted via an intraperitoneal approach, and the other half in the extraperitoneum. The reported complication rate was 42%, mostly low-grade and managed medically. There was no difference in complication rate between split and en-bloc transplants.

Discussion: The conclusions we have reached are that an early decision on splitting must be made; that patient selection and informed consent are critical; and that flexible surgical strategies for vascular and ureteric anastomoses must be deployed for the best outcomes.

P112

Combined liver and kidney transplant - are we ready to break the odds and go for a uniform consensus?

Evgenia Preka[1], Marianne Samyn[2], Nizam Mamode[3], Sheila Boyle[4], Stephen D Marks[4], Jelena Stojanovic[4]

[1]Department of Paediatric Nephrology, Great Ormond Hospital for Children NHS Foundation Trust, London, United Kingdom. [2]Liver Transition Service, Kings College Hospital London, London, United Kingdom. [3]Department of Transplantation, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. [4]Department of Paediatric Nephrology, Great Ormond Hospital for Children NHS Foundation Trust, London, United Kingdom

Introduction: Evidence in combined liver-kidney transplantation (CLKT) for primary hyperoxaluria (PH1) in children is limited and variable. We report a case of a child with a complicated PH1 who to date, had unreported post-operative management with an excellent outcome.

Methods: A 10 year-old male with end-stage kidney disease (ESKD) secondary to PH1 diagnosed at age 5 years after presenting with chronic kidney disease and anaemia underwent CLKT. He had severe systemic oxalosis with bone marrow failure with transfusion-dependent anaemia and uncontrolled hypertension.

Results: Patient's pre-dialysis plasma and urine oxalate levels were ranging between 115-179 and 1200-1600 µmol/l respectively. Haemoglobin (Hb) levels were maintained above 70-75 g/L, with three weekly red blood cell transfusions. Subsequently, he developed haemosiderosis requiring oral iron chelation therapy. Blood pressure measurements were above the 95thcentile despite three anti-hypertensives and three-weekly haemodiafiltration. We decided not to perform bilateral nephrectomies. After 26 months on waiting list, he received a CLKT from a deceased donor without peri-operative complications. Continuous veno-venous haemodiafiltration (CVVH) was commenced at the time of liver implantation and continued for only 48h with primary renal allograft function. He maintained urine output >1ml/kg/hr with a fluid target of 3-3.2 litres/day since day 1 post transplant. Potassium citrate as urinary alkalization was continued. He had no episodes of acute rejection or nephrocalcinosis with estimated glomerular filtration rate of 60mls/min/1.73m2 at six-month follow-up. He is normotensive and off antihypertensive agents and has not required any blood transfusions since week 3 post transplant.

Conclusion: This is the first case of a successful outcome in a CKLT in a complicated PH1 case, with excellent liver and renal allograft function without signs of nephrocalcinosis despite CVVH requirement of only 48 hours and no native nephrectomies, resolution of the transfusion-dependent anaemia and normal blood pressure at six months follow-up.

P113

Does the duration of delayed graft function after DCD donor kidney transplantation influence longer-term outcomes? A UK registry analysis

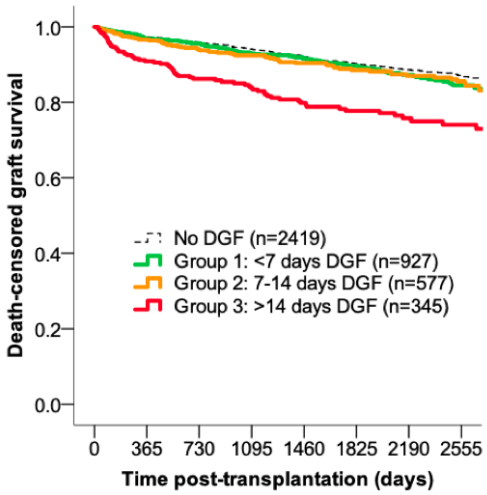
Benedict Phillips[1], Lisa Mumford[2], Anthony Dorling[1], Chris Callaghan[1]

[1]Department of Nephrology and Transplantation, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. [2]Statistics and Clinical Studies, NHS Blood and Transplant, Bristol, United Kingdom

Introduction: Previous UK registry analyses have suggested that the presence of delayed graft function (DGF) does not influence longer-term graft outcomes after DCD donor kidney transplantation. However, the impact of prolonged DGF has not been examined. This study 1) determines if DGF duration affects longer-term outcomes; 2) identifies factors associated with prolonged DGF.

Methods: A UK registry analysis on first single kidney-only DCD transplants from donors aged ≥10 years old to adult recipients between 2006-2016 was performed. Recipients were grouped: no DGF; DGF <7 days (group 1); DGF 7-14 days (group 2); DGF >14 days (group 3). Pre-emptive recipients, those with missing data on dialysis status at transplantation, and those with PNF were excluded. Univariable and multivariable statistical analyses determined the effect of donor/recipient characteristics and DGF duration on post-transplant outcomes.

Results: Of 4268 recipients, 2419 (56.7%) had no DGF, with 927 (21.7%) in group 1, 577 (13.5%) in group 2, and 345 (8.1%) in group 3. There was no difference in death-censored graft survival (DCGS) between recipients with no DGF and those in groups 1 and 2; however group 3 had significantly worse DCGS relative to all other groups (p<0.001), suggesting a threshold effect. DGF duration was an independent predictor of DCGS; those in group 3 had almost three times the risk of graft failure than those without DGF (HR 2.9 CI 1.8-4.5 p<0.001). Surprisingly, duration of DGF was an independent risk factor for patient survival; those in group 3 had double the risk of death relative to recipients with no DGF (HR 2.0 CI 1.5-2.7 p<0.001). Older, male, obese donors with longer CITs, and black, male recipients, were all independently associated with prolonged DGF >14 days.



Conclusions: Unexpectedly, this updated registry analysis shows that duration of DGF >14 days strongly impacts longer-term graft and patient survivals following DCD donor kidney transplantation.

P114

The pattern of CMV (Cytomegalo-virus) viremia post kidney transplantation; 4 years follow up

Abdulwhab Elmghrbee, Sabry Abounzoha, Matthew Fok, Adli Idrees, Adham El Bakry, Sanjay Mehra, Ajay Sharma, Abdul Hammad, Dan Ridgway.

Royal Liverpool Hospital, Liverpool, United Kingdom.

Introduction: CMV viremia is common after organ transplantation. Aimed to assess rate, grade, impact of antiviral prophylaxis and timing of CMV viremia in kidney transplant recipients.

Methods: A retrospective study of 395 transplanted patients between April 2010 and March 2014 .The cohort was divided as shown on table 1.

Table 1.Total kidney transplantation according to CMV serological status and type of kidney transplant:

CMV serostatus	D-/R-	D+/R-	D+/R+	D-/R+	total
DCD	32	26	36	32	126
DBD	36	38	38	34	146
LDTx	49	20	34	20	123
Total	117	84	108	86	395

DCD= donation after cardiac death, DBD= donation after brain death, LDTx=live donor transplant, D=donor, R= recipient

Results: The rate of CMV infection among the transplant cohort was 24%. The highest rate of infection were among the D+/R+ CMV mismatch which was 46.3% (n=44/95), followed by D+/R- and D-/R+ CMV mismatch which were 26.3%(n=25/95) and 26.3% (n=25/95), respectively. 77% (n=73/95) of CMV infection occurred during first six months, declined sharply to 12.6% (n=12/95) between 7 and 12 months, then the rate were 10.5% (n=10/95) after 12 months post-transplant. Breakthrough viremia occurred in 31.6% (n=30/95) of patients, 46.3% (n=44/95) after antiviral prophylaxis and in 22.1% (n=21/95) of those had no prophylaxis. High grade viremia were frequent in D+/R+ and D+/R- CMV mismatch in which 19% (n=18/95) and 17% (n=16/95) respectively ,and less frequent in D-/R+, D-/R- CMV mismatch groups were 9.4% (n=9/95), 2.1% (n=2/95), respectively.

Conclusion: The rate of CMV viremia was 24%. More common in the first 6^{th} months post-transplant, after antiviral prophylaxis, and D+/R+ CMV serostatus. Our recommendation is to extend CMV prophylaxis to 180 days and considering prophylaxis for D+/R+ regardless which induction agent used.

P115

The contributing factors for cytomegalo-virus (CMV) infection post kidney transplantation. Single centre data analysis

Abdulwhab Elmghrbee, Sabry Abounzoha, Matthew Fok, Dan Ridgway, Abdul Hammad

Royal Liverpool University Hospital, Liverpool, United Kingdom.

Introduction: CMV is common and dangerous infection for transplant patients. Our objective was to identify the risk factors for CMV viremia.

Method and material: A retrospective study of 395 kidney transplantation carried out between April 2010 and March 2014.

Results: Those were D+/R+ transplant had higher rate of infection than D+/R- and D-/R+, which were 44.2%, 26.3% and 26.3%, respectively. Alemtuzumab as induction agent had higher rate of viremia when compared to basiliximab, which were 64.2% (n=61/95) and 36% (n=34/98), respectively. CMV viremia more common in donation after cardiac death (DCD) kidney transplantation 47.4% than (DBD) donation after brain death 33% and lowest rate observed in (LDTx) live donation 20%. Recipient older than 55 years of age had an increase of infection by 8%.The longer the cold ischaemic time (CIT) the higher the rate of CMV infection, for those twelve hours (12 hrs) and above it was 58% (n=55/95) and 46% (n=44/95) for those less than 12 hrs. Higher rate of infection in donor with history of alcohol abuse 22% (n=21/95) than non-alcohol abuse 11.7% (n=35/300). 11.6% (n=11/95) diabetic recipients developed CMV infection versus 7 % (n=21/300) diabetic recipient had no CMV infection. Acute rejection rate was marginally higher than those had CMV viremia 13.7% (n=13/95) than those had not CMV viremia 12% (n=36/300).

Conclusion: CMV serological mismatch was the main factor for CMV infection and the greatest risk were among D+/R+, intermediate risk were D+/R- and D-/R+ subgroup. Other contributing factors were alemtuzumab induction, DCD renal transplantation, prolonged CIT, donor history of alcohol abuse, diabetic recipient and increasing age of recipient. While, acute rejection can be the result of CMV infection and anti-rejection treatment can predispose to CMV viremia.

P116

Post-kidney transplant CMV infection graft and patient outcome: 4 years follow-up, single centre experience

Abdulwhab Elmghrbee, Sabry Abounzoha, Matthew Fok, Dan Ridgway, Abdul Hammad.

Royal Liverpool University Hospital, Liverpool, United Kingdom.

Introduction: In spite of antiviral prophylaxis, CMV infection is the most common viral common complication after kidney transplantation.Our objectives were to measure the rate of acute rejection, post-transplant lymphoproliferative disease (PTLD), post-transplant diabetes mellitus (PTDM), and transplant renal artery stenosis (TRAS), and skin cancer and patient and graft survival.

Methods: An observational, retrospective and single –centre study of 395 kidney transplant recipient carried out between April 2010 and March 2014. The cohort divided into CMV infection group and non-CMV infection group.

Results: Our rate of primary and latent CMV infection were 24% (n=95/395). Biopsy proven acute rejection were higher in CMV-infection than the non-CMV infection group which were 13.7.3% (n=13/95) and 10.6% (n=32/300), respectively. There was no difference in PTLD among the two cohorts as it was 1% in each group. Graft loss was higher in non-cmv infection than in CMV viremia group which were, 9.3% (n=28/300) and 6.3% (n=6/95), respectively. PTDM was similar which around 5% in each group was. TRAS is lower in CMV cohort 1% (n=1/95) than in non-cmv infection group 2.7% (n=8/300). More skin cancer cases in CMV infection group 9.5% than those in non-CMV viremia cohort 4.3%. All-cause mortality was higher in the CMV infection group 18% (n=17/95) than non-CMV infection group 11% (n=33/300).

Conclusion: Overall, four year patient and graft survival among the cohort was 87.3% and 91.3%, respectively. CMV viremia after kidney transplantation associated with a higher rate of acute rejection, skin cancer. All-cause mortality was higher among the CMV infection cohort but not the graft loss. There was no difference in PTLD, PTDM among the two cohorts.While TRAS was less frequent in the CMV infection group.

P117 – poster withdrawn

P118

Overcoming technical challenges in live donor renal transplants; a bespoke method of vascular control

Rose Johns, Arun Kapour, Anna Rizzelo, Atul Bagul

University Hospitals of Leicester, Leicester, United Kingdom

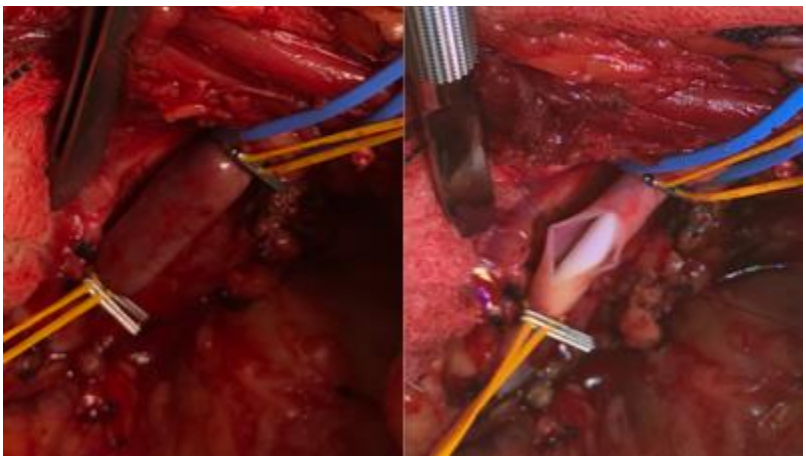
Introduction: Renal patients may present technical challenges for the transplant surgeon as a result of their primary disease, their comorbidities and their previous vascular access surgery; here we present a technique for overcoming these factors.

A 29-year-old female patient with ESRF secondary to glomerularnephritis underwent a live donor renal transplant into her left iliac fossa. Her background included a failed right iliac fossa transplant and subsequent transplant nephrectomy, unsuccessful peritoneal dialysis and severe vascular access problems as well as a history of lupus anticoagulant antibodies. At the time of transplantation she was dialysing on a duel-lumen permacath inserted via her left femoral vein with the tip of the line situated in her right atrium (in order to achieve adequate flow volumes for dialysis). This was placed after angioplasty of significant stenoses in the left common iliac vein and inferior vena-cava, anticipated drainage was via successful plasties and collaterals.

The only option for vascular anastomoses of the graft was onto the left external iliac artery and vein; with the permacath being required before and after the transplant and having had significant difficulties in establishing working access, removing the line from the vessel was not an option prior to transplantation therefore a method for controlling the vein containing the line was required.

Methods: The left external iliac vein was dissected out and controlled, we were unable to use vascular clamps to control the vein during the anastomosis as it contained the permacath. A bespoke method of occluding the vein was therefore adopted using two slings to fit snugly around the vein and line. Slings were secured in place with ligaclips and the vein was opened. A Heparin infusion was commenced post-operatively.

Results:



Discussion: This unconventional method controlled the vein to allow the graft renal vein to be anastomosed successfully without removing the crucial line.

P119

The effect of obesity on access to renal transplantation

Dilushi Wijayaratne, Neal Banga, Gareth Jones, Ewa Frackiewicz, Al Midani Ammar

Royal Free Hospital, London, United Kingdom

Introduction: Obesity, Body Mass Index (BMI) >30kgm^{-2}, is common among patients with end-stage kidney disease, and is associated with a higher incidence of surgical and medical complications such as wound infections, delayed graft function, new onset diabetes after transplantation, cardiac morbidity. Many centres delay listing these patients for transplantation until a more acceptable BMI has been achieved, leading to a longer time on dialysis and reduced access to transplantation.

Methods: We searched our renal database for patients with a BMI >30 kgm^{-2} who are currently undergoing transplant assessment but are yet to be activated on the waiting list.

Results: 73 patients fulfilled our criteria, with a median BMI of 39 kgm^{-2} (range 30-71kgm^{-2}). 58% were of Black, Asian and other minority ethnicities. 34/73(46%) were on dialysis, with a median duration on dialysis of 3 years (range 1 to 11 years). For 47/73 (64%) of these patients the main barrier to transplantation was obesity. 35/47 (74%) patients had been offered a conservative approach which included advice on diet and exercise, and referral to patient education services. 8/47 (17%) patients had been referred to bariatric services, two of whom were then deemed unsuitable for bariatric surgery due to anaesthetic risk. The median BMI on referral to bariatric services was 48 kg/m2 (range 35-67 kgm^{-2}). Only 4/47 (9%) patients had been referred to a specialist dietician.

Discussion: Obesity represents a significant barrier to listing for transplantation in our centre, due to multiple factors including the lack of specialist dieticians and a structured exercise programme, and difficulty in access to bariatric surgery. Whilst minimally-invasive transplantation may be offered to those with a live donor, a formalised protocol of multi-modal approaches is required for those patients whose obesity currently precludes them from being listed for a cadaveric transplant.

P120

Central lines for renal transplantation: a single centre study

Natalie Condie, Philippa Leighton, Sam Turner, Anusha Edwards, Justin Morgan, William Neary, Nia Griffith, Christopher Dudley, Rommel Ravanan, Shakeeb Khan

North Bristol NHS Trust, Bristol, United Kingdom

Introduction: Central line use post-renal transplantation varies across the UK. We retrospectively analysed the fluid balance and creatinine levels of recipient groups managed with and without central lines in one transplant centre. Our aim was to detect any clinically relevant differences between groups.

Methods: Data were collected from the local electronic database- uploaded fluid charts, discharge summaries and biochemistry were analysed for all renal transplant recipients between May and October 2018. Demographic and surgical data, fluid balance and creatinine on days 0-4 were collected. Daily input was compared against protocol standards. Central line complications were noted.

Results: A total of 54 recipients were analysed- 34 with central lines (CL) and 20 without (NL). The majority were male (58%) with no difference in group gender proportion. Median age was comparable between groups. No statistical difference was found in the median intraoperative fluid input between CL and NL groups. There was no significant difference between median input and output volumes on days 1 to 4 post-operatively, or in corresponding creatinine levels. Input volumes varied widely from protocol, but with no difference between groups. Delayed graft function occurred in 15% of each group. There was 1 case of primary non-function. There were no central line complications.

Discussion: We have performed a retrospective analysis to compare the fluid balance and creatinine with and without a central line. We found no statistically significant difference in fluid balance or renal function between groups. These findings support the selected use of central lines for unstable, critically unwell patients with poor access, but for restricted use in others. The limitations of this study are its retrospective design, the small numbers and the lack of long-term data.

Conclusion: The results of this study changed unit practise to move away from routine placement of central lines in all recipients to only in selected patients.

P121

Timing of ureteric stent removal and occurrence of urological complications after kidney transplantation: a systematic review and meta-analysis

Isis Visser[1], Jasper Van der Staaij[1], Anand Muthusamy[1,2], Michelle Willicombe[1], Jeffrey Lafranca[1], Frank Dor[1,2]

[1]Imperial College Renal and Transplant Centre, Hammersmith Hospital, London, United Kingdom. [2]Department of Surgery and Cancer, Imperial College, London, United Kingdom

Introduction: Implanting a ureteric stent during ureteroneocystostomy reduces the risk of urinary leakage and ureteral stenosis after kidney transplantation (KTx), but it may also predispose to urinary tract infections (UTI).The aim of this study is to determine a more definite moment for ureteric stent removal after KTx.

Methods: Searches were performed in EMBASE, MEDLINE Ovid, Cochrane CENTRAL, Web of science, and Google scholar. All aspects of the Cochrane Handbook for Interventional Systematic Reviews are followed and is written based on the PRISMA-statement. Articles discussing JJ-stents and their time of removal in relation to outcome were included. Studied outcome measures were UTI, urinary leakage, ureteral stenosis and re-intervention.

Results: 1043 articles were identified, of which 14 articles were included. Meta-analysis showed a significant reduction of UTI when stents were removed within three weeks (OR 0.52, p = 0.008). Regarding incidence of urinary leakage, there is no significant difference between early and late stent removal (OR 0,928, p= 0,898). No meta-analysis could be performed on the outcome of ureteral stenosis, because of the lack of data.

Discussion: Based on our results, earlier stent removal after KTx (<3 weeks) is associated with a decreased incidence of UTI, and does not show a higher incidence of urinary leakage compared to later removal (>3 weeks). We recommend that the routine removal of ureteric stents implanted during kidney transplantation should be performed around three weeks postoperatively.

P122 – poster withdrawn

P123

Isiris™ for ureteric stent removal in renal transplantation: an initial single centre experience of 150 cases

Daniel Doherty[1,2], Hussein Khambalia[1,2], Martyn Stott[1], Lisa Laycock[1], Ben Grey[3], Zia Moinuddin[1,2], David van Dellen[1,2]

[1]Department of Renal & Pancreas Transplantation, Manchester Royal Infirmary, Manchester, United Kingdom. [2]Faculty of Biology, Medicine & Health, University of Manchester, Manchester, United Kingdom. [3]Department of Urology, Manchester Royal Infirmary, Manchester, United Kingdom

Background: Ureteric stents are inserted during renal transplantation to reduce post-operative urological complications, including anastomotic leak and ureteric obstruction. Transplant ureteric stent removal (TUSR) has historically been performed via flexible cystoscopy in a theatre environment. Isiris™, a single use cystoscope with integrated grasper designed for removal of JJ stents, allows TUSR to be moved away from the operating theatre, with the potential of improved patient experience and reduced resource burden. We aimed to report our unit's initial clinical and financial outcome.

Methods: A retrospective analysis of a contemporaneously maintained database was performed with review of case notes of TUSR in a single transplant unit (10/17-09/18). TUSR was performed in the outpatient setting by surgical middle grades with a single nurse assistant.

Results: 150 TUSR were performed in renal transplant recipients (145 single and 5 dual transplants; mean age 50.2 years, SD ± 15.2; 61.3% male). 91.3% (n=137) of cases were performed in the outpatient clinic. Median time from transplant to TUSR was 42 days (IQR 30-42) with 12 cases of urinary tract infection (UTI) with indwelling stent (8.1%). 147 procedures were successful with 3 failures (prior false urinary passage; technical difficulties; anxiety) with 1 post-TUSR UTI. IsirisTM use for TUSR has provided a £80,680 saving in this cohort.

Conclusion: Isiris™ safely and practically allows timely TUSR. It releases the procedure from the operating theatre to the outpatient clinic or community healthcare facility. This reduces the resource burden for healthcare providers and provides financial benefit, with the savings calculated conservative, as they do not include income gained from re-allocated use of operating theatre capacity. Further work is required to assess patient and surgeon satisfaction, environmental impact, and use in complicated TUSR (encrustation and migration). However, Isiris™ is safe and appropriate for use in the outpatient setting.

P124

The role of recipient weight in renal transplantation revisited; not quite the obesity paradox

Rana Tahawar, Tarique Sabah, Usman Khalid, Michael Stephens, Argiris Asderakis

Cardiff Transplant Unit, University Hospital of Wales, Cardiff, United Kingdom

Introduction: Studies conflict whether obesity is associated with higher risk of failure and death among kidney transplant recipients. ESRF patients show the obesity paradox where the heavier patients have lower mortality. The aim of the study was to define the importance of recipient weight in the modern transplant era and see if this factor was pronounced in certain donors.

Methods: All 771 patients transplanted during 7 years were separated in 4 quartiles according to their BMI. A new variable (BMIext) was created where the lighter and heavier quartile were combined to one group (group A, BMI 30.6) and contrasted to the mid two quartiles (group B, 23£BMI

Results: Graft and patient survival were not associated to the patient BMI linearly. Graft survival was dependent on the recipient age (p=0.002), donor type (LD vs. deceased, p=0.001) and the BMIext (p=0.04). In sub-analysis it seemed the entire effect was restricted to male donors; Graft survival among recipients of male donors at 1 and 5 years was 95% and 79% in group B compared to 89% and 68% in group A (p=0.018). BMIext was significant in Cox regression (p=0.009). Patient survival of male donors was also numerically higher at 1 and 5 years in group B (97% and 83%) vs. group A (94% and 79%), not significantly so (p=0.2). BMIext was significant for patient survival in Cox regression (p=0.016). Patient BMI (or BMIext) was not related to the eGFR at 12 or 36 months. DGF was increased among obese patients (p=0.002).

Conclusion: The renal failure survival paradox is partly modified through transplantation so that the highest BMI group has an increased failure and death rate. This effect is mainly restricted to recipients of male donors.

P125

Induction with ATG in DCD kidneys. Dose effect and predictors of outcome

Tarique Sabah, Aled Jones, Adel Ilham, Elijah Ablorsu, Laszlo Szabo, Rafael Chavez, Argiris Asderakis

Cardiff Transplant Unit, University Hospital of Wales, Cardiff, United Kingdom

Introduction: Thymoglobulin (ATG) is used in few UK centres as induction. We have shown good results with ATG for pancreas transplants. The aim of this study is to see if the total ATG dose used for induction in DCD kidneys affected their outcome and if the initial impact to the blood cells and CD3 count was predictive of its efficacy.

Methods: All 140 DCD patients who received ATG induction (standard of care in reporting centre) were included. Intended dose was 1.25 mg/kg for 5 days rounded to the nearest 25 and not exceeding 150 mg/dose. Patients were separated to 4 quartiles according to the total dose/kg they received. Outcomes examined were total dose relation with rejection, and eGFR, and if the initial cell response to the ATG was predictive of those outcomes.

Results: Rejection (including borderline changes) was 12% in 3 years and was predictive of eGFR at 12 (p=0.05) and 36 months (p=0.1). The total dose or dose/kg was not predictive of rejection but they were both equally predictive of WCC at day5 (p=0.04) and lymphocyte count at day5 (p=0.006, Pearson correlation of dose/kg and day5 lymphocyte -0.36). Platelets dropped but had no correlation with dose/kg. In non-rejectors the lowest dose/kg quartile was associated with 10mls/min lesser eGFR at 12 months compared to the other quartiles (p=0.06). In a subset of patients (30) CD3 count was available at day3. Day3 CD3 was associated with rejection (p=0.001) and inversely associated with eGFR at 12 and 36 months (p=0.03).

Conclusion: There is variable response to ATG even within a tight dose range. WCC and lymphocyte count at day5 better reflect the dose compared to platelets. Less than 4.5 mg/kg total ATG might be associated with worse outcome. Day3 CD3 count is correlated strongly with rejection and eGFR.

P126

Speeding allowed: shorter anastomosis time is associated with a lower incidence of DGF in DCD renal transplants

Natalie Vallant [1], Sami Dost [2], Basir Kunduzi[2], Kostas Stamatis [1], Benedict Phillips[2], Christopher Callaghan[2], Johnathon Olsburgh[2], Nicos Kessaris[2], Ioannis Loukopoulos[2], Nikolaos Karydis[1]

[1]Guy's Hospital, London, United Kingdom. [2]Guy's Hospital, London, United Kingdom

Introduction: Delayed graft function (DGF) in renal transplantation may prolong hospital stay and increase rejection and graft failure rates. Increasing use of marginal organs is expected to lead to higher DGF rates. DCD kidneys are more commonly affected compared to DBDs. Previous reports suggested anastomotic time (AT) as a risk factor for DGF in DBD kidneys. We explored the role of AT in DGF for both DBD and DCD kidney transplants in our centre over the last decade.

Methods: We analysed 579 deceased donor kidney transplants (352 DBD, 227 DCD) performed between 2007 and 2016. We included adult recipients dependent on dialysis at the time who were receiving their first single kidney transplant. Primary non-function cases were excluded.

Results: Overall, donor and recipient age were significantly higher in the DGF group (54.0±14.0 vs 49.4±15.6 and 53.2±11.6 vs 49.6±12.8; p=0.0003 and p=0.0007, respectively). DGF rate was significantly higher in DCD compared to DBD transplants (50.2% vs. 26.9%, p<0.0001). Static cold storage time was similar between groups (834.9±286.1 vs 823.1±296.9 minutes, p=0.65). AT was significantly higher in the DGF group (42.2±14.8 vs 38.9±10.6 minutes, p=0.0057). Mutlivariate regression analysis highlighted AT and DCD donor type as independent risk factors for DGF (p<0.0001) (OR 1.02 and 2.9, respectively). Interestingly, subgroup analysis showed that, in DBD transplants, the incidence of DGF was not associated with donor age, recipient age, or AT in the multivariate model (p=0.13; 0.18; 0.27, respectively). In DCD transplants, AT remained a strong independent predictor of DGF in multivariate analysis (OR 1.03, p=0.0071), unlike donor (p=0.20) and recipient age (p=0.73).

Discussion: Our data suggests that DGF in deceased donor kidneys is influenced by different factors, depending on donor type. In DCD kidneys, a shorter anastomotic time may reduce the incidence of DGF.

P127

The role of raised intra-abdominal pressure (IAP) in simultaneous pancreas and kidney transplants (SPK)

Torath Ameen, Georgios Papadakis, Nikolaos Karydis

Guy's & St. Thomas' Department of Transplant Surgery, London, United Kingdom

Introduction: There have been several reports of raised intra-abdominal pressure (IAP) in solid organ transplantation, including life threatening abdominal compartment syndrome requiring decompressive laparotomy. In simultaneous pancreas-kidney transplants (SPK) however, it remains unknown whether IAP increases and if so to what extent. We conducted a pilot study to explore the incidence of intra-abdominal hypertension (IAH) in SPKs.

Methods: A prospective cohort study was undertaken in adult SPKs performed at our centre during the study period. Preoperative and postoperative IAPs along with other clinically relevant transplant-specific variables were recorded over the first 3 postoperative days (POD). Clinical outcomes were monitored for a period of 3 months.

Results: 15 consecutive SPKs (DBD and DCD) were analysed. Matched pair analysis demonstrated a statistically significant rise in IAP in the immediate post-operative period by a mean 3.5 mmHg ($p < 0.0001$). In addition to this, the peak postoperative IAP was significantly higher than the immediate postop IAP by 9.6 mmHg ($p < 0.0001$). Postoperative IAPs were significantly higher in the higher BMI group (BMI>25) compared to the lower BMI group (<25) (Fig. 1). Throughout the study, all patients had a clinically gradable IAH. 36% of patients sustained grade 1, while 64% of patients sustained grade 2 to 4 IAH (Fig. 2). Patients with late onset (>48 hrs) IAH had significantly higher mean IAP as compared to those with early onset (<48 hrs) IAH ($p < 0.0425$). Interestingly, longer pancreas cold ischaemia time was associated with higher IAP on POD2 ($p > 0.02$). This pilot study was expectedly underpowered for correlation with adverse clinical outcomes.

Discussion: This is the first study to establish an association between SPK transplantation and IAH, which could have potentially detrimental effects on graft function and survival. Increasing the sample size to explore clinical implications of IAH would be best done within a multi-centre study.

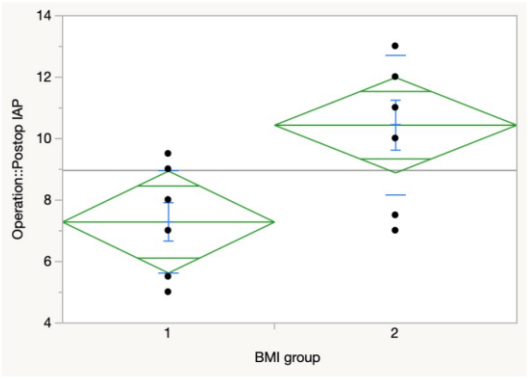
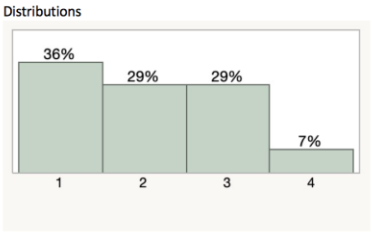


Figure 1. Post-operative IAP is higher in group 2 (high BMI).



Frequencies

Level	Count	Prob
1	5	0.35714
2	4	0.28571
3	4	0.28571
4	1	0.07143
Total	14	1.00000

N Missing 1 4 Levels

Figure 2. Distribution/Frequency table of patients according to abdominal hypertension grading.

P128

The incidence of neutropaenia within the first 12 months following renal transplantation: a single centre experience

Keertana Easwarakumar, Komal Joshi, Manpreet Bawa, John Black, Rosemary Johns, Mohamed Morsy, Tahir Doughman, Anna Rizzello, Atul Bagul

Department of Renal Transplant, Leicester General Hospital, University Hospitals of Leicester, Leicestershire, United Kingdom

Aims: Neutropaenia is commonly observed following renal transplant. It often necessitates admission to hospital for isolative treatment due to the risk of opportunistic infections. Treatment includes modification of immunosuppression and the use of granulocyte colony-stimulating factors (GCSF). This potentially increases the risk of rejection and allograft loss.

Methods: 108 recipients were identified with a neutrophil count of < 1.5 $X10^3$mc/l between October 2017-October 2018. Local electronic records were used to assess recipient data specifics, including blood results and episodes of neutropaenia. Data was processed and analysed using SPSS.

Results: Findings are summarised below. The mean average (+/- SD) is used unless specified.

Neutropaenia related findings

Neutropaenic Incidence (12-months)	19.4%
WCC	2.5 (+/- 0.85)
Neutrophils ($X10^3$mc/L)	1.19 (+/- 0.3)
Onset post transplant (days)	95 (+/- 44)
Creatinine (µmol/l)	132 (+/- 40)
eGFR	53.2 (+/- 18.8)
CMV Co-infection	0%
BK Co-infection	14%
GCFS administered	38%
MMF modified	95%
Recovery (days)	11
Episodes of rejection	0%

Discussion: 21 recipients were identified as neutropaenic (19.4%) requiring admission. The average WCC was found to be 2.5. Mean neutrophil count was 1.19 $X10^3$mc/l. The average time of onset post transplant was 95 days. The average creatinine on discovery of neutropaenia was 132µmol/l, with and eGFR of 53. No recipients were identified as having CMV co-infection. 3 patients (14%) were treated for BK virus co-infection. 95% of recipients were subjected to MMF dose reductions (250 mg BD) during their admission. 1 patient had valganciclovir discontinued. The average time to recovery was 11 days. There were no episodes of rejection or mortality incidences to report. Further studies are required to evaluate.

P129 – poster withdrawn

P130

Red cell distribution width: a biomarker of ageing in renal transplant recipients?

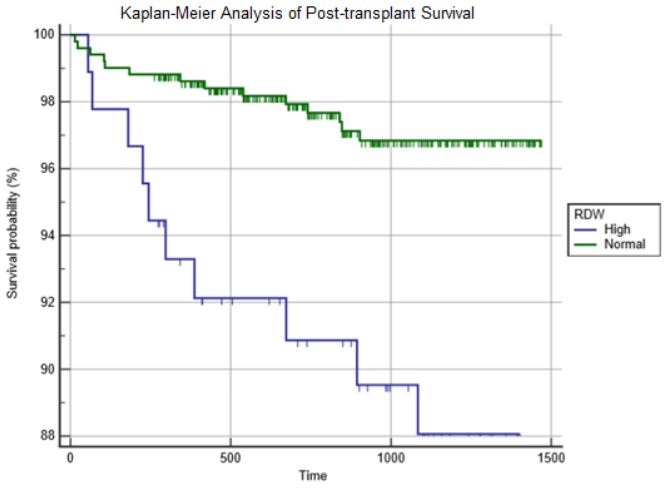
Sanya Patel, Sarah Hosgood, Dominic Summers, Michael Nicholson

Addenbrooke's Hospital, Cambridge, United Kingdom

Introduction: Red cell distribution width (RDW) forms part of the full blood count and represents erythrocyte anisocytosis. Recent literature associates RDW with biological ageing. Premature ageing is prevalent in renal transplant recipients, but there is no objective measure of its severity. We aimed to determine whether RDW could act as a biomarker of premature ageing in this cohort.

Methods: We retrospectively analysed 597 records of all renal transplant patients who had completed 6 month follow up between 2014-2018. Patients were divided by high or normal RDW levels as determined by the hospital laboratory at the time of transplantation (normal range 11.0-16.0%, no patients with low RDW). Primary outcome was survival time from transplant. Secondary outcome was survival by age and RDW. Statistical analysis was performed on MedCalc Statistical Software version 18.11 for log-rank tests and Cox's proportional hazards.

Results: High RDW was associated with reduced survival time compared to normal range RDW (3-year patient survival 88.1% vs 96.8% for high vs normal RDW, p=0.0003). The association of raised RDW and higher mortality remained present even after risk-adjustment for recipient age at time of transplant (HR 3.88 95% CI 1.7-8.7 p=0.001).



Conclusion: High RDW was associated with increased risk of all-cause mortality independent of recipient age. This is a potential biomarker of aging that may help guide selection of transplant recipients and future organ allocation.

P131

Infrared thermography: a potential non-invasive biomarker of early graft function

Dilan Dabare[1,2,3], James Hodson[2], Sashini Iddawela[2], Kevin Howell[3], Neena Kalia[4], Nicholas Inston[1]

[1]Queen Elizabeth Hospital, Birmingham, United Kingdom. [2]University of Birmingham, Birmingham, United Kingdom. [3]UCL Institute of Immunology and Transplantation, London, United Kingdom. [4]University of Birmingham, Birmingham, United Kingdom

Introduction: Currently, no functional imaging modality is used pre- or intra-operatively to assess transplanted kidney perfusion. Infrared thermography has the potential to objectively assess the effects of ischaemia-reperfusion injury (IRI) on cortical microcirculation during kidney transplantation. This preliminary study aimed to assess its prognostic value in predicting delayed graft function (DGF).

Methods: Images of the exposed surface of the kidney were captured using a FLIR E75 camera at seven timepoints (out of ice, after venous anastomosis, immediately before and after perfusion, and at 5, 10 and 15 minutes. The mean and standard deviation (heterogeneity) of temperature at each timepoint was compared between DGF and non-DGF organs using repeated-measures ANOVA. Values were then averaged across all timepoints, and predictive accuracy was assessed using ROC curves.

Results: Forty consecutive patients were recruited, of whom 16 (40%) developed DGF. Apart from higher cold ischaemia time in the DGF group (p=0.029), there were no other significant differences in donor or recipient factors. Mean temperature was similar in DGF and non-DGF kidneys over the seven timepoints (p=0.551), whilst heterogeneity was significantly higher in DGF (p=0.005). ROC curve analysis returned an AUC of 0.75 (p=0.008) for the predictive accuracy of heterogeneity of temperature, with respect to DGF. A cut-off of 1.15 returned positive and negative predictive values of 71% and 77%, respectively. Subgroup analysis found predictive accuracy of the heterogeneity of temperature to be greatest in DCD organs (AUC: 0.90, p=0.028).

Discussion: This study shows for the first time that heterogeneity of infrared thermal radiation may be a useful early biomarker for DGF. Differences in heterogeneity but not absolute temperature, may be explained by the 'no re-flow' phenomenon which creates areas of high and low capillary flow, as a result of IRI. Infrared thermography has the potential to provide non-invasive, real-time data to develop novel therapies and stratify patient management.

P132

Outcome of renal transplantation in Jehovah's Witnesses - a single centre experience

Isaac Kim, Ammar Al-Midani, Colin Forman, Reza Motallebzadeh, Bimbi Fernando, Neal Banga

Royal Free London NHS Foundation Trust, London, United Kingdom

Introduction: Kidney transplantation in Jehovah's Witnesses presents a significant challenge due to their religious objection to blood or blood product transfusions, leading to a small risk of death from uncontrollable haemorrhage. Despite this, transplantation remains the treatment of choice for patients with end-stage kidney disease due to the improved quality of life and life expectancy compared to dialysis. We present the outcomes from our centre.

Methods: All Jehovah's Witnesses who underwent kidney transplantation since the millennium were retrospectively identified and their electronic records reviewed.

Results: Nine Jehovah's Witnesses underwent transplantation between July 2006 and October 2018. Four of these grafts were from cadaveric donors, and five from living donors. All patients had pre-operative haemoglobin optimisation with erythropoiesis-stimulating agents. Iron and folic acid supplementation was not universal. Median recipient age was 36 (26-72) years. Median pre-operative haemoglobin was 131 (range 100-143) g/L. In the post-operative period, haemoglobin fell to a median nadir of 82 (range 48 – 116) g/L with a median decrease in haemoglobin of 42 (range 10-77) g/L. Two patients developed significant post-operative complications: primary non-function in one patient due to an uncertain cause, and bleeding requiring evacuation of haematoma in the second. One month post-transplant, median estimated glomerular filtration rate was 46 (range ^{2} and median haemoglobin was 99 (range 90 - 142) g/L. To date, death-censured graft survival is 88.9% with a median follow-up of 3036 (range 42 – 4508) days.

Discussion: This case series demonstrates that kidney transplantation can be safely performed in Jehovah's Witnesses. Pre-operative optimisation of anaemia, along with the use of cell salvage and recombinant clotting factors (when acceptable) are amongst the strategies that compensate for potential bleeding complications.

P133

It's not the number of arteries or ureters: it's what you do with them that counts

Laura Martin, Emma Aitken, John Asher

Queen Elizabeth University Hospital, Glasgow, United Kingdom

Introduction: Despite the confident assertion of anatomy textbooks that each kidney has a single artery, vein and ureter, transplant surgeons know kidneys do not follow those rules and in the past kidneys have been declined for abnormal anatomy. We aimed to determine whether our older colleagues were wise or merely over-cautious.

Methods: We reviewed data on renal arteries, ureters and transplant outcomes for transplants from 2012 to 2018 and examined the effects of multiple arteries or ureters on transplant function, graft survival and rates of ureteric stricture.

Results: Data was available for 819 adult renal transplants. 192 (23%) kidneys had two renal arteries and a further 29 (3.5%) had 3 or more. 13 (1.5%) had two ureters and one kidney 3 ureters. 27 patients developed ureteric strictures, of whom 11 required ureteric reimplantation. eGFR up to 5 years and graft survival were not affected by the number of arteries, nor were multiple arteries a risk factor for ureteric stricture, but there was a tendency to lower eGFR and graft survival when main stems were joined to form a single end or lower pole artery anastomosis to the inferior epigastric artery, which was also a possible independent risk factor for ureteric stricture ($p=0.056$). There were no ureteric strictures in transplants with more than one ureter. In the single ureter patients there was a tendency to increased stricture risk when implanting onto native ureter (1/4), an ileal conduit (1/11), a bladder with long-term suprapubic catheter drainage (1/3), or other small atrophic bladders (1/14). Normothermic regional perfusion was also an independent risk factor for ureteric stricture ($p=0.012$).

Discussion: In appropriately selected patients, neither multiple arteries nor multiple ureters should be a barrier to transplantation, but it should be noted this retrospective series may be biased by avoidance of duplex ureters for recipients with abnormal urinary drainage.

P134

Single transplants of kidneys with Remuzzi score >5 yield acceptable results

Emma Aitken[1], Karen Stevenson[1], Shana Coley[2], David Kipgen[1], David Kingsmore[1], John Asher[1]

[1]Queen Elizabeth University Hospital, Glasgow, United Kingdom. [2]University of Glasgow, Glasgow, United Kingdom

Introduction: The Remuzzi score can be used to provide information on chronic damage to a kidney to decide on suitability for transplant. One UK transplant centre with access to pre-implantation biopsies has a protocol to transplant kidneys with Remuzzi score 5-6 only as dual transplants, and to discard kidneys with a score of 7. We aimed to evaluate our outcomes from single kidneys with higher Remuzzi scores.

Methods: We reviewed a series of 235 deceased donor transplants with Remuzzi scores performed retrospectively on post-implantation biopsies and compared the outcomes of kidneys with scores 0-4 and those scored at 5-7. The outcome measures reviewed were the incidence of delayed graft function, early graft losses, graft survival at 1 and 3 years and eGFR at 3 months, 1 year and 3 years post-transplant.

Results: 8 of 235 kidneys had Remuzzi score of 5-7 and were all transplanted as single kidneys. They tended to come from older donors (mean age 62.1 vs 50.9) and were transplanted into older recipients (61.1 vs 50.4). There was 1 primary non-function in the high Remuzzi score group and 3 early graft losses in the standard group (p=0.130). There was a tendency to higher rate of DGF in the high Remuzzi group but this was not statistically significant when adjusted for cold ischaemic time and donor type.

The eGFR was lower at each of 3 months, 1 year and 3 years, and the difference was statistically significant at 1 (44.0 vs 57.1, p=0.025) and 3 years (37.1 vs 54.8, p=0.025) even when adjusted for cold ischaemic time and donor type. There were no further graft losses in the high Remuzzi score group in the first 3 years.

Conclusion: Acceptable results can be achieved when transplanting single kidneys with high Remuzzi scores into age matched patients.

P135

Reasons for transplant offer decline and patient outcomes: a single centre experience

Chi Hoi Lee[1], Emma Aitken[2], Ros O'Sullivan[2], Lynne Thomsom[2], Marc Clancy[2], John Asher[2]

[1]University of Glasgow, Glasgow, United Kingdom. [2]Queen Elizabeth University Hospital, Glasgow, United Kingdom

Introduction: To realise the potential of the Taking Organ Transplantation to 2020 strategy without compromising outcomes requires an intelligent approach to organ utilisation. We sought to benchmark our unit by reviewing recent experience.

Methods: We reviewed all kidney offers prospectively recorded by our recipient coordinators over a two-year period from April 2016 to March 2018 with at least 6 month follow up on all patients.

Results: We received 637 formal offers, of which 313 were for named patients, and 119 DCD screening calls. The accepted offers lead to 219 transplants. Reasons for decline included risk of blood borne viruses (36), other infections (34), malignancy risk (33), poor renal function (47), retrieval findings (56), multifactorial (54) and recipient factors (61). There were also 61 non-proceeding DCD. 165 of the 313 named-patient offers proceeded to a transplant. Of the other 148 patients, 58 received a kidney transplant in the follow-up period until 1st October 2018. Median wait time of those who did receive a transplant was 183 days. Many patients received multiple offers: Only 24 (16%) received no further offer, 72 (49%) of patients received one further offer, 45 (30%) received two further offers, 5 (3%) received three more offers) and two received more than 3 offers (one patient received 7 offers during the follow up period). Median time to first offer: 134 days.

Discussion: Reasons for kidney offer decline were varied, and it is notable that most of the declines were for reasons not captured in the UNOS ECD definition or the various published kidney donor risk indices. With the long-term trend to older donors and donors with comorbidity, it is important to remember that many patients will receive another timely offer when a potentially high risk offer is declined.

P136

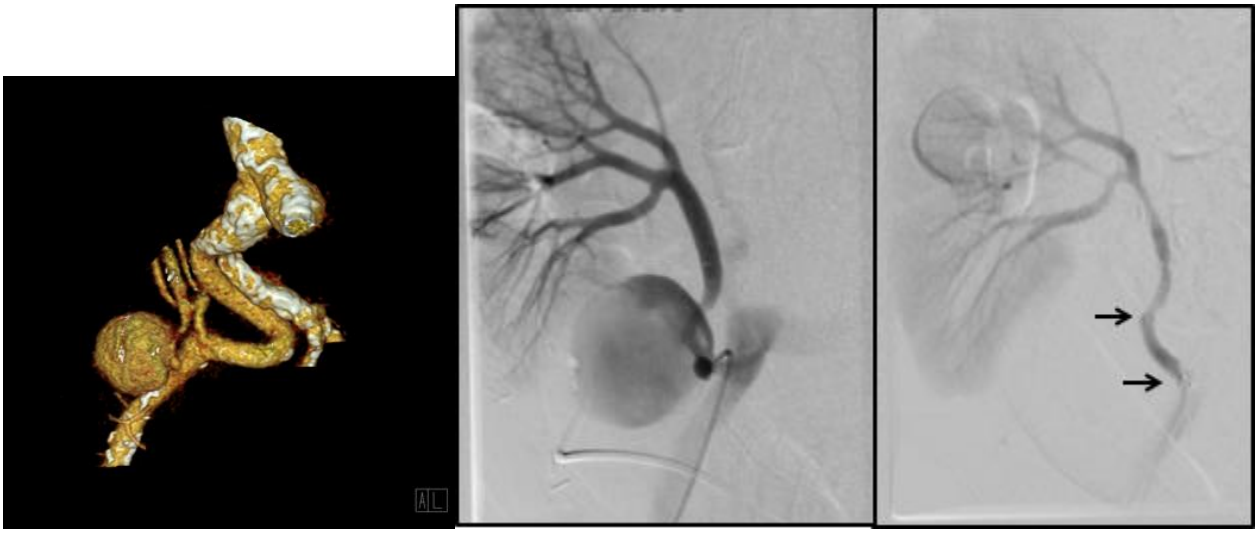
Successful treatment of a transplant renal artery pseudoaneurysm: a case report

Roberta Brambilla, Olatubosun Owoseni, Sarah Heap, Robert Morgan, Abbas Ghazanfar

St George's Hospital, London, United Kingdom

Case report: A 55-year-old gentleman with end-stage renal failure secondary to membranous nephropathy underwent a deceased donor kidney transplant into the right iliac fossa after 3 years of hemodialysis. The donor was 14 years younger and had good renal function. He had, however, a known history of IV drug abuse, although his virology screen was negative. The transplanted kidney had 2 renal arteries on 1 patch. Surgery was uncomplicated and the patient was discharged on the fourth postoperative day with gradual improvement of his renal function. Three weeks after transplantation he suffered from aggravating pain into the right iliac fossa and right groin associated with spikes in temperature. Blood tests revealed high inflammatory markers and an ultrasound scan showed a suspicion of renal artery pseudo-aneurysm. An urgent CT angiogram confirmed the presence of a large (35 mm) pseudoaneurysm arising from the main transplanted renal artery, its origin a few mm distal to the arterial anastomosis (fig.1). The patient underwent an angiogram via a femoral percutaneous approach and the pseudoaneurysm was successfully excluded with a covered stent into the main transplanted renal artery (fig.2). His symptoms improved dramatically straight after the procedure and his inflammatory markers declined. Blood cultures were negative. He was treated with IV antibiotics from admission and antifungal treatment was added because of a possible mycotic origin. The patient was discharged on oral fluconazole and treatment dose of co-trimoxazole for 6 weeks. Follow up at 1 month with USS showed good perfusion of the kidney with complete exclusion of the pseudoaneurysm.

Discussion: Pseudoaneurysm formation after kidney transplantation is a rare but potentially very serious complication that most often leads to graft loss. Furthermore, it is more frequently described as anastomotic. We report a quite unusual presentation of a pseudoaneurysm that was successfully excluded with endovascular technique.



P137

Application of machine learning to predict likelihood of a further kidney offer when an initial offer is declined

Francis Lee, Lynne Thomson, Ros O'Sullivan, Karen Stevenson, John Asher

Queen Elizabeth University Hospital, Glasgow, United Kingdom

Introduction: Even with optimal utilisation it remains necessary to decline offers for certain patients. Where there is dubiety about the suitability of an offered kidney, the likelihood of another future offer is a factor in decisions around acceptance. We describe an application of machine learning to help predict a future kidney offer.

Methods: We examined named patient kidney offers declined or non-utilised for donor-related reasons from April 2016 to April 2018 and used supervised machine learning with a Naïve Bayes Classifier algorithm to classify the potential recipients into those who would not subsequently receive a transplant within 100 days or 6 months of the declined offer. The data were split into training and validation sets in a 70:30 ratio, and six different models were developed.

Results: There were 394 named patient offers which did not lead to a transplant, of which 246 (54.2%) were declined or not utilised for donor-related reasons. The best performing Naïve Bayes Classifier model was based on age, blood group, cRF, total waiting time and waiting time since last reactivated from suspension. This model achieved positive predicted value (PPV) 75.0% and negative predictive value (NPV) 48.0% in the validation dataset for predicting no transplant within 100 days. A model using the same set of predictor variables achieved PPV 62.5% and NPV 60.1% in the validation dataset for predicting no transplant within 6 months.

Discussion: Machine learning can be used to develop a basic algorithm, using information available at the time of kidney offer, to identify with reasonable accuracy the patients at higher risk of not receiving a timely transplant after initial offer decline. A more accurate model may be possible by incorporating HLA frequency data, but would require changes in the information provided with kidney offers. These models would be useful in circumstances of considering a borderline offer.

P138

A dedicated one stop transplant UTI clinic – the future

Fiona McCaig, Asia Imedi, Mark Harber, Stephen Mepham, Vibash Mishra, Neal Banga

The Royal Free Hospital, London, United Kingdom

Introduction: UTI is one of the most frequent complications after renal transplantation and remains a significant cause of recipient morbidity. Offering an easily accessible, one stop UTI clinic improves clinical outcomes and the patient journey. Categorising infections into asymptomatic bacteriuria, recurrent UTIs, persistent UTIs and upper tract infections/urosepsis (systemic upset, pyrexia, elevated CRP) facilitates targeted investigations and tailored treatments. Complex patients are discussed at a multidisciplinary level involving a transplant urologist, nephrologist, microbiologist and specialist nurse. The purpose is to standardise management and deliver excellent patient care.

Methods: Our institution has recently set up a dedicated one stop transplant UTI clinic. Referred patients are reviewed by a consultant transplant urologist alongside a clinical nurse specialist. First-line urological investigations including urinanlysis, uroflowmetry and bladder residuals are performed. Patient symptom and quality of life questionnaires are completed. Referrals are accepted from any members of the transplant team. Patients with infections pre-transplant are also accepted, as part of their work up for transplantation.

Results: Precipitating causes of infection are identified. Treatments include conservative management (adequate hydration, D mannose, topical oestrogen, double voiding), low dose antibiotic prophylaxis, self catheterisation, bladder outflow surgery, hyaluronic bladder instillations, deflux injection (for reflux), treatment of calculi/strictures and consideration of native nephrectomy. On occasion immunosuppression can be reduced.

Discussion: Renal transplant recipients with UTIs often bounce between specialities including nephrology, urology, transplant surgery, general practice and the emergency department. Having a dedicated transplant UTI clinic ensures standardised management and aims to reduce emergency department urosepsis admissions and suboptimal antibiotic prescribing from external health care professionals. Ideally every transplant unit could offer a dedicated one stop clinic for these complex patients. Treatment strategies aim to minimise the impact of UTIs, prevent upper tract scarring and improve quality of life.
[IA1]Do we add evidence here? We can add it later in the poster.

P139

Paediatric renal transplantation-outcomes of renal allografts requiring explantation and re-implantation

Muhammad Arslan Khurram[1,2], Helen Jones[2], Nick Ware[2], Grainne Walsh[2], Jonathon Olsburgh[1,2], Geoff Koffman[1,2], Francis Calder[1,2], Nizam Mamode[1,2], Nicos Kessaris[1,2]

[1]Department of Transplantation, Guy's and St. Thomas NHS Foundation Trust, London, United Kingdom. [2]Paediatric nephrology and transplantation, Evelina London Childrens Hospital, London, United Kingdom

Introduction: Challenges faced in paediatric renal transplantation can be different from the adult population. This can be due to the small recipient size and circulating volumes, thrombophilia, multiple medical/surgical comorbidities and challenging vascular anatomy. Vascular complications are rare but when they do occur, majority of the allografts are lost. We present our outcomes of transplants requiring explantation for vascular complication followed by reimplantation after backbench flushing of allografts with perfusion fluid in paediatric patients.

Methods: Retrospective analysis of all paediatric transplants in a single centre over a 5 year period (Jan 2013- Dec 2017)

Results: 85 (61 live donors, 2 altruistic, 22 deceased donor) paediatric renal transplants were performed in a single centre over a 5 year period. Four patients (all living related transplants), required explantation, back bench flushing with perfusion fluid followed by reimplantation. The average follow up is 31 months with mean GFR of 50.7ml/min/1.73m2. Patient survival was 100%, graft survival was 80% with 50% delayed graft function rates. The details of the individual cases as per table.

	Case 1	Case 2	Case 3	Case 4
Age, weight	16y, 88Kg	15y, 49Kg	4y, 15.5Kg	9y, 25Kg
Aetiology	Reflux nephropathy	VUR	PU valves	Nephronophthisis
Renal replacement	Pre-emptive	Peritoneal dialysis	Pre-emptive	Peritoneal dialysis
Site	Iliac vessels	Iliac vessels	Intra-abdominal-Aorta + IVC	Iliac vessels
Donor	Live related	Live related	Live related	Live related
Arterial anastomosis	1 Renal Artery-EIA	1 Renal Artery-EIA	2 Renal arteries-aorta	1 Renal artery-CIA
Venous anastomosis	1 Renal Vein-EIV	1 Renal Vein-EIV	1 Renal vein-IVC	1 Renal vein-CIV
Primary non-function	No	No	No	No
Delayed graft function	Yes	No	Yes	No
Thrombophilia screen	Positive	Negative	Positive	Negative – but has spontaneous Central retinal vein thrombosis
Day of re-implantation	During initial surgery	During initial surgery	During initial surgery	Day 12
Operative finding	Initially well perfused kidney. Thrombus in EIA and renal artery. 1st re-anastomosis. No flow on wound closure – 2nd re-anastomosis.	Initially well perfused. Doppler suggested proximal renal artery thrombus. Re-anastomosis.	Not perfused. Arterial anastomosis re-done after insitu perfusion (side branch of renal vein as vent) - no improvement. 2nd revision of both anastomoses.	Necrosed transplant ureter. Arterial anastomosis dehiscence-fresh bleeding. Re-anastomosis.
Visible clot	Yes	Yes (clinically and on US)	No	No
Intra/Post op heparin	Yes	Yes	Yes	No
Significant complications	Ischaemic limb requiring femoral embolectomy and fasciotomies, ipsilateral lower limb paresis	-	Left hemicolectomy due to ischaemia	Perinephric haematoma
Current eGFR	31ml/min/1.73m^2	54ml/min/1.73m^2	55ml/min/1.73m^2	63ml/min/1.73m^2
Follow up period	11 months	15 months	37 months	62 months

Discussion: Early recognition of acute vascular complications and keeping a low threshold to re-explore complex paediatric patients leads to good patient and allograft outcomes. Usually these patients require multidisciplinary input as major medical/surgical complications are common.

P140

Early graft loss post kidney transplantation

Sabry Abounzoha, Adli Idrees, Adham El Bakry, Sanjay Mehra, Ajay Sharma, Dan Ridgway, Abdul Hammad. Abdulwhab Elmghrbee.

Royal Liverpool University Hospital, Liverpool, United Kingdom

Introduction: renal transplantation is the treatment of choice of end stage renal disease. However, early graft loss is very painful experience for the patients and the health care specialists. The aim of this study was to investigate the incidence and the causes of early graft loss in 90 days post transplantation.

Methods: a retrospective and single centre study of 395 adult kidney transplantation from deceased and living kidney donors was performed between April 2010 and March 2014 at Royal Liverpool University hospital.

Results: Of 395 renal transplantation 3 % (n=12/395) had experienced early graft loss during 90 days after transplantation. Factors associated with early graft loss were identified; 58.3% of grafts (n=7/12) lost secondary to renal vein thrombosis and 41.7% (n=5/12) of graft loss was non-renal vein thrombosis related. Further analysis of renal vein thrombosis related graft loss 33.3% (n=4/12) were due to coagulation problems (thrombophilia, factor V deficiency and hyperhomocysteinemia) and 25% (n=3/12) were due to renal vein thrombosis. While for non-renal vein thrombosis, 16.7% (n=2/12) of graft loss were due to primary non-functioning graft. Infectious complications, pseudo-aneurysm, and infarcted graft after paediatric en-bloc transplant, all had similar contributions which were 8.3% for each cause.

Conclusion: During the 4-year study period, the incidence of early graft loss in our hospital was 3%.The most common cause of early graft loss in our centre was transplant nephrectomy due to renal vein thrombosis. Post-transplant infection, pseudoaneurysm, primary non-function graft, and infarction of paediatric en bloc transplantation are associated with early graft loss.

P141

One stop transplant clinic removal of renal transplant stents using Isiris coloplast single use cystoscopes

Shraddha Shetty, Clare Whittaker, Mohan Prasad, Prashanth Chowdary, Olga Manolitsi, Benjamin Lindsey, Ismail Mohamed, Rajesh Sivaprakasam, Cinzia Sammartino, Muhammad Khurram

The Royal London Hospital, London, United Kingdom

Introduction: JJ stents are routinely placed to bridge the uretero-cystic anastomosis during renal transplant. If the stent removal procedure can be moved from the day-case theatre to the clinic, while being performed in a safe and sterile manner, it would potentially translate to better utilisation of theatre resources for other procedures. The Isiris disposable scope provides such an opportunity, and its ease of use makes it possible to train advanced nurse practitioners to undertake the activity.

Methods: We studied the feasibility and safety of application of the Isiris scope in removal of renal graft stents in the Transplant Clinic from June to November 2018, and recorded the failure and post-procedure complication rate. This was then compared to the complication rate seen in an equal number of theatre removal of stents from December 2017 to May 2018.

Results: A total of 72 stent procedures were attempted in the Clinic over 6 months. There were 4 failures, with no sex predilection, necessitating removal in the theatre, 2 of which required Urological assistance. Post-procedure complications included one case each of haematuria and graft pyelonephritis, bringing the overall complication rate to 8.3%, including failures. These results were then compared to the complication rate seen in standard flexible cystoscopic stent removal which amounted to 6.8%, including 3 cases of haematuria and 2 cases of UTI. Application of the one tailed Z test showed a p value of 0.31 on comparison of complication rates in the two cohorts and was found to be not significant.

Discussion: Our initial experience shows that the Isiris scope removal of JJ stents is feasible and safe. By training other members of the multidisciplinary team to perform the procedure safely, appropriate use of knowledge and expertise could foster better collaborative effort, streamline flow in the patient pathway and improve patient satisfaction by reducing waiting time.

P142

Novel stent removal technology in kidney transplantation

Daniel Ness, Jonathon Olsburgh, Rhana Zakri, Ade Adiki

Guy's Hospital, London, United Kingdom

Introduction: Ureteric stents should be routinely used in kidney transplantation to reduce major urological complications. Standard practice is stent removal with flexible cystoscopy six weeks post-transplant. Increased rates of urinary tract infection (UTI) are associated with longer time transplant stents remain. Magnetic stents and Isiris single use technology allow outpatient portable removal. We aimed to investigate if the use of these technologies are feasible in kidney transplant patients and whether removal times could be reduced and outcomes improved.

Methods: A prospective study of transplant stent removal in 181 patients who underwent either kidney transplant (KT) or simultaneous pancreas kidney transplantation (SPK) between 08/11/2017 and 12/08/2018. The type of stent, method of removal, location, time to removal and any procedure complications were recorded. 21 female patients had a 15cm magnetic stent inserted. All other patients had a standard 16cm stent.

Results: 185 stent removal procedures were performed for 179 patients. 6 (3.3%) patients required two procedures to achieve stent removal. 47 (25.4%) removals used Isiris single use technology; performed in transplant outpatient clinic or occasionally on inpatient wards. 3 (6.5%) attempted Isiris removals required standard outpatient flexible cystoscopy to remove the stent. 107 (57.8%) used standard flexible cystoscopy. 10 (5.4%) stent removals were done in theatre under general anaesthetic or sedation. 14/21 (67%) magnetic stents were removed in transplant outpatient clinic. 4/21 (19%) magnet stents fell out early; 3/21 (6.5%) magnet stents required Isiris for removal. The mean time to stent removal (TtR) for all patients was 43.5 days (range 4 to 184 days). Mean Isiris TtR was 44 days. Mean magnet stent TtR was 29 days.

Discussion: Isiris and magnetic stent technologies are feasible after kidney transplantation. This has allowed for stent removal before discharge or during outpatient clinics. Both technologies have potential to reduce administration time, patient hospital visits and associated costs.

P143

Multidisciplinary (MDT) transplant UTI service; challenging the stalemate

James Jen Yao Chong, Adefunke Adiki, Daniel Ness, Jonathon Olsburgh, Rhana H Zakri

Guy's Hospital, London, United Kingdom

Introduction: Symptomatic UTIs cause detrimental effects on long-term graft function. Immunosuppression coupled with underlying renal/urological abnormality makes treating these patients complex, often multi-resistant, and difficult to eradicate. We present our initial experience of implementing a MDT transplant UTI service.

Methods: Prospective data was collated (July 2017-October 2018). Transplant patients with recurrent UTIs were eligible. Patients were seen as per transplant follow-up regime thus not requiring additional clinic visits. All new patients answered a quality of life (QOL) questionnaire, had urine dip/observations/bloods and post-void bladder scan. They were seen first for UTI 'care bundle' advice from our transplant nurse specialist. The number of subsequent UTIs, impact on graft function and QOL data was analysed.

Results: 33 MDT clinics were held during the study period with interval MDT meetings to discuss complex cases. 116 new transplant patients were seen and followed up on 68 occasions. 21 appointments were lost through non-attendance. 15/116 were discharged after first visit. Median number of UTIs prior to presentation was 2, 71% female predominance and mean age 50Yrs. Cause of end stage renal failure: intrinsic renal disease 27%, diabetic nephropathy 22%, APKD 15%, VUR 15%, congenital urological disease 11%. Median time from transplantation to initial assessment was 73 months (range: 6-469). 41% were referred within 5 years post-transplant, 17% referred within 2 years. 34/116 have completed 1-year follow-up with a mean improvement in graft function of 34µmol/l. With referral into clinic, each new patient generated £383 and each follow-up £183; a total of £56872 income generated.

Discussion: With antimicrobial resistance predicted to become the leading cause of death by 2050, there is a pressing need to identify risk factors, intervene early and impose antibiotic stewardship in these patients. Establishment of a transplant UTI clinic provides a pathway of specialist targeted care and facilitates investigations that accurately identify infectious foci early.

P144

Renal cell carcinoma in kidney allografts: a single centre experience

Daniel Ness, Rhana Zakri, Tim O'Brien, Giles Rottenberg, Chemine Horsfield, Michelle Webb, Nizam Mamode, Geoff Koffman, Jonathon Olsburgh

Guy's Hospital, London, United Kingdom

Introduction: Aim is to review the management of Renal Cell Carcinoma (RCC) in transplant kidneys over 24 years in a high-volume integrated transplant-urology center.

Methods: Retrospective review of 3407 adult kidney transplants performed at our center between 1994-2018. Data was collected on donor characteristics, imaging, histology, treatment and outcomes.

Results: 19 patients with RCC in the renal allograft were identified (deceased donor 13; living donor 6); incidence 0.5%. Median time between transplant and diagnosis was 14.5 years (1 month -25 years). Histology: 8 papillary, 7 clear cell, 3 cystic RCC. Seven were diagnosed incidentally (2 following percutaneous biopsy; five following transplant nephrectomy for a non-functioning graft). One patient had both RCC and rejection on transplant nephrectomy presenting with haematuria and a failing graft. Twelve cases were incidental on imaging including one patient with history of previously resected native kidney RCC and one patient with a muscle-invasive bladder cancer. 2 multifocal tumours (1.5cm-6cm) both treated by transplant nephrectomy. RFA was used in one patient with multiple co-morbidities. Another patient with multiple co-morbidity was managed by immune-suppression switch to Sirolimus. Five patients with uni-focal tumours (1.5-4cm) underwent partial nephrectomy all with clear margins, preserved baseline renal function and no major (> Clavien 3) complications. 6 are alive with functioning grafts; 3 are alive after transplant nephrectomy, of whom two have been re-transplanted. 4 died with functioning grafts; 4 died on dialysis but there were no RCC-related deaths with median follow up of 5 years (range 4 months to 17 years).

Discussion: Partial nephrectomy (PN) is the ideal treatment in a functioning renal transplant. Our PN technique has evolved to zero ischemia zero transfusion, maintaining baseline function. RFA was used in patients with co-morbidity. Transplant nephrectomy should be reserved for large tumours or patients with failing grafts being considered for re-transplantation.

P145

Intraoperative fluid volume administration during paediatric live donor renal transplantation

Noah Howes[1], Jan Dudley[1], Carol Inward[1], Shakeeb Khan[2], Sam Turner[2]

[1]Bristol Children's Hospital, Bristol, United Kingdom. [2]Southmead Hospital, Bristol, United Kingdom

Introduction: There is wide variation in intraoperative fluid administration practices nationally, with centres thought to use from 30-200mL/kg. After careful scrutiny of local practices, a review found that the average intraoperative fluid delivery at the time was 30-50mL/kg. Our review led us to increase the volume of fluid given to from 50-100mL/kg. Our aim was to assess the current local practice of intraoperative fluid administration of fluid during paediatric live donor renal transplantation compared to previous practice.

Methods: A retrospective sequential case series using data from our local transplant database and extracted from patient notes. Data were extracted from notes using a pro-forma and entered into a Microsoft excel spreadsheet.

Results: Seven patients underwent live donor transplant in Bristol Children's hospital from 2016-2018, with a mean age of 8 years and 6 months. Intraoperative fluids used were: saline, Plasma-lyte 148, and packed red cells. The median volume of fluid administered was 94.3mL/kg (range: 66.4 - 117.6mL/kg), or 21mL/kg/hr (range: 13.3 – 29.4) with total fluid used varying between 1652 – 3000mL. Choice of fluid changed from saline to Plasma-lyte 148 over time, this was in-line with local guidelines. Packed red cells were only given in two patients. Over time there was a slight downward trend in volume given from 117.6mL/kg to 74.5mL/kg.

Conclusion: Our data show an increase in fluid volume used since the 2015 review and from 2016 - 2018 we have performed seven safe live donor transplants with these guidelines in place. This review serves as a baseline enquiry. The next step in this project will be to review practice nationally with a future aim to understand the optimum intraoperative fluid volume during paediatric live donor renal transplants.

P146

Fontan procedure, Hepatocellular carcinoma and liver disease as new challenges for hepatology and liver transplantation

Rebeca Sanabria-Mateos[1], Abid Suddle[1], Miriam Cortes-Cerisuelo[2], Sergio Assia-Zamora[3], Nigel Heaton[3]

[1]Kings College Hospital, London, United Kingdom. [2]King´s College Hospital, London, United Kingdom. [3]King´s College Hospital, London, United Kingdom

Introduction: Fontan procedure has dramatically improved the survival of children born with single ventricle physiology. Chronic liver disease occurring in long term survivors of this procedure is increasingly recognised, although the patho-physiology is not fully understood. Moreover, Hepatocellular carcinoma (HCC) is increasingly being recognised in long-term survivors. Late diagnosis is associated with a poor prognosis.

Methods: Studies reporting HCC in patients after Fontan procedure were searched for on Medline, Cochrane Library and PubMed up to April 2018, matching the terms “hepatocellular carcinoma”, “liver nodules”, “Fontan procedure”.

Results: From the search, 18 case reports, one review and two retrospective studies identified 38 patients with Fontan and HCC. Mean age at the first Fontan procedure was 7.1 years (range: 0.58-21), mean age at diagnosis of HCC was 29.8 years (range 12-49), and mean interval from the first Fontan procedure to diagnosis of HCC was 21 years (range 6-34). The mean central venous pressure was 19 mmHg (range 13-35). Diagnosis of HCC was incidental in 13 cases. Two or more nodules were reported in 9 cases; of these, 2 had concomitant benign lesions. Treatment was documented in 29 cases. Liver resection was the treatment of choice in 5 cases. Loco-regional therapies were used in 16 patients; in 3 cases as bridging therapy whilst on the waiting list for combined liver and heart transplantation.

Discussion: The natural history of Fontan associated liver disease and HCC risk is not well defined and is multifactorial. Medical and surgical therapies to prevent progressive liver damage, resulting from the paradoxical systemic hypertension and pulmonary hypotension that occurs after the Fontan procedure, are key. Surveillance/Screening for HCC should be considered for long-term Fontan survivors as HCC presents after 20 years; Treatment strategies including loco-regional therapy and combined heart/liver transplantation have yet to be defined.

P147

Staggered dual kidney transplant: Patient benefit and organ utilisation without wastage in a difficult logistic situation

Clodagh Mangan [1], Vishwanath Siddagangaiah[2], Ahmed Hassan[2], Rajinder Singh [2], David van Dellen [2,3], Titus Augustine [4,2]

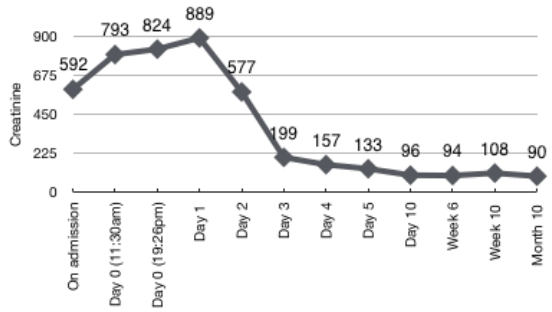
[1]Manchester Royal Infirmary, Manchester, United Kingdom. [2]Manchester Royal Infirmary, Manchester, United Kingdom. [3]University of Manchester, Manchester, United Kingdom. [4]University of Manchester, Manchester, United Kingdom

Introduction: Dual kidney transplantation (DKT) allows simultaneous implantation of both organs from a donor into a single recipient, to increase nephron mass and potentially improve overall transplant function. Here we present a unique case of a dual renal transplant with implantation staggered over 12 hours.

Methods and results: Both standard criteria kidneys from a donor following brain death were accepted by our unit. Due to logistical delays and long cold ischaemic time (CIT), both kidneys were placed on a hypothermic perfusion pump. The first patient proceeded with the transplant following discussion of the risks of increased CIT. While she was in recovery the second recipient refused the paired kidney. That kidney was then offered to the first patient as a 'staggered dual transplant' to augment graft function and to avoid organ wastage, albeit with increased surgical and anaesthetic risk. Further informed consent was taken and she was transplanted with the second kidney 7 hours later. The recipient made an excellent recovery with good symmetrical kidney function on post-operative nuclear medicine renogram.

Donor factors	
Age	43yr
BMI	38.7
Sex	Male
Cause of death	Intracranial thrombosis
Co-morbidities	Nil
1st renal transplant	
Knife to skin	04:14am
Total ischaemic time	43 hours
2nd renal transplant	
Knife to skin	15:00pm
Total ischaemic time	52 hours

Discussion: DKT has the ability to optimise graft function in extended criteria grafts However, it is a major operation with potentially more morbidity than single organ transplantation. In this unique situation, the implications of a further surgical procedure within 7 hours on the recipient and potential effects on the primary graft were considered. An assessment of the patient's capacity to consent so soon after the initial operation and anaesthesia was taken in to account, and the patient made a decision to return to theatre after consultation with a number of consultant members of the multidisciplinary team.



P148

Simultaneous liver-kidney transplantation: a single centre experience

Matthew Gittus[1], Madeleine A. Vernon[2], Hazel Richards[3], Joanna Moore[3]

[1]Leeds Teaching Hospital Trust, Leeds, United Kingdom. [2]Leeds Renal Transplant Unit, Leeds, United Kingdom. [3]Leeds Liver Transplant Unit, Leeds, United Kingdom

Introduction: Post-liver transplant outcomes are significantly influenced by renal impairment. Simultaneous Liver Kidney transplantation (SLKT) was introduced as a means to decrease morbidity and mortality. There is published data from the United States regarding outcomes which is lacking for the UK population. We looked at 10-year liver and kidney outcome data from our large UK transplant centre and compared this to national data.

Methods: A retrospective analysis was performed of SLKT recipients in our centre over 10 years (01/04/08-31/03/18) focusing on clinical outcomes compared to the national data from the UK Transplant Registry. Inclusion criteria were aged 17 or over at time of transplant; received both liver and kidney grafts and an elective procedure. Primary clinical outcomes included patient survival, graft survival, eGFR and complications.

Results: 19 patients were included (9 males and 10 females; median age 54 years) from our centre compared to 97 patients nationally in the period. SLKT indications were varied but similar across the groups (p 0.64). There is no difference in median time from listing to transplant in our centre compared to others (275 days (IQR 77-453) v 269 days (IQR 74-597)). Of patients receiving first grafts there was no difference in survival (table 1) or graft status (table 2). The cause of death in three patients at our centre was infection.

Table 1. Patient survival following SLKT in LTHT and the rest of the UK

Patient Survival	0 days	30 days	90 days	1 year	5 years
LTHT (N, alive)	15	15	13	9	5
LTHT (N, total)	15	15	14	11	6
LTHT (%, alive)	100%	100%	92.9%	81.2%	83.3%
Rest of the UK	100%	-	97.6%	97.6%	89.8%

Table 2. Transplant graft status

	LTHT N (%)	Rest of UK N (%)	National N (%)
Total Patients	19 (16.4)	97 (83.6)	116 (100)
Liver and kidney graft status			
Patient alive, both organs functioning	15 (78.9)	78 (80.4)	91 (78.4)
Liver functioning but kidney failed	1 (5.3)	2 (2.1)	3 (2.6)
Liver failed but kidney functioning	0 (0.0)	1 (1.0)	1 (0.9)
Both organs failed	0 (0.0)	4 (4.1)	4 (3.4)
Patient died with a functioning kidney but failed liver transplant	0 (0.0)	1 (1.0)	1 (0.9)
Patient died with a functioning liver but failed kidney transplant	2 (10.5)	2 (2.1)	4 (3.4)
Patient died with both organs functioning	1 (5.3)	3 (3.1)	4 (3.4)
Patient died with a functioning liver but unknown kidney status	0 (0.0)	0 (0.0)	0 (0.0)
Kidney functioning but unknown liver function	0 (0.0)	1 (1.0)	1 (0.9)
Unknown graft status for both organs	0 (0.0)	5 (5.2)	5 (4.4)
Liver graft status			
Functioning	16 (84.2)	80 (82.5)	96 (82.8)
Failed	0 (0.0)	6 (6.2)	6 (5.2)
Patient died with functioning graft	3 (15.8)	5 (5.2)	8 (6.9)
Unknown graft status	0 (0.0)	6 (6.2)	6 (5.2)
Kidney graft status			
Functioning	15 (78.9)	80 (82.5)	95 (81.9)
Failed	3 (15.8)	8 (8.2)	11 (9.5)
Patient died with functioning graft	1 (5.3)	4 (4.1)	5 (4.3)
Patient died with an unknown graft status	0 (0)	0 (0.0)	0 (0.0)
Unknown graft status	0 (0)	5 (5.2)	5 (4.3)

Discussion: SLK transplantation is a complex operation. Our centre has excellent outcomes comparable to national and published U.S. data (Wadei et al, 2014).

P149

A comparison of morbidity and mortality prediction tools following deceased donor liver transplantation in the intensive care unit in a resource poor environment – a single center experience

Sachintha Hewage[1,2], Bhagya Gunatilleke[2], Niranjala Wickramasinghe[2], Rohan Siriwardene[2], Ruwan Dissanayake[2], Madunil Niriella[2], Anuradha Dassanayake[2], Sandun Bulathsinhala[2], Nalaka Gunawansa[2]

[1]Kings College Hospital, Denmark Hill,, London, United Kingdom. [2]North Colombo Liver Transplant Service, University of Kelaniya, Colombo, Sri Lanka

Introduction: Various scoring systems exist to predict morbidity and mortality following liver transplantation. There is lack of evidence regarding their accuracy with regard to Sri Lankan population. This study was designed in view of applying multiple risk stratification scores to the same group of patients and compare their ability to accurately predict morbidity and mortality.

Methods: We retrospectively reviewed 11 patients who underwent deceased donor liver transplantations over 15 months. The scoring systems Model for End staged Liver Disease model including sodium (MELD Na)[1], Acute Physiology and Chronic Health Evaluation (APACHE ii)[2], Sequential Organ Failure Assessment Score (SOFA)[3] and Child- Turcotte-Pugh score(CTP)[2] was applied to every patient on admission to intensive care unit. Descriptive statistics and non parametric tests were used to determine associations since sample size was small.

Results: The incidence of 30 day survival was 81%. Statistically significant cutoff values for prediction were taken as MELDNa 29, APACHE ii 28, SOFA 14 and CTP 9.

	Maximum score	Minimum score	Mean score	Sensitivity	Specificity	Positive predictive value	Negative predictive value
MELD Na	35	19	287	100%	88%	66%	100%
APACHE ii	33	4	19	100%	88%	66%	100%
SOFA	15	5	10.6	100%	100%	100%	100%
CTP score	12	8	9	0%	77%	0%	77%

Conclusion: Various scoring systems showed different predictive accuracies. Commonly used MELD Na score seems to be a useful marker as a predictor of mortality as compared to other complex scores which require large number of parameters. A unique model is needed in order to achieve further improvement of prognostic accuracy.

P150

Long term co-morbidity profile and outcomes of obese recipients undergoing liver transplantation – winning a battle, losing the war

Rebeca Sanabria-Mateos, Michail Papoulas, Elissaios Kontis, Sergio Assia-Zamora, Miriam Cortes-Cerisuleo, Wayel Jassem, Hector Vilca-Melendez, Parthi Srinivasan, Andreas Prachalias, Abid Suddle, Nigel Heaton, Krishna Menon

King´s College Hospital, London, United Kingdom

Introduction: Obesity is affecting more than 60% of adults in UK, contributing to an increasing prevalence of Non-alcoholic fatty liver disease (NAFLD). Our aim was to compare the co-morbidity profile pre and post liver transplantation among the obese patients.

Methods: A retrospective single center study of all patients with Body Mass Index (BMI) greater than 30 who underwent primary liver transplantation from September 2009 to August 2015 were analysed. Co-morbidities assessed were Hypertension (HTN), diabetes, serum triglyceride levels and weight pre and post transplantation.

Results: 957 patients underwent liver transplantation during the study period. Among those, 174 patients were obese with a mean value BMI of 33.6 (range 30-42) with a median follow up period of 61 months. Most common aetiology was NAFLD (39%) followed by hepatocellular carcinoma (28%). There was no difference in the weight pre and post transplant ($p=0.24$). New onset of diabetes was seen in 57% of the patients, while the diabetic control was significantly worse among those patients that were diabetic prior to transplant measured by the level of HbA1c ($p=0.02$). Serum triglyceride levels as well as the incidence of hypertension post-transplant increased significantly ($p=0.04$ and $p<0.01$ respectively). The incidence of cardio-vascular events after transplant was 12% accounting for 21% of the overall mortality. Only 23% of the patients were involved in mild intensity regular exercise post liver transplant.

Conclusion: Co-morbidities of obese patients worsen following liver transplantation. Aggressive treatment and management of those comorbidities is imperative in order to improve the outcomes and the survival in obese transplant recipients.

P151

Anticoagulation in simultaneous pancreas kidney (SPK) transplantation-on what basis?

Jeevan Prakash Gopal, Vassilios Papalois, Jeremy Crane, Paul Herbert, Frank Dor, Anand Muthusamy

West London Renal and Transplant Centre, Imperial College Healthcare NHS Trust, London, United Kingdom

Introduction: Despite technical refinements, early pancreas graft loss due to thrombosis continues to occur. Conventional coagulation tests do not detect hypercoagulability and hence is left untreated. Thromboelastogram (TEG) is a dynamic, in-vitro diagnostic test that provides a global hemostatic profile. This study compares the outcome between TEG and conventional tests-based anticoagulation in SPK recipients.

Methods: We compared the outcomes of 13 SPK recipients who received TEG directed anticoagulation (TEG-SPK) against 23 contemporaneous SPK recipients matched for donor age and graft type (DBD/DCD), who received clinically directed anticoagulation (Clinical-SPK). Anticoagulation consisted of IV heparin titrated up to 500IU/hour based on clinical assessment or directed by TEG results. Graft, patient outcomes, thrombotic and bleeding complications between the two groups were compared.

Results: There were 11 DCD grafts (4 in TEG-SPK and 7 in Clinical-SPK). Incidence of radiologically confirmed partial graft thrombosis was 46.15% in TEG and 39.13% in Clinical-SPK group. All recipients with thrombus had anticoagulation dose escalation. Thrombus resolution rates in subsequent scans, in TEG-SPK and Clinical-SPK groups were 100% and 83% respectively. Overall clinical incidence of post-operative bleeding (hematoma/GI bleeding/hematuria/re-exploration for bleeding/post-op red cell transfusion) was 53.84% (TEG-SPK) and 56.52% (Clinical-SPK). TEG group had reduced red cell unit transfusion (35 in TEG-SPK vs. 49 in Clinical-SPK) and increased blood component usage (18 in TEG-SPK vs. 9 in Clinical-SPK). All Clinical-SPK recipients with escalated anticoagulation subsequently developed clinical evidence of bleeding, whereas it was 60% (3 patients) in TEG group. No graft loss in TEG-SPK group, whereas 3 grafts (1 pancreas, 2 kidneys) were lost due to thrombosis in Clinical-SPK group. All patients had functioning grafts in TEG-SPK group, whereas 80.43% of patients in Clinical-SPK group had functioning grafts.

Discussion: TEG is a promising tool in guiding judicious use of anticoagulation with concomitant prevention of graft loss due to thrombosis.

P152

Quality of life after pancreas/islet transplantation in patients with insulin dependent diabetes with or without renal failure: a systematic review of the literature

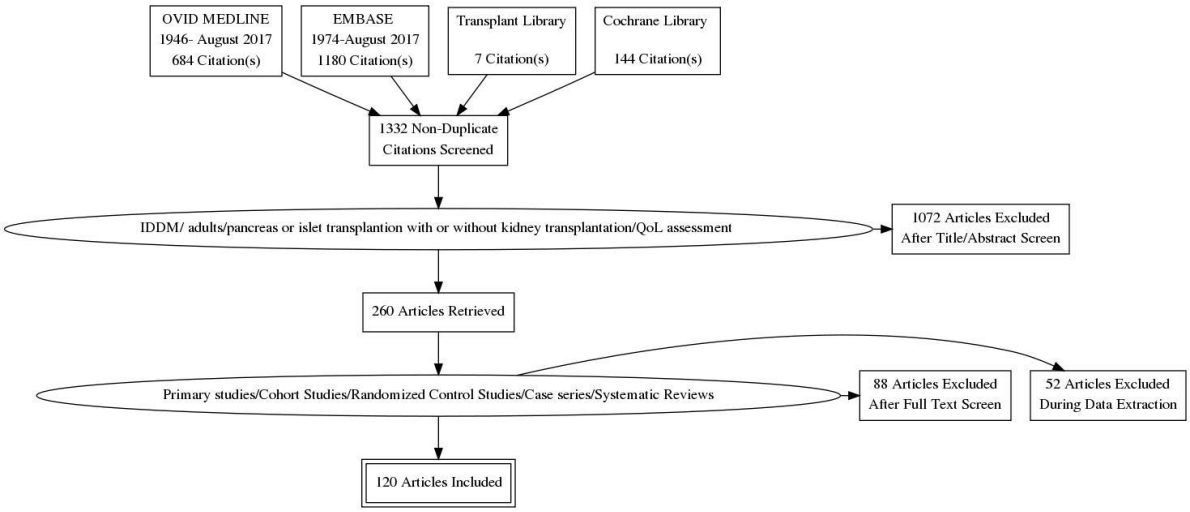
Irene Mosca[1], Richard Dumbill[2], Shruti Mittal[1], Simon Knight[1], Peter Friend[1]

[1]University of Oxford, Oxford, United Kingdom. [2]Oxford University Hospitals, Oxford, United Kingdom

Abstract: Quality of life after pancreas/islet transplantation in patients with insulin dependent diabetes with or without renal failure: a systematic review of the literature

Introduction: Insulin dependent diabetes can significantly compromise quality of life (QOL). Pancreas Transplantation (PT) and Islet Transplantation (IT) are therapeutic options for a select ed cohort of people with this disease. Clinical decision-making is based on our knowledge of surgical risks, long-term outcomes and the patients's own preference. Whilst the quality of life benefit from renal transplantation is well documented, the benefits associated with pancreas transplantation are less known. This systematic review examines the existing literature on QoL after PT and IT and aims to identify the most appropriate Patient Reported Outcomes Measures (PROMs) for use in this group.

Methods: Literature searches were performed using OVID MEDLINE, EMBASE, the Transplant Library and the Cochrane Library for studies reporting disease-specific or generic quality of life outcomes in adult insulin dependent diabetic patients undergoing pancreas or islet transplantation. All primary study types and systematic reviews were considered. Search results were screened independently by two reviewers and differences resolved by discussion. Demographic details, outcomes and details of PROMs used were extracted and analysed.



Results: The initial searches identified 2015 potentially relevant references. Following removal of duplicates and abstract screening, the full text of 260 studies was reviewed, yielding a total of 120 manuscripts from 574 studies meeting the inclusion criteria. We will examine the QOL outcomes of pancreas and islet transplant, using comparative data where appropriate.

Discussion: In the last two decades much has changed in the methodology of Quality of Life studies. This review offers the opportunity to investigate QoL outcomes in pancreas and islet transplant recipients as described throughout the years, and to identify the tools most suited for use in future clinical trials in this patient population.

P153

Small but mighty? miRNAs as biomarkers for acute kidney injury after cardiac transplantation and ventricular assist device insertion

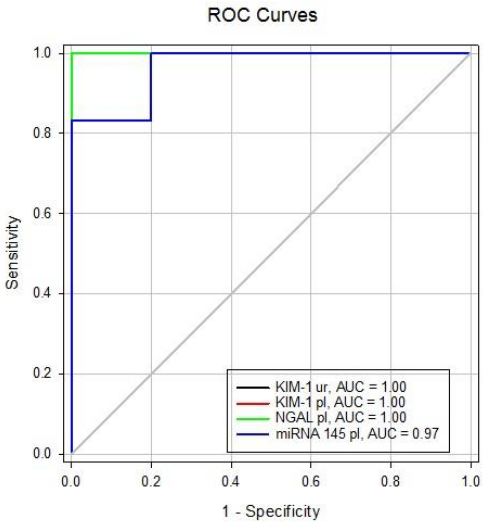
Joseph Battle, Lucy Bates, Neil Sheerin, John Dark

Newcastle University, Newcastle, United Kingdom

Introduction: Acute Kidney Injury (AKI) is common post cardiac transplantation and ventricular assist device (VAD) insertion, with the large majority of patients going on to develop an AKI. Currently clinicians use Serum Creatinine or oliguria for diagnosis; however, both have limitations. microRNAs provide a potential alternative. This study aims to compare more established biomarkers for AKI, NGAL and KIM-1, with microRNAs.

Method: 6 patients undergoing heart transplantation or VAD insertion and 5 patients undergoing routine cardiac surgery had blood and urine specimens collected prior to and 24-hours post-surgery. microRNA 21, 24 and 145 levels were determined by qRT-PCR and normalized to microRNA 39 from Caenorhabditis elegans. NGAL and KIM-1 levels were measured using a sandwich ELISA. Diagnosis of post-surgical AKI was made in accordance with the KDIGO guidelines. Patients were followed-up for 7 days post-surgery. Patients were divided into two groups: no AKI after routine cardiac surgery (nAKI) and VAD/ Transplant AKI (VADHTx). We established the association between biomarker levels and AKI by estimating the area under the curve (AUC) for receiver operating characteristic (ROC) curves.

Results: 24-hour plasma KIM-1 levels (p=0.035) and serum Creatinine levels (p=0.035) were significantly increased from baseline in the VADHTx group. 24-hour plasma NGAL levels (p=0.004) and plasma miRNA 145 (p=0.034) were significantly increased from the 24-hour levels in the nAKI group. There was no significant upregulation in the levels of miRNAs at 24-hours from baseline in any group. ROC curve analysis indicated that 24-hour levels of urinary KIM-1(AUC=1.00, p=0.00902), plasma KIM-1 (AUC=1.00, p= 0.00617), plasma NGAL (AUC=1.00, p=0.00617), plasma miRNA 145 (AUC=0.97, p=0.01059) had significant prognostic predictive power for AKI.



	Non AKI	VADHTx	P value
	n=5	n=6	
Demographics and perioperative factors			
Age	74 (72-76)	35.8 (31.4-40.3)	**0.006**
Female	1	3	0.545
BMI	25.6 (24.1-27.2)	26.7 (25.1-27.8)	1
Diabetes	1	0	0.455
Hypertension	4	0	**0.15**
Congestive HF	3	6	0.182
COPD	0	0	1
Smoker	3	2	0.392
MI	0	2	0.273
Ejection Fraction	46 (32.5-55)	32.9 (18.8-44.8)	0.35
Preoperative creatinine	98.8 (85.5-114.0)	98.5 (76.0-116.3)	1
Preoperative eGFR	62 (54.5-68.0)	72.8 (56.3-90.0)	0.233
Preop IABP	0	0	1
Surgical Factors			
Elective Operation	2	6	
Previous Cardiac Surgery	0	6	**0.002**
Surgery Type			
CABG	1	0	0.455
Valve	2	0	0.061
CABG and Valve	1	0	0.455
Other	1	6	**0.002**
CPB time	68.8 (55.5-83.0)	151.5 (69.0-223.3)	0.068
Aorta cross clamp time	51.4 (35.5-69.5)	76.0 (0.0- 137.0)	0.027
Cleveland Score	1.8 (0.5-3.0)	4 (2.0-5.3)	0.073
Postoperative Factors			
Stage 1 AKI	0	3	
Stage 2 AKI	0	0	
Stage 3 AKI/ Renal Replacement Therapy	0	3	
ITU stay	5.0 (1.0-10.0)	21.7 (6.0-43.0)	**0.027**
Total stay	15.2 (6.0-26.5)	44.8 (25.0-61.8)	0.099

Conclusion: This study has shown that microRNA 21 and 24 were not comparable biomarkers for AKI to NGAL or KIM-1. Plasma microRNA 145 was the only microRNA that provided any indication for further research.

P154

Inclination for risk while waiting for a cardio-thoracic transplantation

Adriana Robb, Jasvir Parmar, Tahmina Akhtar, Steve Robb

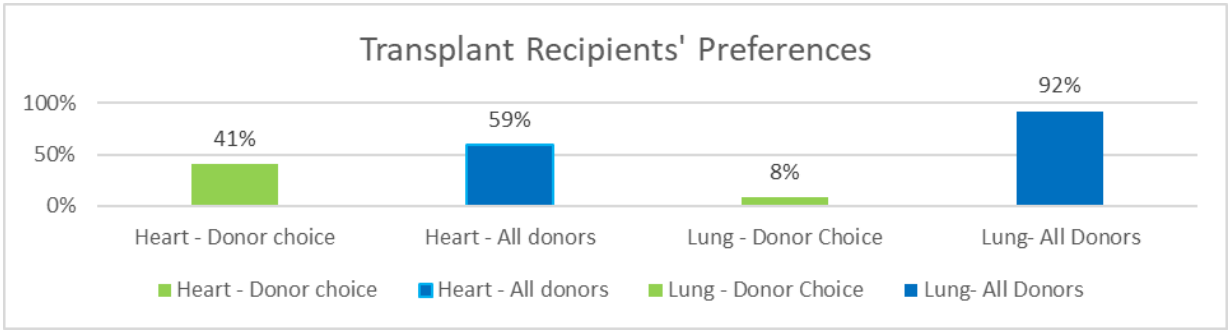
Royal Papworth Hospital, Cambridge, United Kingdom

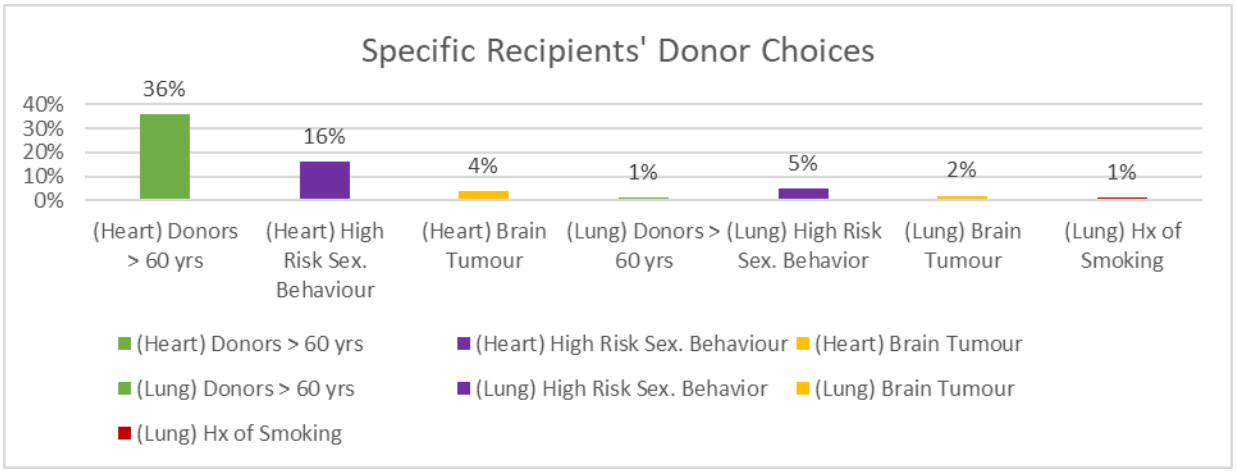
Introduction: Cardio-thoracic Organ Transplantation is a viable choice of treatment for carefully selected patients suffering from end-stage heart or lung disease. It is an opportunity to lengthen and improve their current quality of life. However, the demands are surpassing the availability by a significant margin. In order to bridge this gap, a growing number of solid organs from suboptimal donors are utilised. Since 2012, the potential transplant recipients were formally given the opportunity to consider donor specifics in regards to the hypothetical related risk. This study aimed to identify the willingness of the patients on CT waiting list to accept organs from donors correlated with elevated probability of risk.

Methods: A retrospective analysis of a cohort of 100 heart and 100 lung transplant recipients is undertaken. Their preferences in regards to set donor characteristics, demographics and waiting list duration prior to transplantation are compared. Data is obtained from a single UK cardio-thoracic transplant center, covering the period 2015 - 2018.

Results: The exploration revealed 59% of the potential heart transplant recipients were agreeable to any type of donors, versus 41%, who expressed aversion towards donors with prospective contaminants. Compared to the lung transplant population, the majority of potential recipients 92% endorsed all donors.

Discussion: The results indicated that the potential heart transplant recipients are significantly more inclined to express preferences towards donors than the lung cohort. The increased selectiveness in the heart cohort could have emerged due to the availability of feasible transplant bridging therapies, which are not an option for the lung cohort. Furthermore, clear, consistent information and better education could enhance recipients' understanding of the donor's transmitted risks – e.g. utilising donors with positive virology, therefore expanding donor pool while maintaining good outcomes.





P155

Vasoplegia in patients undergoing heart transplantation bridged with an LVAD is not associated with inferior long-term outcomes

Jason Ali, Serena Patel, Catherine Sudarshan, David Jenkins, Steven Tsui, Yasir Abu-Omar, Pedro Catarino, Stephen Large, Sai Bhagra, Marius Berman

Royal Papworth Hospital, Cambridge, United Kingdom

Introduction: Vasoplegia has been associated with inferior outcomes following heart transplantation (HTx), and is associated with patients undergoing left ventricular assist device (LVAD) explant at the time of transplantation. This observational study was designed to compare outcomes in recipients with or without vasoplegia following LVAD explant and heart transplantation.

Methods: All patients undergoing LVAD explant followed by HTx from 01/2013 – 10/2018 at our centre were included. Vasoplegia was defined as the requirement for high dose vasopressor (noradrenaline [>0.5 mg/kg/min] and vasopressin [>1U/hr]) over the first 24 hours following HTx. Demographic and outcome data were retrieved from the transplant unit database.

Results: During the study period 22 patients underwent LVAD explant and HTx. Of these, 12 (54.4%) developed vasoplegia. There were no differences in donor and recipient demographics. Both groups had a similar duration of LVAD support (median 651 vs 709 days p=0.70). HTx following donation after circulatory death (DCD) occurred in 7 (31.8%) patients and was not associated with a higher incidence of vasoplegia (p=0.23). Patients developing vasoplegia had a longer warm ischaemia time (51 vs 36 min p=0.04) and required higher amounts of metaraminol intraoperatively (p=0.02). Median follow-up is 424 days. Patients developing vasoplegia had similar ICU (p=0.87) and hospital (p=0.64) lengths of stay. There has been no association with episodes of acute rejection (p=1). Survival was equivalent both at 30-day (91.7% vs 100% p=1) and 1-year (72.9% vs 72% p=0.75). Our overall HTx 1-year survival was 89% over this period.

Conclusion: This study demonstrates that LVAD explant confers a survival disadvantage. However, development of vasoplegia following HTx in patients bridged with an LVAD is not associated with inferior outcomes. If patients are appropriately managed, the impact of vasoplegia can be minimised and outcomes not compromised.

P156

Do lung transplants performed at night carry a higher risk than daytime procedures?

Pradeep Kaul, Jason Ali, Irfan Elahi, Catherine Sudarshan, Jas Parmar, Pedro Catarino

Royal Papworth Hospital, Cambridge, United Kingdom

Background: There is growing evidence that lung transplant cold ischaemic times have little influence on graft function. This raises the possibility of deferring the start of a lung transplant procedure until daytime hours, without any delay to procurement timings. This would be worthwhile if night time procedures carried a higher risk than daytime procedures.

Methods: To investigate this, we examined the database of lung transplants performed at our institution between Oct 2013 and Oct 2018. Daytime transplants were those where the knife to skin time was between 0800 and 2000. All others were considered night-time transplants.

Results: Over the period, 216 lung transplants were performed: 148 during the day and 68 during the night. A higher proportion of night-time transplants were double rather than single lung transplants (27.9% vs 16.2%, p=0.07), and used cardiopulmonary bypass support (45.6% vs 27.7%, p=0.02). A similar proportion used DCD donors (14.2% vs 19.1%, p=0.47). For night-time transplants, the warm (81 mins vs 70 mins, p=0.38) and cold (389 vs 369 mins, p=0.116) ischaemic times were similar to daytime transplants. Similarly, ICU (4 vs 3, p=0.14) and hospital (24 vs 25, p=0.87) lengths of stay were equivalent. Similar 30-day (97.3% vs 95.6%) and 1-year (77.9% vs 80.6%) survivals were observed.

	Daytime n=148	**Night-time n=68**	**P Value**
Single lung transplants	16.2%	27.9%	0.07
DCD donor	14.2%	19.2%	0.47
Cardiopulmonary bypass	27.7%	45.6%	0.02
Warm ischaemia time (median, mins)	81	79	0.38
Cold ischaemia time (median, mins)	389	369	0.12
ICU length of stay (median, days)	4	3	0.14
Hospital length of stay (median, days)	24	25	0.87
30-day survival	97.3%	95.6%	0.87
1-year survival	77.9%	80.6%	0.71

Conclusion: There is no evidence that lung transplants performed at night are associated with inferior outcomes. This data does not support deferring the start of lung transplants until day-time hours.

P157

Normothermic portable ex-vivo lung perfusion of marginal donor lungs followed by successful transplantation – first clinical case in UK

Pradeep Kaul, Jason Ali, Simon Messer, Irfan Elahi, Clair Ellis, Jennifer Baxter, Catherine Sudarshan, Jas Parmar, Marius Berman, Pedro Catarino

Royal Papworth Hospital, Cambridge, United Kingdom

Introduction: Transmedics Organ Care System (OCS) lung device has been utilised for normothermic portable ex-vivo preservation. Non inferior results were demonstrated for both standard criteria donors (INSPIRE trial) and extended criteria donors (EXPAND trial). Here we report the first clinical UK use of the OCS device for assessment, reconditioning and transport of marginal donor lungs that were successfully transplanted.

Case report: A DBD donor offer was received from a 48-year old non-smoker, O+ male donor who had suffered an intracranial haemorrhage. The patient had been ventilated for 10 days, with a tracheostomy and had *E. coli* cultured from sputum. A chest radiograph confirmed bi-basal collapse and consolidation. The PaO_2/FiO_2 ratio at offer was 18.3. All other UK centers declined the offer. In view of the young donor age and non-smoking history, and a clinically deteriorating recipient, we opted to retrieve the lungs onto the OCS to permit assessment and optimization. At inspection significant bibasal atelectasis was recruited with improved differential pulmonary vein PaO_2. The lungs were procured and mounted onto the OCS device. During transport, the lungs were submitted to protective ventilation. Pulmonary arterial pressure and vascular resistance, peak airway pressure and PaO_2/FiO_2 monitored. On arrival at the recipient centre, PaO_2/FiO_2 had increased to 47. Bronchoscopy revealed clear airways. The lungs were deemed transplantable and were implanted into a 22-year old female with cystic fibrosis on the urgent list. The transplant was uneventful, and the recipient made a good recovery - extubated on post-operative day 2, discharged from ITU on day 5 and discharged home after 2 weeks.

Conclusion: Normothermic portable ex-vivo perfusion on the OCS-lung device offers the opportunity for assessment and reconditioning of marginal donor lungs which may expand the donor pool, particularly for DCD donation.

P158

Non-directed altruistic liver donation. The experience at a UK teaching hospital

Julie Jeffery, Jeremy Lodge, Magdy Attia, Giles Toogood, Dhakshina Vijayanand, Vivek Upasani, Jayne Dillon, Joanna Moore, Chenchu Chimakurthi, Christian Hosker, Deesa Ward, Katie McGoohan, Ernest Hidalgo

Leeds Teaching Hospitals, Leeds, United Kingdom

Introduction: Living donation (LD) is an established option to facilitate liver transplantation. Altruistic organ donation is becoming increasingly frequent in kidney transplantation although remains indistinct with liver donation. Since the commencement of living donor liver transplant (LDLT) program, we have received 112 enquiries from potential non-directed altruistic donors (NDAD), and have performed 11 liver transplants our aim is to present our results from this particular group of patients, with focus on (1) the assessment process and (2) the justification for its use.

Methods: From 2007 to 2018, we identified 112 potential donors from a prospectively maintained database. The donor assessment process involves: blood group identification and questionnaire evaluation, clinical assessment by several disciplines, donor liver evaluation (MeViS), Independent Assessor evaluation, approval from the Human Tissue Authority and successful completion of donation. The criteria for donor selection, donor demographics, graft type, complications, length of stay were extracted. Donor morbidity was assessed objectively using the modified Clavien-Dindo classification.

Results: Of those initial 112 enquiries, 85 progressed beyond initial questionnaire. They were predominately males (63%) with a median age of 40 years. The main reason for not progressing (45%) to donation was failure to further engage and the existence of medical conditions precluding donation (30%). Overall, a total of 11 out of 85 assessments progressed and were finally able to donate (13%). The median age within this group was 26 years and again predominantly males. Ten out of 11 donated left lateral segment. The median length of stay (LOS) following surgery was 4 days (mean 5.2 days, SD 4-7). The overall postoperative complication rate was 18%, all them being Clavien classification grade I.

Discussion: This group was demographically diverse, intellectual, psychologically well balanced, self-aware with a universal sense of social and personal responsibility to help others, this mirrors the previous findings reported in the literature.

P159

Do potential live kidney donors need a chest x-ray or renal ultrasound?

India Cox, Kay Hamilton, Lesley Read, Jo Vaz, Rommel Ravanan, Chris Dudley, Shakeeb Khan, Anusha Edwards, Samuel Turner

Southmead Hospital, Bristol, United Kingdom

Introduction: Live kidney donor (LKD) transplantation is the best form of renal replacement therapy. At our centre all potential LKDs undergo plain chest radiography (CXR), and a renal ultrasound scan (USS) prior to CT renal angiogram (CTRA). Our aim was to assess their utility.

Methods: A retrospective analysis of all potential LKDs over a five year period (2013-2017) where CXR and USS reports were available on local IT systems was performed. The cohort was identified from an electronic database.

Results: Of 323 CXRs, 314 (97.2%) were normal. Of the 9 abnormal, 5 did not proceed due to various medical problems, 2 proceeded to donation after further tests and 2 were lost to follow-up. Of 323 USS, 302 were normal (93.5%). Of the 21 abnormal, 11 did not proceed based on the findings, 3 proceeded to donation after CTRA confirmed angiomyolipoma and 7 others went on to have CTRA for further characterisation. In addition, 7 of the patients with normal ultrasounds had abnormalities detected subsequently on CTRA which prevented donation.

Discussion: <3% of potential donors had an abnormal CXR. However, because the chest is not otherwise imaged and the consequences of missing even a single abnormality could be dangerous, the decision at our centre was to continue to perform CXR in all potential LKDs. CXR is also cheap and non-invasive with low radiation exposure. Given that the few abnormalities detected by USS (and more), are anyway detected by CTRA, the decision was taken to remove USS from our work-up process. This will increase radiation exposure for 11 (3.4%) potential donors who would otherwise leave the process before CT, but many would nevertheless proceed to CT to characterise any abnormality further. Each centre should consider all aspects of workup in order to improve efficiency and lower cost.

P160

Can cystatin C replace isotope GFR measurement in live kidney donors?

Samuel Turner, Kaat Marynissen, Nicola Hamilton, Lesley Read, Shakeeb Khan, Rommel Ravanan, Anusha Edwards, Chris Dudley

North Bristol NHS Trust, Bristol, United Kingdom

Introduction: BTS guidelines state that in addition to eGFR based on serum creatinine (SCr), donor renal function must be assessed using a reference measured method (mGFR). ^{51}Cr-EDTA is currently the most widely available, but international supplies will run out in early 2019; significant supply constraints are also predicted to affect DTPA availability. Cystatin C (Cys) is a low molecular weight cysteine protease inhibitor produced at a constant rate by all nucleated cells which is filtered freely by the glomerulus. It has shown promise as a confirmatory test to obtain a more accurate eGFR.

Methods: From June 2018, all potential LKDs at our centre had serum Cystatin C measured during their workup. eGFR was calculated according to the CKD-EPI formulae: CKD-EPI creatinine (2009) (eGFRscr); CKD-EPI cystatin C (2012) (eGFRcys), and CKD-EPI creatinine-cystatin C (2012) (eGFRscr_cys). These were compared with ^{51}Cr-EDTA GFR (mGFR), which is used in our current protocol.

Results: At the time of writing, 16 donors had both Cys and mGFR measured. Bland-Altman analysis for eGFRcys vs mGFR revealed a bias of +9.54 with all points but one falling within the 95% limits of agreement (LOA) (range -14.8 to 33.8); for eGFRscr_cys vs mGFR the bias was +5.31 with all points falling within the 95% LOA (range -17.2 to 27.8). For comparison, Bland-Altman analysis for eGFRscr vs mGFR showed a bias of -1.5 with all points falling within the 95% LOA (range -32.5 to 29.6).

Discussion: Using ^{51}Cr-EDTA GFR as the reference standard, eGFRcys and eGFRscr_cys showed reasonable agreement. Both had a tighter agreement range with mGFR than eGFRscr; eGFRscr_cys provided the best agreement. If we use the analysis of eGFRscr vs mGFR to define acceptable LOA, the fact that eGFRscr_cys was well within these limits suggests that Cys should be validated with larger UK-wide numbers before ^{51}Cr-EDTA runs out.

P161

A comparison of outcomes after living donor kidney transplantation done in parallel and sequentially in a large centre and a survey of UK national practice

Osborne Vaz[1], Mohan Shanmugam[2], Zia Moinuddin[1,3], Rajinder Singh[1], Raman Dhanda[1], David van Dellen[1,3], Afshin Tavakoli[1], Bence Forgacs[1], Tunde Campbell[1], Michael Picton[1], Lisa Mumford[4], Titus Augustine[1,3]

[1]Department of Renal & Pancreas Transplantation, Manchester University NHS Foundation Trust, Manchester, United Kingdom. [2]Department of Anaesthetics, Manchester University NHS Foundation Trust, Manchester, United Kingdom. [3]Faculty of Biology, Medicine & Health, University of Manchester, Manchester, United Kingdom. [4]Statistics and Clinical Studies; NHS Blood and Transplant, Oxfordshire, United Kingdom

Introduction: Living donor kidney transplantation is considered the gold standard RRT. The donor (D) and recipient(R) can be done either sequentially or in parallel with shorter cold ischemia times and different surgical teams. This study analyses outcomes in 873 living donor transplants in a large transplant centre where both approaches are used.

Methods: All living D nephrectomy and transplants done in a single centre from January 2006 to November 2018 were analysed retrospectively from all patient record sources. R variables which were analysed included cold ischemia time (CIT) graft function, transplant renal artery stenosis, ureteric stenosis, graft loss and recipient death with or without a functioning graft. An analysis of national practice was extrapolated from anonymised CIT data provided by NHSBT.

Results: 873 donors were done by the laparoscopic hand assisted technique. 741 were done sequentially and 132 were done in parallel by different D and R surgeons. The outcomes were as below and were not statistically significant (p>0.05)

Table: Outcomes in recipients

OUTCOMES				
	Sequential (n, %)		Parallel (n, %)	
Cases N=873	741	84.88%	132	15.12%
Conversions in donor	8	1.07%	2	1.51%
Bleeding in donor	10	1.34%	2	1.51%
Avg CIT (min)	243	97		
Graft Thrombosis	6	0.80%	2	1.50%
PNF	0	0%	1	0.75%

Discussion: A parallel procedure is considered optimum as the graft undergoes shortest cold ischemia transplanted by a fresh surgical team. Local practice and logistics mainly the non-availability of parallel operating teams and theatres may deter this. Despite no statistically significant differences in our group, best practice should dictate parallel procedures. Conversely in the sequential procedure done by the same team, there could be nuanced technical aspects which could be adapted in the donor to optimise outcomes in the recipient by the operating surgeon. There is variable national practice.

P162

Overcoming the challenge of late referrals to ensure that all potential donor families are given equality in end of life care choices and opportunities

Jane Monks, Dawn Lee, Emma Thirlwall, Nicola Hargreaves, Sue Duncalf

NHS Blood and Transplant, North West, United Kingdom

Introduction: Early identification and referral of potential donors is encouraged within the region, however late referrals occur where families have already been informed of the imminent withdrawal of treatment. It was recognised that action was required to ensure that the families of these patients are not disadvantaged by the late referral.

Methods: Following a late referral, the team manager will liaise with the hospital staff to arrange a mutually convenient time to speak to the family via telephone. A specialist nurse is mobilised to the hospital prior to the family conversation occurring. An approach for organ donation is not made at this time but an opportunity for the family to speak to a specialist nurse is offered. It is emphasised that this is to ensure that they are offered the same end of life care opportunities as every other family. The team manager is asking the family for "time" for the specialist nurse to arrive on site and the name of the specialist nurse who is attending and what time they will arrive is given. A request is also made that the family wait for the arrival of the specialist nurse before extubation.

Results: This method has been utilised 5 times in the region within a 3 month period. This resulted in the 5 families allowing time for the specialist nurse to arrive to assess the potential for donation. On each occasion they were greeted by the family, by name, in a positive manner resulting in a good relationship from the outset.

Discussion: This practice removes the need for non collaborative, unplanned, hasty and at times inappropriate, discussions about organ donation when there is a late referral from a regional hospital. It is envisaged that this practice will continue within the region and its effects monitored and shared with other regions.

P163

Implementation of the Specialist Requestor role – the benefits for the wider team: a single region experience

Dawn Lee, Jane Monks, Emma Thirlwall, Nicola Hargreaves, Sue Duncalf

NHS Blood and Transplant, North West Region, United Kingdom

Introduction: The Specialist Requestor (SR) role was introduced in the region in September 2016. It was identified that this afforded an opportunity to improve the work / life balance for the Specialist Nurses Organ Donation (SNODs) within the team by reducing the 24 hour on call period

Methods: Feedback following implementation of the SR role was that the SNODs were mobilised to a patient later in the day than previously. The SRs work 12 hour days with 2 rostered on each day. They are, whenever possible, mobilised first to a patient to assess suitability and approach the family for donation. Once verbal consent has been gained the on call SNOD is mobilised. This presented an opportunity to reduce the SNODs on call day to 21 hours by pushing their start time later. It was also fed back that attending once consent has been gained often protects the SNOD from the complex conversations and negotiations, both with families and hospital staff, following which it can be difficult to focus on the remainder of the donation process.

Results: The later start allows the SNOD downtime prior to commencing their on call day and protects time for embedded working before mobilising. We have observed improved staff retention rates, with a turnover of 3% versus 12.4% for the directorate. The turnover of new starters recruited since April 2015 is 0% in the region versus 28% for new starters in the same time period across the directorate.

Discussion: The reduction in 24 hour working has had a positive impact on the team by providing the SNODs with greater flexibility which is paid back in the form of a cohesive, stable and flexible workforce. The intention is to further reduce the length of the on call working in line with national initiatives

P164

Implementation of the Specialist Requester role: creation of experts and maintaining exceptional performance. A single region experience.

Jane Monks, Dawn Lee, Emma Thirlwall, Nicola Hargreaves, Sue Duncalf

NHS Blood and Transplant, North West Region, United Kingdom

Introduction: Specialist Requesters (SRs) attend hospitals and approach families of potential organ donors. Once consent is gained they hand over the care of the family and patient to their colleagues who continue with facilitating the donation. The SR role was introduced into the region in September 2016. Since implementation 6 individuals in the role have demonstrated a consistent rise in their individual consent rates

Methods: 6 SRs were selected via interview and assessed for the role according to their personality and level of resilience. The individuals had variable consent rates prior to the role ranging from 36% - 88%. The SRs continuously analyse their approaches together and share practice with the wider team. The SRs have advanced communication and resilience training and have spent time with a variety of religious leaders. They formally debrief monthly and address concerns and discuss any difficulties encountered. Feedback from the SRs is that they have more time to spend with families without the pressure of completing the whole donation process. They spend a great deal of their time building relationships with the hospital staff and negotiating to ensure that the families are approached at the right time with the right people in the room, in line with best practice recommendations.

Results: After an 18 month period consent rates for the SRs range between 66% - 90%, with each individual having increased consent rates. Over the time period the SRs have approached 380 families with a combined consent rate of 78.4% versus 61% consent rate for nurses who are less exposed to approaching families

Discussion: SR consent rates support the creation of an expert role. The challenge for the region is maintaining the exceptional performance demonstrated by these experts. The team will share their practice nationally and explore new and innovative ways to increase the overall consent rate to 80%.

P165

Successful kidney transplantation from a donor on mechanical circulatory support

Irene Benaran[1], Mark Steven[2], Alison Mitchell[2], Marc Clancy[3], Lynne Malley[2]

[1]University of Glasgow, Glasgow, United Kingdom. [2]Golden Jubilee National Hospital, Glasgow, United Kingdom. [3]Queen Elizabeth University Hospital, Glasgow, United Kingdom

Introduction: Ventricular Assist Devices (VAD) are a form of Mechanical Circulatory Support (MCS) used in the treatment of end stage cardiac failure. They are used as a bridge to recovery, Heart Transplantation or destination therapy when transplantation is contraindicated. Patients will recover, receive a transplant or die from complications.
149 VADs were inserted during 2016-2017 in the UK, 30% of these patients died on support. Organ donation from these patients is rare. We present a case of successful DCD from a BiVAD patient which underlines that this cohort of patients should be considered for organ donation.

Methods: The donor was a 33-year-old female who developed post-partum cardiomyopathy and required a BiVAD as a bridge while waiting heart transplantation. Unfortunately, she suffered a catastrophic intracranial haemorrhage 10-days following implantation of the device. Futility of care was established, in view of her age and absence of any secondary organ failure or other contra-indications donation was discussed. The family were very supportive, authorisation was obtained and offering began. There were protracted discussions to place the organs but ultimately donation progressed.

Results: DCD was successful, both kidneys and the pancreas were retrieved. All recipient operations were a technical success with immediate graft function and all patients were discharged expediently from hospital. There have been no complications in the 11 months since transplantation.

Discussion: This is the first case in Scotland where a VAD patient has become a successful donor and consequently three patients have received potentially life-saving transplants. There appears to be a reluctance within the recipient centres to consider organs given that the circulatory profile does not conform to the normal acceptance criteria.
We need to dispel these reservations and raise awareness within the donation and transplant community to ensure that the donation potential is maximised. We need everybody!

P166

Diagnosing neurological death: a relative's information leaflet

Sharon Mitchinson[1], Janice Mckenna[1], Jill Featherstone[1], Judith Wright[2]

[1]NHSBT, Northern, United Kingdom. [2]South Tees Hospital NHS Foundation Trust, Middlesbrough, United Kingdom

Introduction: In a regional neuro trauma unit, consent was gained for 53 out of 56 potential DBDs for the period 2013-16, an overall rate of 94.6% (2013–14 17/17 100%, 2014-15 18/21 86%, 2015-16 18/18 100%). In 2016-17 our consent rate fell to 11/18 61% which was below the national average of 69%. Review of our practice revealed no obvious changes. In an attempt to increase our consent rate, we decided to focus on family information. It has been our practice to invite families to observe the second set of tests for many years. In December 2016 we chose to update a leaflet that had been used previously on the ICU which helped explain death by neurological criteria and the tests needed to diagnose this. In order to assess how this change was working we used a PDSA cycle.

Method: The PDSA includes 3 cycles to date. The 1st cycle was review and revision of the leaflet by the SNODs and intensivists. The 2nd cycle involved asking all stakeholders, including all ICU staff (medical, nursing, AHPs and domestics) for feedback on the leaflet. The 3rd cycle starting in January 2017 was the introduction of the leaflet. The leaflet was given to families whose relatives were to undergo neurological death testing. To date there have been 16 leaflets given to a potential 29 families.

Results: The consent rate since January 2017 to October 2018 so far has risen to 71%. Since April to October 2018 the consent rate has risen to 80%.

Discussion: Further PDSA cycles are planned with the intention to implement this in the region to be used in all of our hospitals.

P167

Youngest neonatal donor after determination of neurological death

Sharon Mitchinson

NHSBT, Northern, United Kingdom

Neonatal organ donation is a practice that is relatively new and a rare occurrence compared to donation in adults. Neonatal organ donation after determination of neurological death is even less frequent but is now possible due to changes in neonatal practices since April 2015.

In late 2016 a neonate was referred to the embedded SNOD in our trust. A twin pregnancy had been uneventful, with routine care provided. Spontaneous rupture of membranes occurred at 37+2 CGA, induction with prostaglandin, forceps delivery and both babies were well. On day 2 mum was breastfeeding baby 1 when she noticed baby had become floppy and unresponsive although she felt baby had been suckling up until that point. Immediate help was called and cardio-pulmonary resuscitation commenced by the emergency team. The baby was transferred to the neonatal unit where post arrest care took place over the next few days. On day 3 as the baby was showing signs of severe neurological deficit, pupils were fixed and dilated and there no signs of waking an MRI was performed which showed an intracranial haemorrhage.

After discussion with the family a plan was made for both twins to be christened. During one of the many conversations that night the family brought up donation as they would like something positive to come from this and would like their baby to leave a legacy behind if at all possible. The next day at 38 weeks CGA, NDT occurred. At this time, to NHSBT knowledge, this was the youngest neonate in the country to be tested.

The poster will explore the new diagnosis of Neurological determination of death in neonates, the challenges of communication between the family, the SNOD team, the neonatal team and the wider transplant community.

P168

A memorial like no other: an overview of a hospital organ & tissue donation memorial that 'grows' with support year on year

Adam Barley

North West Organ Donation Services Team, Liverpool, United Kingdom

Introduction: Recommendation 12 of the Organ Donation Taskforce highlighted the need for appropriate ways to publicly recognise individual organ donors, where desired. Many local hospital initiatives have developed to create memorials for organ donors, this hospital has invested in a memorial that grows, encouraging stakeholder engagement further enabling personal follow-up to donor families.

Methods: The memorial design was developed by an artist featured at a famous annual horticultural event. Working with the hospital to develop a bespoke design and concept which would allow the memorial to be interactive and grow as stakeholders engage with the memorial. The gesture of donation is immortalised and commended to celebrate the donation efforts regardless of donation outcome, which bridges the gap in commemoration of the Order of St John Award conditions. The memorial features in family discussions as a positive element of the donation pathway, reassuring families regardless of the outcome, supporting donation allows them to feature within the memorial.

Results: Year on year we have increased numbers of donors, subsequently more donor families returning to the hospital to participate in the memorial event. This is largely promoted by the hosting hospital trust who embrace the event and message, creating a platform for not only commemoration, but also organ donation awareness/promotion. With the embedded memorial on site, there has also been an increase in donor families bringing up donation positively before approach, enhancing trusts consent rates in donation.

Discussion: The trust has really gone above and beyond to develop this memorial and make it unique. The memorial has gained national awareness with the help of communications and media who have engaged with the memorial and become a benchmark for other hospitals to develop memorials alongside.

P169

Using human factors tools in clinical governance within ODT

Michelle Hunter[1], Claire Mitchell[2]

[1]NHSBT - Clinical Governance, Newcastle, United Kingdom. [2]NHSBT - Clinical Governance, Bristol, United Kingdom

Introduction: In 2016, the Care Quality Commission recommended to "move the focus of investigation from the acts or omissions of staff, to identifying the underlying causes of the incident" and "use Human Factors principles to develop solutions that reduce the risk of the same incidents happening again"[1]. Human Factors are how the people within the organisation interact with the hardware, software and each other when completing a task[2] therefore "Day to Day Observations" was used to identify areas of good practice and where improvements could be made. Following a trend of clinical incidents, where donor family letters were completed incorrectly, a new process had been implemented to reduce the risk of reoccurrence. Errors were subsequently still reported, therefore it was agreed to use a Human Factors approach particularly looking at external factors and influences.

Method: Training was provided and an observation tool developed. The group consisted of:

- 2 managers
- 2 administrators
- 2 independent observers

Twenty-one observations were carried out (maintaining a usual working environment) over three days to incorporate all administrator teams.

Results: The results highlighted areas of good practice on all observations. The findings showed that additional steps were undertaken due to the lack of accurately documented information; this was in relation to keepsakes and addresses.

External Influencing Factors:

External influencing factors	Individual good practice	Work telephone calls	Personal telephone calls	Colleague distractions	Email distractions	Office environment	IT problems
Number of observations recorded	16	2	0	15	2	14	8

Discussion: Following presentation of the results, actions were identified to mitigate against the external influencing factors that were found. Good practice was highlighted and shared, and it was acknowledged that external factors can influence on a task being completed accurately. Due to the benefits obtained from this review, Human Factors observations will be rolled out in other areas of ODT to strengthen practice.

P170

Service user involvement to strengthen the organ donation and transplantation clinical governance process of incident reporting, understanding what happened and sharing learning with the wider community

Sarah Jones[1], Kay Sybenga[2]

[1]NHSBT - ODT Clinical Governance, Tooting, United Kingdom. [2]NHSBT - ODT Clinical Governance, Newcastle, United Kingdom

Introduction: The electronic incident reporting system is a central data capture tool which enables incidents to be investigated, learning and actions identified and implemented which are then shared for awareness in the wider donation and transplant community to maintain and improve patient safety and quality. The clinical governance process had not been reviewed from a user perspective previously. The aim of this service improvement project was to gain feedback and comments from a wide range of users to redesign, streamline and strengthen the process of incident reporting, investigating and sharing learning.

Method: A number of questions via a 'Survey Monkey' were sent to key stakeholders from across the pathway requesting feedback on all aspects of the clinical governance process such as use of the electronic incident reporting form, the management of reported incidents, the feedback received and the wider shared learning.

Results: The results demonstrated responses from a wide range of healthcare professionals across the organ donation and transplantation pathway:

The findings were informative and highlighted areas for improvement with the electronic reporting system which are currently being taken forward. There were also user recommendations in relation to the incident investigation, the outcome responses and wider shared learning. Examples which are currently being considered are the value of learning from when processes and practice go well and the option of an incident reporting application for mobile devices.

Discussion: A number of users recommended the use of an investigation summary template to guide reviewing what happened and identify learning. Overall the results were reassuring that a positive culture of incident reporting and sharing learning is developing across the pathway. Improvements in practice and patient safety cannot be made in isolation. To be effective and achieve the outcome of enhancing patient safety and quality, the service users are integral to the clinical governance process redesign.

P171

An audit of offering organ donation following best practice guidelines against the pre mention of organ donation in a single hospital Trust

Mick Willcox, Helen McManus

ODT, Oxford, United Kingdom

The biggest barrier preventing more organs becoming available for transplant is families declining consent (NHSBT 2016). NHS Blood and Transplant identifies a best practice model (NHSBT 2013) for offering donation nevertheless this model is not always followed. We audited 5 years of approach data (n100), in one hospital trust to see how different methodologies compare.

Objectives: To see if the best practice method methodology achieves a higher consent rate than a pre mention methodology. To identify any need for further education or research

Design: Pre mention of donation was identified as: donation being talked about to a family in any way different to NHSBT best practice guidance (NHSBT 2013). All data was extracted from the potential donor audit.

Results: 53% of approaches were pre mentions, 10% families raised donation without being asked, SNOD only approach 2% and 35% approaches were collaborative (32% DCD 41% DBD). Consent when donation was pre mentioned in DCD was 67% & DBD 76%. Consent when best practice followed was DCD 77%, DBD 85%. Registrar approaches were also represented in the audit showing a combine consent rate of 38% whilst three of thirteen consultants had consent rates over 83% mainly using a pre mention methodology.

Discussion: This hospital achieves good consent rates regardless of the approach methodology, nonetheless following best practice guidelines shows higher consent rates than pre mentioning of donation. Individually some consultants who do not consistently follow best practice achieve better results. Supporting individuals effective practice would seem reasonable but this is an inconsistent approach to promote best practice furthermore what a pre-approach entails requires investigation. Surprisingly in this hospital registrars rarely followed best practice achieving very low consent rates.

P172

Mind the gap: exploring the difference in UK consent rates from the perspectives of the specialist nurses in organ donation

Mick Willcox

ODT, Oxford, United Kingdom

A major barrier to the availability of organs for transplant in the UK is consent for donation. (National Health Service Blood and Transplant [NHSBT] 2017). There is a 15% difference between the consent rates in Donation after Brainstem Death (DBD) and Donation after Circulatory Death (DCD) (NHSBT 2015) in the UK. The reason for this difference in consent rate is not currently well informed by empirical evidence or expert opinion.

The study used a linked anonymity email consensus Delphi model to identify what the experts felt caused the difference in consent rates between DBD and DCD. Specialist Nurses in Organ Donation (SNODs) with over four years' experience in donation were identified as the experts initially generating over 300 opinion statements being reduced by consensus to ten of the highest rated statements.

The study identified the main factors that SNODs feel cause the difference in consent rates between BDB and DCD. DBD is identified as the benchmark for consent and the ten factors identify the differences between DCD and DBD in current practice and what SNODs feel influences families to decline donation.

The factors range from the length of time patients are in hospital until decisions to withdraw treatment are made, through lack of confidence and clarity of DCD donation process, potential suffering of patients, lack of compliance to identified best practice in offering organ donation in DCD, to lack of trust between medical staff and SNODs.

DBD and DCD are fundamentally different, and this causes a difference in consent rates. What is clear is that DCD is not accepted in the same way as DBD and the results of this study could be used to for information and education which has the potential to reduce the gap in consent rates.

P173

UK review of donor characterisation & general practitioner documentation

Lesley Logan[1], Phil Walton[2]

[1]NHSBT, Edinburgh, United Kingdom. [2]NHSBT, Swansea, United Kingdom

Introduction: Safe transplantation of organs and tissue relies on comprehensive characterisation of the deceased donor. As well as interrogating hospital records for past medical history and liaising with the patient's General Practitioner (GP), vital information about the donor's behaviours relating to lifestyle, travel and sexual history is routinely sought from family members and/or close contacts of the donor.

Methods: In 2017/18 NHS Blood and Transplant, along with partner organisations, led a review of the United Kingdom family characterisation and GP questionnaire. The process was prompted by updated guidance provided by the United Kingdom Department of Health's Advisory Committee for the Safety of Blood, Tissue and Organs (SaBTO). Subject matter experts were engaged from many clinical specialities UK wide, and all available evidence was reviewed. Characterisation questions were refreshed, updated and new questions introduced resulting in new and more robust information being collated. Detailed training of the new questionnaire with an accompanying rationale document was developed, piloted and delivered to 350 Specialist Nurses working in organ and tissue donation services across the UK prior to implementation, refreshing and improving their clinical knowledge base.

Discussion: The review was not without challenges including liaising with multiple external experts, geographical constraints, travel around meetings, interpretation of guidance, timescales and ensuring questions would be fully understood by the public to illicit the detailed information required. Among the positive outcomes from this review are:

- Improved safety of organs and tissue from deceased donors considered for transplantation in the UK.
- More permissive questions may result in more eligible donors being considered for donation and over time an increase in the organs and tissue available for transplantation.
- Improved clinical knowledge of specialist nursing staff working in deceased donation including an enhanced appreciation of the different risk profiles associated with organ or tissue transplantation.

P174

The impact of deceased organ donation decisions for families at least six months post-bereavement: ameta-ethnography

Jonathan Harrold, Jenny Moses, Catherine O'Leary

Cardiff & Vale UHB, Cardiff, United Kingdom

Introduction: The unexpected death of a relative can lead to families being approached by healthcare staff with an organ or tissue donation request. This review aimed to identify, appraise and synthesise the extant qualitative research into the longer-term experiences of grief and adjustment to loss in such families.

Method: A systematic search of the literature identified fifteen studies utilising qualitative methodologies which met the criteria for the review. A qualitative appraisal tool was used to assess quality, and a meta-ethnographic approach facilitated data extraction and synthesis.

Results: The quality of the studies was predominantly moderate to high, with variance regarding reference to researcher reflexivity and theoretical frameworks. Three master themes arose from the data extraction and synthesis process: *Ongoing relationship with the donor; Psychological impact of the decision;* and *Support in grief*. The consequences of donation decisions may not be clear at the time of request.

Conclusions: The synthesis illustrated the importance of post-bereavement follow-up for both consenting and non-consenting families, and the value of making donation intentions known. Further research is required exploring the post-bereavement experiences of families from countries operating presumed consent.

P175

Maximising tissue donation referrals as an alliance site trust - our journey to ensuring that all adults that die within the trust have the opportunity to be considered for tissue donation

Rebecca Russell, Nicola Freeman-Fielding

United Hositals Bristol, Bristol, United Kingdom

Introduction: Since Jan 2016 the Trust has been under contractual agreement as a Tissue Donation 'Alliance Site'. As such, the Trust is expected to refer 100% of all deceased adult patients for tissue donation (including referral even if it is known that the patient does not wish to donate to capture that we have explored the question). Referral rates for 2015 were just 20% at the highest point.

Aims & methods: Our aim is to ensure that 100% of all adult patients that die within the trust are referred for tissue donation consideration by December 2018. The use of a Driver Diagram helped us to plan our project. The main crux of the project was the development of a new [first of kind] electronic referral form and associated guideline to help staff with the process. Both documents were developed using a PDSA approach. A education, media and marketing campaign was held throughout February to advertise the launch.

Results: Feedback of the launch and education campaign has been very positive. At the time of writing, since the launch of new referral process in Feb this year, we have seen a rise from 52% to 85% in referrals which therefore improves opportunities for potential recipients. The conversion rate from referral to donation has increased from 10% last year to 13% this year

Discussion: Education and exploration of continuing barriers to getting the referral done is ongoing, and how to make the referral as normal process has been a challenge. It seems barriers are largely still staff needing education about the process and how to do it. Guidance is now available on our intranet and we are planning a further education day in December and every 6-9 months thereafter to maintain continuity in training and knowledge.

P176

Dual kidney transplantation: a single centre case series

Demelza Vinnicombe, John O'Callaghan, Sanjay Sinha, Peter Friend, Srikanth Reddy, Georgios Vrakas

Oxford University Hospitals, Oxford, United Kingdom

Background: The use of expanded criteria donor kidneys has opened up a potential pool of donors to address the demand for transplantation. In some cases, two kidneys may be transplanted from the same deceased donor (Dual Kidney Transplant, DKT), as a way of providing sufficient functional nephron mass. We study the efficacy and safety of DKT with a view to increasing the kidney donor pool.

Methods: We study the outcomes of a cohort of 10 recipients of DKTs. Data was collected prospectively and averages presented as median (range).

Results: All 10 patients had both transplanted kidneys implanted unilaterally; median CIT 11.5 hours (10-20 hours), WIT 64 minutes (60-98 minutes), and operating time 220 minutes (205-300 minutes). Median donor age was 71 years (59-79 years), eGFR 60ml/min (41-90 ml/min), 70% DCD. Median age of recipients was 62 years (42-79 years), with waiting time 325 days (111-1925 days). All were having their first transplant. 50% showed DGF, 40% showed initial function, and 10% had primary non-function. Length of stay was 9 days (5-10 days). Nine biopsies were taken from 5 patients, showing 2 BPAR, 3 CNI toxicity, 3 ATI and donor vascular disease, and 1 severe T cell and ABMR. Post-operative complications included 1 ureteric leak with single transplant nephrectomy, 1 hydronephrosis that was successfully managed with nephrostomy and re-stenting, and 1 transplant renal artery stenosis that was successfully angioplastied. Median eGFR at 12months was 31.5ml/min (24-73 ml/min). 1-year graft survival was 90% and 1-year patient survival was 100%.

Discussion: We have demonstrated the safety and efficacy of DKT in 10 individuals, suggesting that DKT could be a safe and effective way to increase the kidney donor pool in very specific patient-donor combinations. Further questions remain on the criteria for determining donor kidney status to maximise the value of dual kidney transplantation.

P177

Timing of brainstem testing in intensive care

Orlagh McNally, Dominic Trainor

Royal Victoria Hospital, Belfast, United Kingdom

Introduction: Between January and October 2018, 11 patients in a regional Intensive Care unit in the UK were tested for brainstem death. We reviewed the time each patient had the first set of brainstem tests completed with the aim of increasing the total number of tests carried out before lunchtime.

Methods: We recorded the time the first set of brainstem tests were done for all 11 patients. Then, using the "*Form for the diagnosis of death using neurological criteria*" from the *FICM* website, we checked for any medical reason that may have delayed brainstem testing including electrolyte disturbance and hypoglycaemia. Finally we reviewed the time in hours that sedation had been off prior to brainstem testing.

Results: We found that 8 of the 11 patients (73%) had brainstem testing carried out after 1pm, 3 of whom had testing done after 5pm. Only 3 patients (27%) were tested for brainstem death before 1pm. 3 patient's were tested for brainstem death at the weekend and 8 patients (82%) became organ donors. None of the patient's had a medical reason for delaying brainstem testing as their blood glucose and electrolytes including sodium, potassium, magnesium and phosphate were all within the accepted range for brainstem testing on morning bloods.

Discussion: We concluded that an effort could be made by the ICU team to make brainstem testing a priority for that day which would increase the overall number of patients tested for brainstem death before lunchtime. Benefits of this include timely referral to SNODs to start the process of organ donation and early referral for any necessary tests including echocardiography. It would avoid making referrals to the coroner out of hours and may make the experience somewhat easier for patient's next of kin by avoiding waiting all day to hear if their family member is deceased.

P178

Organ offering by hub operations

Jacqueline Newby

NHS Blood and Transplant, Bristol, United Kingdom

Introduction: The process of making an organ offer to a transplant centre moved from Specialist Nurses - Organ Donation to Hub Operations over 2017 – 18 and there is currently only DCD heart offering which remains within SN-OD role. A potential risk was that the organ donation process may became longer due to non-clinical staff making organ offers.

Methods: Historical time comparisons were reviewed as well as differences between SN-OD and Hub Operations.

Table 1 – time in hours between consent gained and retrieval surgery start

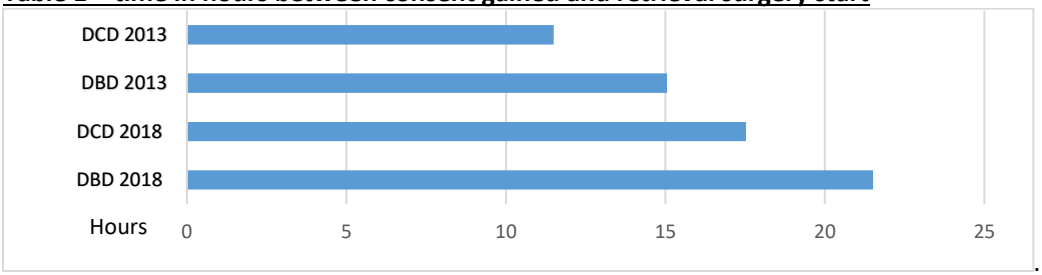
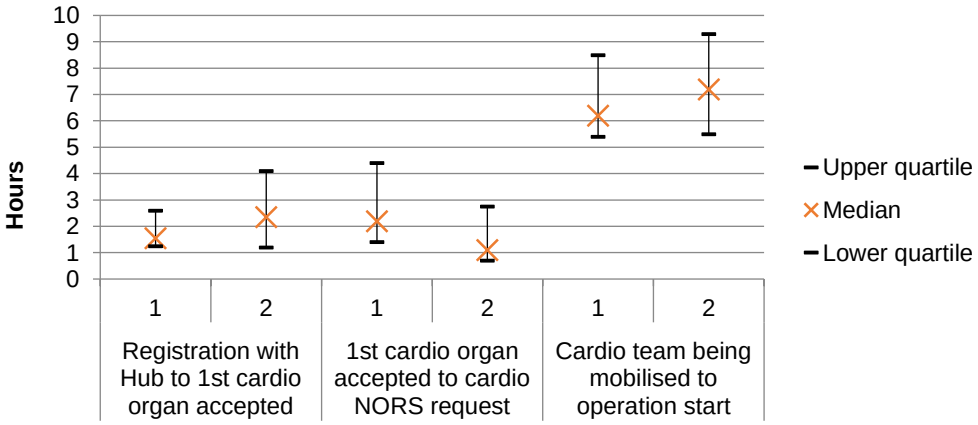


Table 2 shows data from 213 consented donors between September and December 2017 where at least one cardiothoracic organ was accepted.

Table 2 – donation process time intervals

1 = offering undertaken by Hub Operations 2 = offering undertaken by SN-ODs



Results: The slight decrease in time taken to place an organ seen when Hub Operations undertook offering may be attributed to having matching runs at hand and being able to initiate simultaneous organ offering early, whilst the increased time to mobilise teams may be down to poor communication between Hub Operations and SNODs. In March 2018 liver offering from DBD donors changed from centre offers for any patient to a named patient offer with Hub Operations making all offers. This resulted in a 16% increase in liver offers but the actual time from offering to acceptance increased by only 7 minutes.

Discussion: Early review would suggest that non-clinincal staff making organ offers to transplant centres have not increased the time it takes to get an organ accepted, However, all centre decline timings must be added to organ acceptance to give a true reflection of the total time organ offering takes. Further investigation is also needed to look at the reasons for the almost 8 hour time delay seen in table 2 between getting an organ accepted and surgery starting.

P179

The length of the deceased organ donation and transplantation process

Rebecca Curtis[1], Olive McGowan[2], Dale Gardiner[1]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]NHS Blood and Transplant, Leeds, United Kingdom

Introduction: Of all families declining organ donation, 12% of cases in 2015/16 were reportedly due to the length of the donation process being too long (146 of 1267 declines) with this figure rising to 13% in 2017/18 (150 of 1151 declines). Alongside this, pioneering analysis conducted in 2016 highlighted that the length of the organ donation and transplantation process in the UK was increasing. As such the process is now under regular review.

Methods: The DBD and DCD donation processes vary and therefore timings are reviewed separately. The time from the formal organ donation discussion with family to the time of transplantation of the donated organ is analysed, this is broken down into differing events depending on the process. The median time between each event of interest is routinely calculated for full or partial financial years.

Results: The most recent results produced are presented in tables 1 & 2. Data for 3,548 patients from the DBD process and 2,128 from the DCD process, facilitated between 1st April 2012 and 31st December 2017, are analysed. These results are soon to be updated to include the 2017/18 full financial year and partial 2018/19 results.

Table 1 – DBD process data

Financial year	Number of patients	Time from approach to retrieval operation start (hh:mm)	Time from retrieval operation start to kidney perfusion with recipient's blood (hh:mm)
2012/13	459	15:05	14:48
2013/14	576	16:51	14:19
2014/15	608	18:02	14:22
2015/16	637	19:46	14:02
2016/17	695	21:41	13:44
2017/18 (April-December)	573	21:51	13:18

Table 2 – DCD process data

Financial year	Number of patients	Time from approach to withdrawal of life sustaining treatment (hh:mm)	Time of withdrawal of life sustaining treatment to retrieval operation start (hh:mm)	Time from retrieval operation start to kidney perfusion with recipient's blood (hh:mm)
2012/13	284	11:50	0:26	11:56
2013/14	345	13:00	0:26	11:40
2014/15	329	14:30	0:26	11:30
2015/16	401	16:49	0:26	11:08
2016/17	423	17:55	0:26	11:07
2017/18 (April-December)	346	17:53	0:25	11:04

Discussion: Various events have been held involving relevant stakeholders to identify parts of the process that contributed to delays and possible initiatives to influence change in these areas. Initiatives that have been introduced to reduce the length of the donation process include; the development of a proforma and a ten-point plan for time-critical job completion for specialist nurses when they attend units of deceased organ donors. The most recent initiative involves encouraging retrieval operations to occur through the night and transplant surgery to occur during the day. A pilot is proposed for 2019 to ensure this occurs for several cases following a sequence of timed events.

P180

Trends in organ donation 2006 – 2017: a UK cardiothoracic transplant perspective

Sampath Weerakkody[1,2], Antonio Rubino[3], Dale Gardner[4]

[1]John V Farman Intensive Care Unit, Addenbrooke's Hospital, Cambridge, UK, Cambridge, United Kingdom. [2]Princess Royal Hospital, Shrewsbury, United Kingdom. [3]Papworth Cardiothoracic Hospital, Cambridge, United Kingdom. [4]Intensive Care Unit, Queen's Medical Centre, Nottingham, United Kingdom

Introduction: The last decade has seen a remarkable change in the landscape of organ donation after brain death (DBD) and circulatory death (DCD) in the UK. Between 2008 and 2011 the Organ Donation Taskforce[1] and other medical institutions[2-7] published recommendations that there was urgent need to address the lack of clear ethical, legal and professional practice frameworks, particularly for DCD.

Methods: Data was evaluated from the NHSBT potential donor audit, the organ donor register and renal registry.

Results: Despite a 75% increase in all donors in the UK from 2007 to 2017, there is consensus that further improvements are possible[8]. Three key metrics to achieve this are: increasing referral rates for all possible donors, the use of specialist nurses (SNODs) to facilitate family approaches, and consistent use of neurological death testing. Data from 2016/17 demonstrates the clear benefit of SNOD involvement, [9] contributing to a net decrease in the transplant waiting list for all organs from 2009. However, the mortality while waiting for a transplant is still between 3-27%, with the highest mortality accounted for by heart and lung transplant waiting lists.[10] Data from 2014-2017 demonstrate that cardiothoracic (CT) intensive care units (ICUs) compared to non-CT-ICUs perform similarly. Transplant and non-transplant CT-ICUs have a similarly high rate of SNOD involvement (82%), neurological testing was more prevalent at transplant CT-ICUs (88%), however interestingly, referral rates were worse at transplant CT-ICUs (83.1% versus 88.4%).

Discussion: CT-ICUs are pioneering new technology in resuscitation, with mechanical circulatory assist and extracorporeal membrane oxygenation devices available in the Emergency Department and even at the scene of incident. The issue of confirming death on such devices is contentious and needs clarification. Furthermore, the UK is moving towards deemed consent for organ donation, which may also affect uncontrolled DCD. We would recommend an expert panel working group, to collaboratively attain consensus for these emerging questions.

P181

Time to family approach from hospital admission

Chloe Brown[1], Alex Manara[2], Susanna Madden[1], Rebecca Curtis[1], Sue Duncalf[3], Ascanio Tridente[4], Dale Gardiner[1]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]Southmead Hospital, Bristol, United Kingdom. [3]NHS Blood and Transplant, Liverpool, United Kingdom. [4]St Helens and Knowsley Teaching Hospitals NHS Trust, St Helens, United Kingdom

Introduction: In January 2018 the UK Devastating Brain Injury (DBI) consensus statement was published recommending that intubated patients with perceived DBI should be admitted to ICU for a period of observation to improve prognostication. Concern was raised that increasing the time between hospital admission and the approach for organ donation may lead to a reduction in consent rate due to family fatigue. We investigated whether the consent rate is related to the time from hospital admission to family approach; whether the time from admission to approach increased following introduction of the DBI guidance; and whether there is regional variation in time to approach across Organ Donation Services Teams (ODST).

Methods: Data was obtained from the national Potential Donor Audit on all eligible DBD and DCD approaches between 1 January – 30 June 2018 and from a comparative timeframe in 2016 and 2017.

Results: The time from hospital admission to approach was similar across teams for DCD donors (Figure 1) and more variable for DBD donors (Figure 2), with national median times of 89 and 61 hours respectively.

Figure 1 Median time from hospital admission to approach for all eligible DCD approaches in each ODST

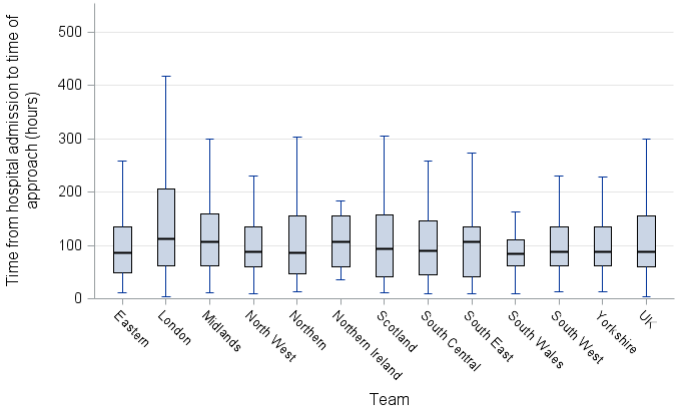
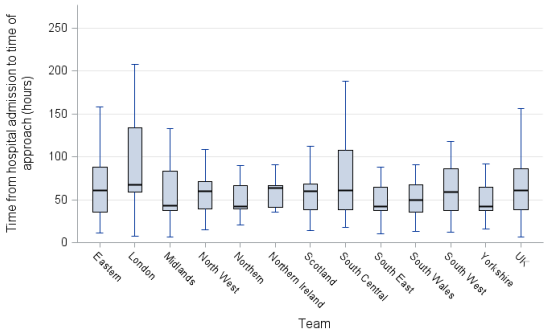


Figure 2 Median time from hospital admission to approach for all eligible DBD approaches in each ODST



There was no significant change in median time from hospital admission to approach after introduction of the DBI guidance for both DBD and DCD patients nationally (Kruskal-Wallis p=0.17, p=0.29 respectively). The median time from hospital admission to approach was significantly longer in those consenting for DCD (106 hrs (IQR: 61-158)) compared to those declining (85 hrs (IQR: 49-135)), p=0.01. The time from admission to approach in DBD was similar in those consenting (61 hrs (IQR: 39-85)) and those declining (62 hrs (IQR: 40-87)).

Discussion: The introduction of DBI pathways does not appear to have changed the median time from hospital admission to approach for DBD or DCD eligible donors. Further studies should focus on the potential effect of time of family approach on consent in potential DCD donors.

P182

Learning from service user's experience to strengthen quality care

Kay Sybenga

NHSBT - Clinical Governance, Newcastle, United Kingdom

Introduction: Evaluation **is** important in healthcare because it supports an evidence-based approach to the care we provide. In such an important sphere of health care it assists in judging how good our service is and informs decisions about changes that could be considered to enhance the care we provide. It was recognised that lessons are learnt locally from complaints and compliments but our national sharing process for compliments and complaints required strengthening.

Method: "Complimentary Tales" and "Learning from complaints" were developed to share service user feedback nationally. The aim of the quarterly updates is to share and review compliments and learn from other areas. The updates are circulated to the directorate quarterly via Team Talk including:

- Compliments
- Professional recognition
- Successes linking to Nursing Strategy 2020
- Clinical and non-clinical complaints data
- Key learning from complaints

Results: "Complimentary Tales" has encouraged sharing success and showed an increase in compliments from health care professionals. Teams have acknowledged that donor family compliments are a great motivator and boost for morale, enabling SNODs to review good practice and provides insight of how the service is experienced. The implementation of "Learning from complaints" has enabled teams to learn from others, review actions taken based on feedback and assess whether any actions or review of processes locally are required.

Discussion: The quarterly updates allow us to have up to date information on service evaluation. It also allows us to compare the number of compliments received in comparison to the number of clinical and non-clinical complaints:

Quarter 2018-19	Clinical (non-clinical) complaints	Compliments
1	8 (2)	25
2	8 (4)	22
Total	16 (6)	47

Overall, the findings show that meaningful feedback from service users is a powerful way of ensuring our service is achieving standards we expect to achieve, for every family, every time, highlighting the benefits of the change in process.

P183

Outcomes following renal transplant from deceased AKI donors: a single-centre retrospective analysis involving 23 recipients

Lucy Hare, John Black, Rosemary Johns, Mohamed Morsy, Tahir Doughman, Anna Rizzello, Atul Bagul

Department of Renal Transplant, Leicester General Hospital, University Hospitals of Leicester, Leicestershire, United Kingdom

Aims: Acute kidney injury (AKI) is defined as an abrupt reduction in kidney function, measured through an increase in serum creatinine and/or decreased urine output. This study looks at kidney donation in the context of donor AKI, with a particular focus on recipient outcomes (graft function, transplant rejection, and mortality).

Methods: 23 recipients of kidney transplant from a donor with AKI (stages 1-3) were identified over a 24 month period (01/06/15-01/06/17).16 recipients were included in this study;7 were excluded based on criteria. Donor forms were used to obtain donor specifics. Electronic records were used to assess recipient outcomes.

Results: Donor details and recipient outcomes are summarised below. The mean average (+/- SD) is used unless specified.

DONOR DETAILS		**RECIPIENT OUTCOMES**	
Age (years)	51.9	Age (years)	51.3
Sex(M:F)	1:1	Primary Non-Function (PNF)	0%
BMI	27.1(+/- 4.03)	Delayed Graft Function (DGF)	31.3%
Donor (DBD:DCD)	5:2	Episode of Rejection	6.3%
Admission creatinine(µmol/l)	98.1(+/- 36.9)	Creatinine 7 days (µmol/l)	525(+/- 254)
Retrieval creatinine (µmol/l)	204(+/- 101.4)	Creatinine 1 month (µmol/l)	195(+/- 91.6)
History of hypertension	28.6%	Creatinine 6 months (µmol/l)	170(+/- 89.2)
History of diabetes	0%	Creatinine 12 months(µmol/l)	157(+/- 85.9)
Proteinuria >30mg/dl(+)	35.7%	Mortality	0%
Haematuria	57.1%	Length of stay (days)	11.2(+/- 5.88)

Discussion: Mean donor age 51.9 years (11-76). 28.6% were DCD. Mean donor serum creatinine was 204µmol/L at retrieval. Mean recipient age was 51.3 (29-68). The mean serum creatinine 7 days post-transplant was 525 µmol/L. One year mean serum creatinine was 157µmol/l. Average length of stay was 11.2 days. 31.3% of recipients had DGF. 1 recipient was treated for rejection.12-month graft survival was 100%. 1 recipient was treated for acute CMV infection at 5 months post-transplant. 1 recipient developed adenocarcinoma of the colon. There were no mortalities. AKI donor outcomes are acceptable.

P184

How can transplant clinicians make the best use of centre-specific offer decline data provided by NHSBT? A survey of kidney transplant surgeons

Catherine Boffa[1,2], Prodromos Laftsidis[3], Chris Callaghan[2], Nizam Mamode[2], Vassilios Papalois[4]

[1]Portsmouth Hospital Trust, Portsmouth, United Kingdom. [2]Guy's and St Thomas' Trust, London, United Kingdom. [3]Portsmouth Hospitals Trust, Portsmouth, United Kingdom. [4]Imperial Hospital, London, United Kingdom

Introduction: NHSBT provides data directly to units on declined deceased donor organ offers. However, there is some uncertainty about the best way for units to use and learn from this information. A survey was sent to transplant surgeons to identify current practice, and to gain consensus on the optimal ways of learning from collected experiences.

Methods: A web-based survey was sent out to 135 consultant kidney transplant surgeons in all 23 adult UK units, using the Chapter of Surgeons' mailing list.

Results: 53 surgeons responded (response rate 39%). All units except three had a responder. 91% of surgeons reported that there is a regular forum to discuss declined kidney offers in their unit, and most are attended by consultant surgeons (98%), consultant nephrologists (90%), surgical trainees (82%), recipient co-ordinators (80%), and nephrology trainees (59%). The majority of these meetings occur monthly (65%) or quarterly (25%). 60% of responders feel the data provided by NHSBT could be improved, though 91% find the process of following up declined kidney offers useful and 57% feel that they have changed their practice for accepting deceased donor kidney offers. A variety of alternative forums for learning from declined offers were suggested

Discussion: The overwhelming majority of UK kidney transplant units have regular multi-disciplinary meetings to discuss offer decline data provided by NHSBT; these are felt to be useful and are likely to have changed practice. Further suggestions for the refinement of the data provided were proposed, and ongoing thought is needed on how to disseminate key learning points from this process.

P185

Checklists and role cards limiting human factors in DCD retrieval

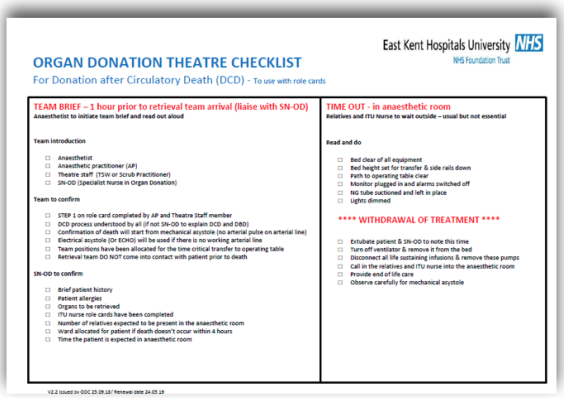
Adam Coates [1], Ranjit Dulai[1], Barry Featherstone[1], Christine Vimalanathan[1], Kim Hoyland[1], Jacqui Kennedy[1,2], Simon Lawrence[1,2]

[1]William Harvey Hospital, East Kent University Hospitals NHS Foundation Trust, Ashford, Kent, United Kingdom. [2]NHS blood and transplant team, Ashford, Kent, United Kingdom

Introduction: In 2017/2018, there were 7 DCD across the East Kent Hospitals (613 nationally). These are rare events and are on the increase. NICE guidelines state "The multidisciplinary team must have the necessary skills and knowledge," to facilitate a DCD. To help educate our MDT, a simulation course MODIS (Managing Organ Donation In the Simulator) was established in 2016. From real life DCD feedback and the MODIS course, numerous human factors and lack of understanding around the DCD process were highlighted. These include the roles of the SN-ODs, the theatre team as well as interaction with the transplant retrieval teams. A clearer system was needed. This led to the development of a DCD checklist and role cards.

Method: The theatre checklist and role cards for the anaesthetist, ODP, theatre and ICU nurses were drafted in conjunction with the theatre team. They were trialled by in-situ theatre DCD simulation; feedback was gained and they were adjusted accordingly. The policy guidelines can be found on the trust intranet and the role cards on lanyards in theatre.

Results:



East Kent Hospitals University NHS
NHS Foundation Trust

ORGAN DONATION THEATRE CHECKLIST

For Donation after Circulatory Death (DCD) - To use with role cards

TEAM BRIEF – 1 hour prior to retrieval team arrival (liaise with SN-OD)
Anaesthetist to initiate team brief and read out aloud

Team introduction
- ☐ Anaesthetist
- ☐ Anaesthetic practitioner (AP)
- ☐ Theatre staff (TSW or Scrub Practitioner)
- ☐ SN-OD (Specialist Nurse in Organ Donation)

Team to confirm
- ☐ STEP 1 on role card completed by AP and Theatre Staff member
- ☐ DCD process understood by all (if not SN-OD to explain DCD and DBD)
- ☐ Confirmation of death will start from mechanical asystole (no arterial pulse on arterial line)
- ☐ Electrical asystole (Or ECHO) will be used if there is no working arterial line
- ☐ Team positions have been allocated for the time critical transfer to operating table
- ☐ Retrieval team DO NOT come into contact with patient prior to death

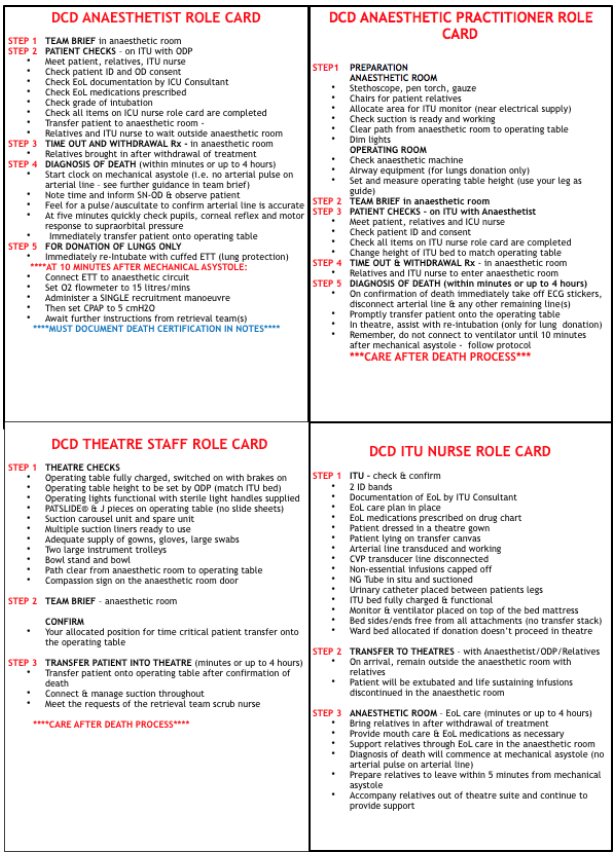
SN-OD to confirm
- ☐ Brief patient history
- ☐ Patient allergies
- ☐ Organs to be retrieved
- ☐ ITU nurse role cards have been completed
- ☐ Number of relatives expected to be present in the anaesthetic room
- ☐ Ward allocated for patient if death doesn't occur within 4 hours
- ☐ Time the patient is expected in anaesthetic room

TIME OUT - in anaesthetic room
Relatives and ITU Nurse to wait outside – usual but not essential

Read and do
- ☐ Bed clear of all equipment
- ☐ Bed height set for transfer & side rails down
- ☐ Path to operating table clear
- ☐ Monitor plugged in and alarms switched off
- ☐ NG tube suctioned and left in place
- ☐ Lights dimmed

**** WITHDRAWAL OF TREATMENT ****
- ☐ Extubate patient & SN-OD to note this time
- ☐ Turn off ventilator & remove it from the bed
- ☐ Disconnect all life sustaining infusions & remove these pumps
- ☐ Call in the relatives and ITU nurse into the anaesthetic room
- ☐ Provide end of life care
- ☐ Observe carefully for mechanical asystole

V2.2 Issued in OOC 25.09.18/ Renewal date 24.05.19



DCD ANAESTHETIST ROLE CARD

STEP 1 **TEAM BRIEF** in anaesthetic room
STEP 2 **PATIENT CHECKS** - on ITU with ODP
- Meet patient, relatives, ITU nurse
- Check patient ID and OD consent
- Check EoL documentation by ICU Consultant
- Check EoL medications prescribed
- Check grade of intubation
- Check all items on ICU nurse role card are completed
- Transfer patient to anaesthetic room -
- Relatives and ITU nurse to wait outside anaesthetic room

STEP 3 **TIME OUT AND WITHDRAWAL Rx -** in anaesthetic room
- Relatives brought in after withdrawal of treatment

STEP 4 **DIAGNOSIS OF DEATH** (within minutes or up to 4 hours)
- Start clock on mechanical asystole (i.e. no arterial pulse on arterial line - see further guidance in team brief)
- Note time and inform SN-OD & observe patient
- Feel for a pulse/auscultate to confirm arterial line is accurate
- At five minutes quickly check pupils, corneal reflex and motor response to supraorbital pressure
- Immediately transfer patient onto operating table

STEP 5 **FOR DONATION OF LUNGS ONLY**
- Immediately re-intubate with cuffed ETT (lung protection)

****AT 10 MINUTES AFTER MECHANICAL ASYSTOLE:**
- Connect ETT to anaesthetic circuit
- Set O2 flowmeter to 15 litres/mins
- Administer a SINGLE recruitment manoeuvre
- Then set CPAP to 5 cmH2O
- Await further instructions from retrieval team(s)

*****MUST DOCUMENT DEATH CERTIFICATION IN NOTES*****

DCD ANAESTHETIC PRACTITIONER ROLE CARD

STEP1 **PREPARATION**
ANAESTHETIC ROOM
- Stethoscope, pen torch, gauze
- Chairs for patient relatives
- Allocate area for ITU monitor (near electrical supply)
- Check suction is ready and working
- Clear path from anaesthetic room to operating table
- Dim lights

OPERATING ROOM
- Check anaesthetic machine
- Airway equipment (for lungs donation only)
- Set and measure operating table height (use your leg as guide)

STEP 2 **TEAM BRIEF in anaesthetic room**
STEP 3 **PATIENT CHECKS - on ITU with Anaesthetist**
- Meet patient, relatives and ICU nurse
- Check patient ID and consent
- Check all items on ITU nurse role card are completed
- Change height of ITU bed to match operating table

STEP 4 **TIME OUT & WITHDRAWAL Rx** - in anaesthetic room
- Relatives and ITU nurse to enter anaesthetic room

STEP 5 **DIAGNOSIS OF DEATH (within minutes or up to 4 hours)**
- On confirmation of death immediately take off ECG stickers, disconnect arterial line & any other remaining line(s)
- Promptly transfer patient onto the operating table
- In theatre, assist with re-intubation (only for lung donation)
- Remember, do not connect to ventilator until 10 minutes after mechanical asystole - follow protocol

CARE AFTER DEATH PROCESS

DCD THEATRE STAFF ROLE CARD

STEP 1 **THEATRE CHECKS**
- Operating table fully charged, switched on with brakes on
- Operating table height to be set by ODP (match ITU bed)
- Operating lights functional with sterile light handles supplied
- PATSLIDE® & J pieces on operating table (no slide sheets)
- Suction carousel unit and spare unit
- Multiple suction liners ready to use
- Adequate supply of gowns, gloves, large swabs
- Two large instrument trolleys
- Bowl stand and bowl
- Path clear from anaesthetic room to operating table
- Compassion sign on the anaesthetic room door

STEP 2 **TEAM BRIEF** - anaesthetic room

CONFIRM
- Your allocated position for time critical patient transfer onto the operating table

STEP 3 **TRANSFER PATIENT INTO THEATRE** (minutes or up to 4 hours)
- Transfer patient onto operating table after confirmation of death
- Connect & manage suction throughout
- Meet the requests of the retrieval team scrub nurse

****CARE AFTER DEATH PROCESS****

DCD ITU NURSE ROLE CARD

STEP 1 **ITU** - check & confirm
- 2 ID bands
- Documentation of EoL by ITU Consultant
- EoL care plan in place
- EoL medications prescribed on drug chart
- Patient dressed in a theatre gown
- Patient lying on transfer canvas
- Arterial line transduced and working
- CVP transducer line disconnected
- Non-essential infusions capped off
- NG Tube in situ and suctioned
- Urinary catheter placed between patients legs
- ITU bed fully charged & functional
- Monitor & ventilator placed on top of the bed mattress
- Bed sides/ends free from all attachments (no transfer stack)
- Ward bed allocated if donation doesn't proceed in theatre

STEP 2 **TRANSFER TO THEATRES** - with Anaesthetist/ODP/Relatives
- On arrival, remain outside the anaesthetic room with relatives
- Patient will be extubated and life sustaining infusions discontinued in the anaesthetic room

STEP 3 **ANAESTHETIC ROOM** - EoL care (minutes or up to 4 hours)
- Bring relatives in after withdrawal of treatment
- Provide mouth care & EoL medications as necessary
- Support relatives through EoL care in the anaesthetic room
- Diagnosis of death will commence at mechanical asystole (no arterial pulse on arterial line)
- Prepare relatives to leave within 5 minutes from mechanical asystole
- Accompany relatives out of theatre suite and continue to provide support

Discussion: DCD surgery is rare within a single hospital and should be seen as emergency surgery. The checklist and role cards facilitate optimal donor management, providing the best conditions for the retrieved organs and their outcomes, and importantly honouring the wishes of the deceased. They also ease the burden of responsibility sensed by the theatre team to ensure the procedure goes smoothly. The WHO checklist has been shown to significantly improve patient outcomes, and has highlighted the beneficial role that checklists have to offer. With an increased demand for organ donation and DCD becoming more common, the roles of theatre teams need to be clear. The DCD checklist and role card system contain critical safety steps developed through simulation trials and have the potential to be replicated nationwide.

P186

Audit of documentation for the diagnosis of death using neurological criteria in a regional organ donation team (April 17 to March 18)

Helen McManus[1], Michael Willcox[2]

[1]NHS Blood & Transplant. ODT, Southampton, United Kingdom. [2]NHS Blood & Transplant. ODT, Portsmouth, United Kingdom

Introduction: Diagnosis and confirmation of death is extremely important in medical practice regardless of organ donation, nevertheless for donation after brain death (DBD) donors an expectation of these procedures is to have good documentation that demonstrates due processes and application of guidelines where applicable. Furthermore, this adds to medical professionals and the public's justifiable confidence in the procedures and diagnosis.

Aim: To provide evidence for resolvable recurring documentation errors for death by neurological criteria (DNC) documentation within an organ donation team

Objectives: Highlight common problems with DNC documentation. Identify areas of DNC documentation that can be addressed with education to both clinicians and SNODs. Highlight any potential difficulties with accurately documenting DNC. Identify issues with DNC documentation that may require further investigation.

Methods: The audit reviewed all fields in DNC forms for DBD donors over a year in one organ donation team

Results: A total of 69 forms were reviewed - date range April 17 to March 18. A mix of DNC forms in use - 2 different full guidance versions (long forms) and 5 different abbreviated versions (short forms).

Findings:

- Donor demographics missing from pages 21/69 forms.
- Evidence for irreversible causes missing 2/69 forms
- Ancillary testing field blank 14/69 forms
- Completion of diagnosis missing or incomplete 2/69 forms
- Arterial Blood Gas pre-apnoea test not meeting criteria (starting $PaCO_2 \geq 6.0kPa$ & starting pH < 7.4 [H+] >40nmol/L) 11/69 forms
- 45% of tests carried out after 4pm contributing to donation during the night which is difficult to arrange

Discussion:

- CLODs informed of documentation practice within hospitals
- Units dispose of "old DNC forms" - keeping most recent versions
- Following DNC, forms are reviewed fully by the SNOD with clinicians to amend any errors
- Consideration for earlier DNC testing

P187

An audit of offering organ donation following best practice guidelines against the pre-mention of organ donation in a single hospital Trust

Michael Willcox[1], Helen McManus[2]

[1]NHS Blood & Transplant ODT, Portsmouth, United Kingdom. [2]NHS Blood & Transplant ODT, Southampton, United Kingdom

Introduction: The biggest barrier preventing more organs becoming available for transplant is families declining consent (NHSBT 2016). NHS Blood and Transplant identifies a best practice model (NHSBT 2013) for offering donation nevertheless this model is not always followed. We audited 5 years of approach data (n100), in one hospital trust to see how different methodologies compare.

Objectives:

- To see if the best practice method methodology achieves a higher consent rate than a pre-mention methodology.
- To identify any need for further education or research

Methods: Pre-mention of donation was identified as: donation being talked about to a family in any way different to NHSBT best practice guidance (NHSBT 2013). All data was extracted from the potential donor audit and analysed by embedded SNODs.

Results: 53% of approaches were pre-mentions, 10% families raised donation without being asked, SNOD only approach 2% and 35% approaches were collaborative (32% DCD 41% DBD). Consent when donation was pre-mentioned in DCD was 67% & DBD 76%. Consent when best practice followed was DCD 77%, DBD 85%. Registrar approaches were also represented in the audit showing a combine consent rate of 38% whilst three of thirteen consultants had consent rates over 83% mainly using a pre-mention methodology

Discussion: This hospital achieves good consent rates regardless of the approach methodology, nonetheless following best practice guidelines shows higher consent rates than pre-mentioning of donation. Individually some consultants who do not consistently follow best practice achieve better results. Supporting individuals effective practice would seem reasonable however this would be an inconsistent approach to promoting best practice, furthermore what a pre-approach entails requires further investigation. Surprisingly in this hospital registrars rarely followed best practice and achieving very low consent rates.

P188

Organ donation after extracorporeal mechanical support oxygenation (ECMO). A retrospective study

Charles Slater[1], Jonathan Sinclair-Williams[1], Andrew Hadley-Brown[2], Jo-Anne Fowles[2], George Joseph Thundyil[3], Debbie Watford[3], Antonio Rubino[2]

[1]University of Cambridge, Cambridge, United Kingdom. [2]Royal Papworth Hospital, Cambridge, United Kingdom. [3]NHSBT, Cambridge, United Kingdom

Introduction: Historically, most organ donations were following brain-stem death (DBD). There is growing research about organ donation following cardiac death (DCD). For patients who have undergone unsuccessful attempts at using live-saving mechanical support devices such as ECMO, , there is the opportunity to optimise organ perfusion and suitability for donation using the mechanical support devices. We sought to evaluate how many patients who died whilst on ECMO, or immediately after weaning from ECMO, were referred to for organ donation. From this patient population, we evaluated how many donations were made.

Methods: We retrospectively reviewed the medical records for all patients on VV, cAV and pAV ECMO between the years 2015-2018 in our institution. We assessed the total number of patients on ECMO, the number of deaths during and post-ECMO, the number of organ donation referrals, and finally the number of donations.

Results: Between 2015-2018, a total of 270 patients were put on ECMO. Of those, 87 (32%) died whilst on ECMO and 29 (11%) died immediately following ECMO withdrawal. Of those who died on ECMO, 21 (72%) were referred to SNOD (specialist nurse for organ donation) resulting in three donations. Of those who died post ECMO, 13 (45%) were referred to SNOD resulting in one donation.

Discussion: All patients who are on ECMO should be referred to SNOD for donation assessment, regardless of morbidity status. Improvements need to be made to the SNOD referral protocol for patients who are on ECMO or have recently been weaned. There were very few donations made following the SNOD referral, more research needs to be done in how best to optimise the organs of ECMO patients in whom the care is withdrawn to potentially increase the size of the organ donation pool.