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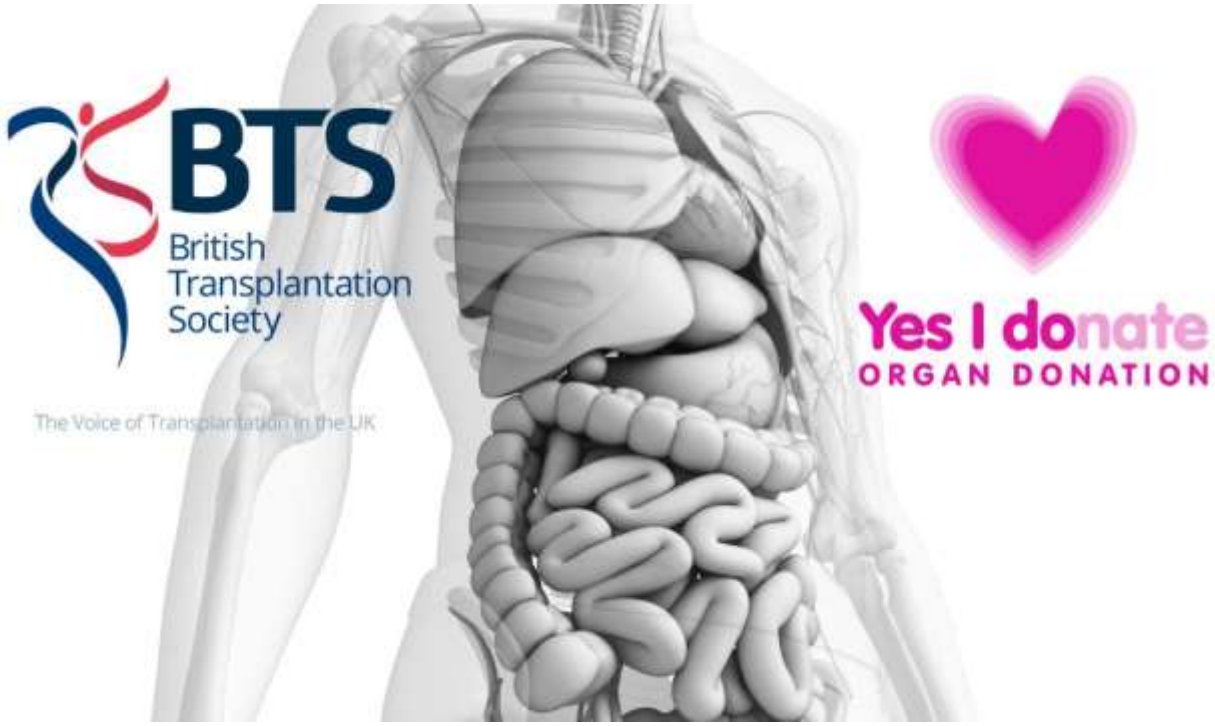
Abstract Book



MEDAWAR MEDAL PRESENTATIONS

M01: Utilisation and clinical outcomes of simultaneous pancreas kidney transplantation from older pancreas donors: Single centre experience

Mr Jeevan Gopal[1], Mr Kazim Abbas[1], Ms Jennifer Kingston[1], Prof Titus Augustine[1,2], Mr Raman Dhanda[1], Mr David van Dellen[1,2], Mr Zia Moinuddin[1,2]

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Abstract

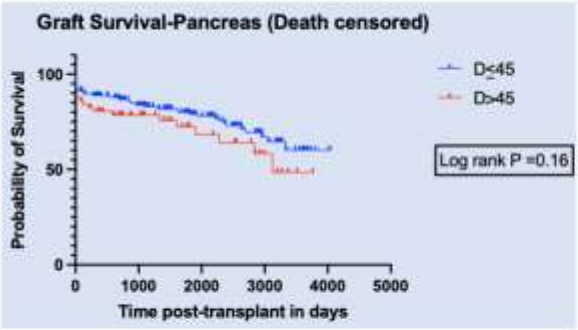
Introduction: Donor pancreas utilisation rates for transplantation are inferior to that of the other organs. Despite the revised NHSBT donor age limit (DBD<61-years/DCD<56-years), pancreas utilisation rates from donors >45-years remain low due to the perceived poor outcomes. Hence, we aimed to investigate the outcomes of simultaneous pancreas & kidney (SPK) transplants from donors >45-years & their utilisation rate in our cohort.

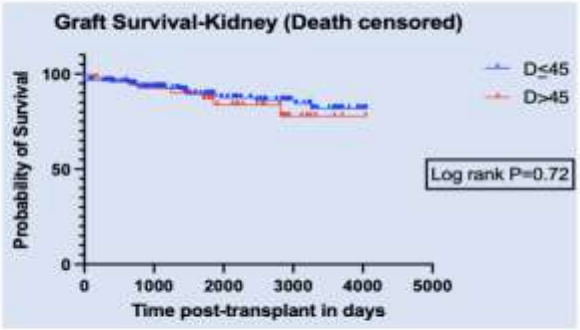
Methods: Our centre's data on all SPK transplants performed and named SPK offers received between 01-01-2010 to 31-12-2020 was retrospectively analysed. The primary aim was to compare the pancreas graft loss (3-month & 1-year) and long-term survival between SPK transplants performed from donors aged ≤45-years (D≤45) & >45-years (D>45). The secondary aim was to compare the utilisation rates between the two groups. Appropriate univariate & multivariate analysis were performed.

Results: 276 transplants were done and the baseline characteristics as in table-1. The 3-month & 1-year pancreas graft loss were comparable between D≤45 & D>45 cohorts (8.6% vs. 14.03%, p=0.21; 10.9% vs. 19.29%, p=0.09, respectively). The overall patient survival and death-censored dual graft survival was comparable (figure-1). In a cox proportional hazards regression model, donor age>45-years was not at increased risk for pancreas graft loss (HR 1.57, CI 0.89 to 2.69, p=0.10). Among the 2574 named offers received, 55% (1423) were from D>45 group (median donor age = 54-years; IQR 50-57). The offer decline rate was significantly higher in the D>45 group (96.34% vs. 83.57%, p<0.0001). Among the declined offers, 13.1% (180/1371) of the offers in the D>45 group were declined solely based on the donor's age.

Discussion: We are the first to report outcomes from older donors along with utilisation data. Acceptance from older donors are likely to be more selective. Survival outcomes from this under-utilised cohort are equivalent to younger donors, thereby supporting the usage of older pancreas donors to improve organ utilisation.

Figure 1





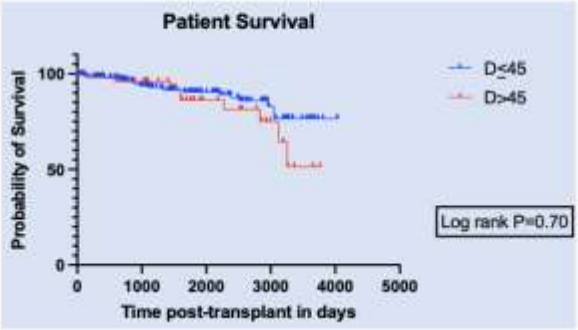


Table 1

Donor/ recipient/ transplant characteristics	Donor age > 45 (n=57)	Donor age ≤45 (n=219)	P value
Median donor age (IQR)	51 (48-54)	26 (19-36)	<0.0001
Median donor BMI in Kg/sq.m (IQR)	24.5 (22.7-26.8)	22.7 (20.5-25)	<0.0001
Median donor abdomen girth in cms (IQR)	94 (83-97)	80 (74-89)	<0.0001
Proportion of non-Caucasian donors (Number)	10.52% (6/57)	7.76% (17/219)	0.50
Proportion of non-traumatic COD (Number)	96.49% (55/57)	89.04% (195/219)	0.08
Proportion of local donors (Number)	26.31% (15/57)	23.74% (52/219)	0.68
Proportion of insulin use in donors (Number)	50.87% (29/57)	35.15% (77/219)	0.03
% of heavy alcoholic (>9 U/day) donors (Number)	61.40% (35/57)	56.16% (123/219)	0.47
Median recipient age in years (IQR)	42 (36.5-49)	40 (34-48)	0.11
Median recipient BMI in kg/sq.m (IQR)	24.6 (21.8-26.6)	24.4 (22.1-27.2)	0.77
Median pre-Tx Insulin use in U/day (IQR)	40 (30-50)	40 (32-50.7)	0.29
Median duration of diabetes in years (IQR)	28 (23-36)	27 (22-32.5)	0.41
Proportion of sensitised recipients (Number)	24.56% (14/57)	30.13% (66/219)	0.40
Median waiting time in days (IQR)	528 (304.5-793.5)	458 (173-654)	0.10
Proportion of DCD Tx (Numbers)	17.54% (10/57)	38.81% (85/219)	0.002
Proportion of non-Caucasian recipients (Number)	3.50% (2/57)	5.47% (12/219)	0.54
% of recipients with non-favorable MM (Number)	93% (53/57)	97.26% (213/219)	0.12
Median CIT in mins (IQR)	690 (537-800)	653 (558-781)	0.87
Median WIT in mins (IQR)	38 (30-45)	36 (31-44)	0.74

Categories: Clinical - pancreas and islet (pancreatic transplant (all types) - surgery - recipient clinical care and management)

M02: Assessment of 'molecular organ age' in retrieval kidney biopsies

Dr Roy Zhang[1], Dr Patrick Trotter[1], Dr James McCaffrey[1,2], Dr Benjamin Stewart[1,3], Dr John Ferdinand[1], Dr Kevin Loudon[1], Dr Alexandra Riding[1], Dr Jonathan West[1], Dr Ashley Ferro[1], Dr Robert Kirkpatrick[4], Professor Menna Clatworthy[1,3]

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Abstract

Introduction: Kidney transplantation is an excellent treatment for end-stage kidney failure but organ shortage remains a problem. The use of marginal donor kidneys is hampered by variable outcomes and an inability to accurately predict post-transplant function. Transcriptomic profiling enables an in-depth assessment of the dominant molecular processes occurring in kidneys, quantifying the expression of ~25,000 genes, with the potential to identify novel outcome-associated biomarkers.

Methods: Retrieval biopsies were obtained via the Quality in Organ Donation (QUOD) biobank from n=271 deceased circulatory death kidneys and processed for bulk RNA-sequencing and histological assessment. Transcriptional features associated with delayed graft function (DGF) and 12-month estimated glomerular filtration rate (eGFR) were assessed using differential gene expression and pathway enrichment. Weighted gene co-expression network analysis (WGCNA) was used to identify gene modules co-associated with outcome and age.

Results: Following adjustment for variable tissue composition, we found enrichment of neutrophil and acute inflammatory gene signatures associated with better transplant outcomes, including DGF and 12-month eGFR. In contrast, kidneys with a worse prognosis showed positive enrichment for fibrosis- and adaptive immune-gene signatures (Figure 1), with increased interstitial lymphocyte infiltration confirmed histologically. WGCNA of cortical biopsies identified an adaptive immune gene-rich module that significantly associated with increasing age and worse outcomes (Figure 2). Cellular deconvolution using human kidney reference single cell transcriptomes confirmed an increase in kidney-specific B and T cell signatures, as well as kidney macrophage, myofibroblast and fibroblast genesets in this module, corroborating our differential expression analysis and localising these findings to the cortex.

Discussion: Altogether, our work reveals the cellular molecular features of pathological organ ageing, identifiable at organ retrieval, and supports the use of transcriptomic assessment of 'molecular organ age' in pre-transplant kidney assessment.

Figure 1: Gene set enrichment analysis using signatures from the Kidney Cell Atlas.

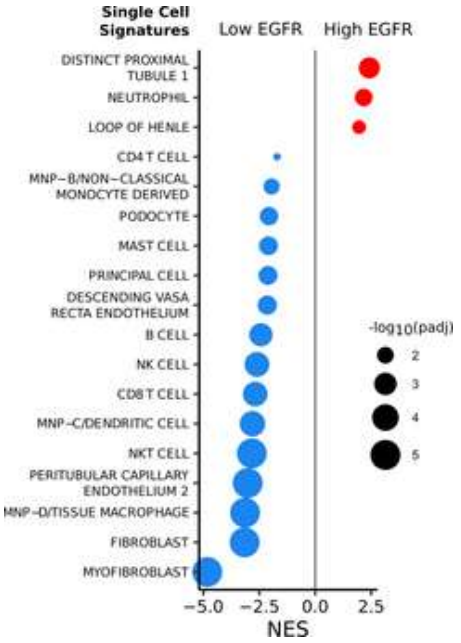
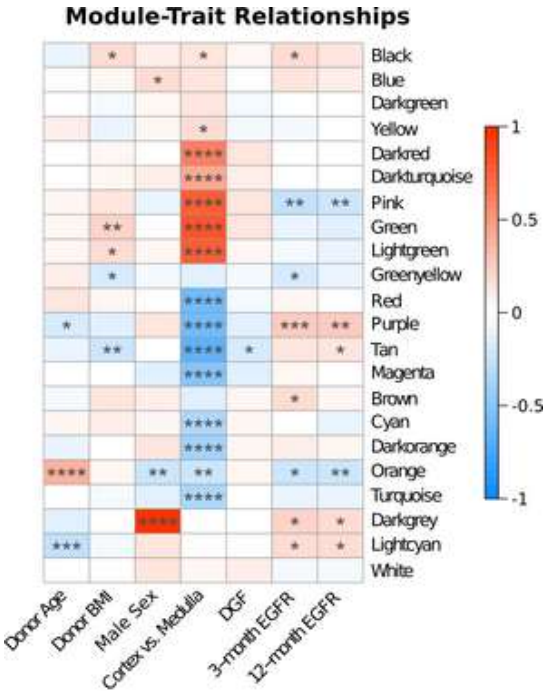


Figure 2: Module-trait relationships. Colour indicates correlation (*, p<0.05; **, p<0.01; ***, p<0.001; ****, p<0.0001).



Categories: Basic and translational science (as per category - all science)

M03: Artificial Intelligence Decision making in Kidney Transplant (AID-KT): Accurate and explainable machine learning predictions for 10-year kidney graft survival

Dr. Laura Wingfield[1], Dr. Achille Salaun[2], Dr. Tingting Zhu[3], Mr. Simon Knight[1]

[1]Oxford Transplant Centre, Oxford, United Kingdom. [2]Department of Engineering Science, Oxford, United Kingdom. [3]Department of Engineering, Oxford, United Kingdom

Abstract

Introduction: Decisions around kidney organ offers are made by the transplant team based upon information available at the time of offer. Clinicians use clinical experience, but do not have clinical decision tools available to help predict individual patient outcomes from donor and recipient characteristics. This project aims to develop machine learning (ML) models to help decision making at the time of organ offer.

Methods: This study used donor and recipient demographic data (n=32,850) and transplant outcomes from the UK transplant registry over 20 years. ML models were created to predict overall survival functions, survival classifications at discrete time-points, and multiple risk classification (death, alive with graft function and alive with failed graft) out to 10 years post-transplant. ML models were compared to cox regression. Shapey values, which determine factor contribution in ML models, were used to select the most significant variables and understand the contribution of demographic factors to predictions. Models were assessed using area under the receiver operator curve (AUC) and calibration measures.

Results: ML algorithms were able to predict 1, 3, 5, and 10-year graft survival, with discrete classification models more accurate than those predicting the whole survival function. Ten-year graft survival was easier to predict than earlier timepoints (neural nets, AUC 0.72), due to higher event rates over time and better representation of long-term risk factors.

Discussion: This initial work created successful explainable ML model, which perform on par with traditional modelling predicting long-term graft survival. Survival models and short-term classification models do not outperform cox regression, but ML models show promise in predicting all long-term patient outcomes at 10-years post-transplant, meaning that models could be very useful in decision making and risk communication at the time of organ offering. Future work will investigate multiple risk analysis, as donor and recipient features in models may reflect those seen in existing tools.

Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

M04: The role of intestinal barrier dysfunction and the gut microbiota in acute renal transplant rejection

Mr Fernando Yuen Chang[1,2], Dr Amber Vaitkute[2], Miss Meryl Attrill[2], Dr Stephanie Chong[2], Miss Hibo Mahdi[1], Dr Paul Blair[2], Professor Alan Salama[1,2], Dr Simon Eaton[2], Professor Claudia Mauri[2], Dr Mona Bajaj-Elliott[2], Dr Anne Pesenacker[2], Professor Reza Motallebzadeh[1,2]

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

Abstract

Introduction: Long-term graft survival in renal transplantation remains a challenge. Emerging evidence suggests that the gastrointestinal microbiota-immune axis impacts on extra-intestinal health. Our study aims to identify the interplay between the gut microbiota and recipient immunity, with our hypothesis that a pro-inflammatory state, promoted by increase gut permeability and reduced availability of bacterial-derived metabolites associated with immunoregulation e.g. short chain fatty acids (SCFAs), is related to acute rejection (AR).

Methods: Ninety transplant recipients and twenty-one live-donors were recruited with urine, stool and blood samples collected at baseline and up to 12-months after surgery. Flow cytometry was used to assess proportions of peripheral blood $CD45^+CD19^+$ B-cells and $CD45^+CD3^+CD4^+CD45RA^-CXCR5^+$ T-follicular helper cells (T_{FH}) in a subcohort (n=54). Gut permeability was assessed by measurement of intestinal fatty-acid binding protein (i-FABP). The gut microbiota was profiled by 16S-rRNA sequencing and gut-associated metabolome by high-performance liquid chromatography and gas chromatography-mass spectrometry.

Results: Patients with AR had evidence of increased gut permeability before transplantation (figure 1). There was a trend for higher frequencies of plasmablasts, resting memory B-cells and T_{FH} cells pre-transplantation in patients with AR, with reduced frequencies of transitional B-cells (3.96%±1.14% vs 3.26%±1.23%; p=0.26) and $FoxP3^+$ T_{FH} cells (0.026% IQR[0.009-0.072] vs 0.003% IQR[0-0.020]; p=0.03) at 3-months. Levels of microbially-produced aryl-hydrocarbon receptor (AhR) ligands, e.g. indole-3-acetic acid are increased after transplantation in patients without AR (figure 2). Although tryptophan availability increases after transplantation, SCFAs are reduced at 1-month, compared to baseline, in patients with AR.

Discussion: Our preliminary data has shown complex dynamics exist between the gastrointestinal microbiota and associated metabolites with recipient immunity. Increased gut permeability may be contributory to a pro-inflammatory immune state, predisposing patients to AR. We postulate that there is decreased responsiveness or availability of AhR ligands, such as indoles and SCFAs, that contributes to a dysregulated immune milieu in AR.

Figure 1. Increased pre-transplant gut permeability in recipients that develop biopsy-proven acute rejection

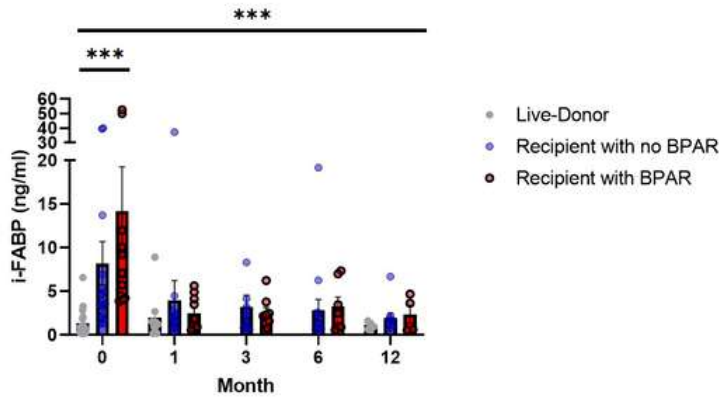
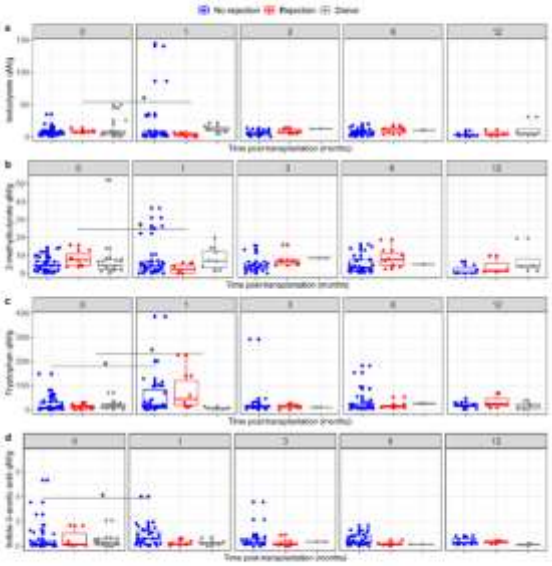


Figure 1. Concentrations of intestinal fatty acid binding protein (i-FABP) in the serum of live-donors (n=20), recipients without BPAR (n=21) and recipients with BPAR (n=13) by ELISA. Recipients without BPAR subselected from cohort and matched with recipients with BPAR based on age, gender, level of sensitisation and HLA mismatch level.* - p=0.007**
Overall transplant recipients have higher baseline levels of i-FABP compared to live-donors. Transplant recipients with BPAR have higher levels of i-FABP when compared with recipients without BPAR (3.64ng/ml IQR[2.29-6.16 vs 7.14ng/ml IQR[4.37-31]; p=0.007) pre-transplant. Generally, levels of i-FABP decrease to normal after transplantation.

Figure 2. Snapshot of the faecal metabolome after live-donation and renal transplantation



Categories: Basic and translational science (as per category - all science)

M05: Survival outcomes comparing older living donor versus standard criteria donor kidney transplantation versus not being transplanted: a population-cohort analysis of wait-listed kidney transplant candidates

Mr Kamlesh Patel[1], Ms Anna Brotherton[1], Ms Felicity Evison[1], Mr Tom Nieto[1], Mr Dilan Dabare[1], Dr Adnan Sharif[1,2]

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

Abstract

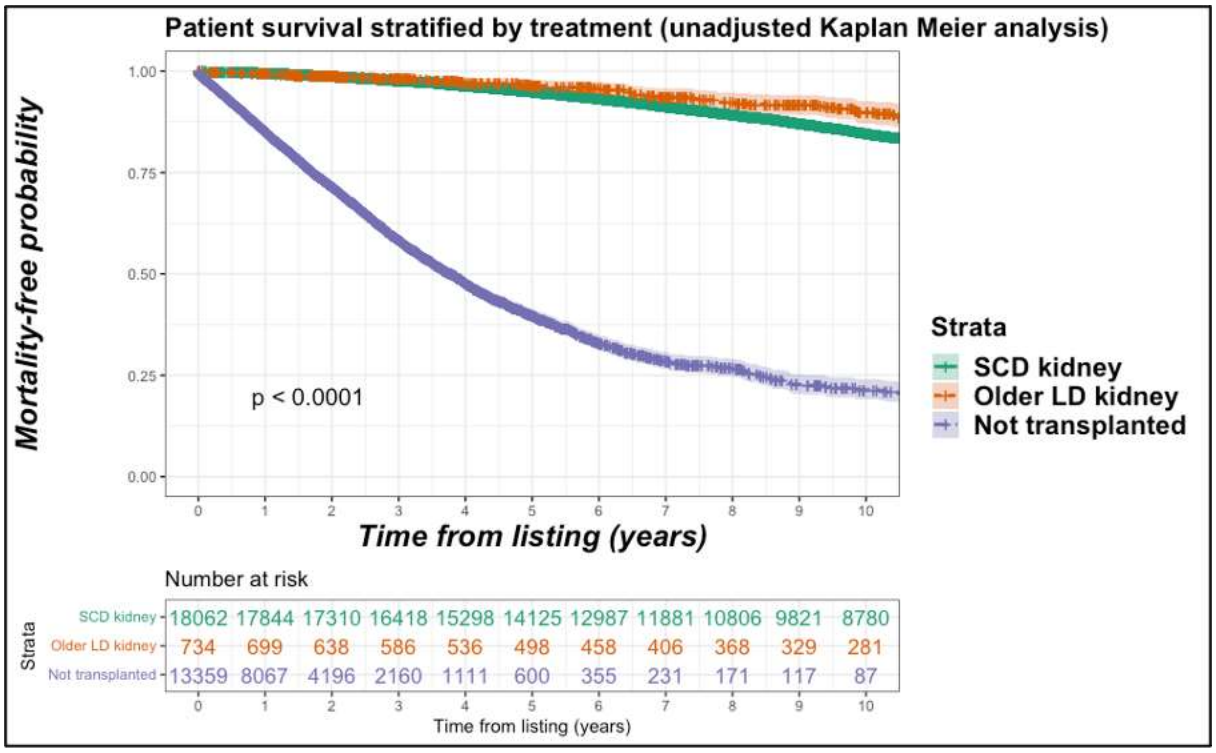
Introduction: Living donor kidney transplant rates in the UK are among the highest in the world but have reached a plateau.

Our aim was to explore mortality outcomes for kidney transplant candidates receiving older living donor (LDO) kidneys, defined as a donor aged 60 years or above, versus receiving a younger standard criteria cadaveric donor (SCD) kidney or remaining on dialysis using UK transplant registry data.

Methods: A retrospective cohort study was undertaken of prospectively collected UK transplant registry data of all waitlisted kidney failure patients receiving haemodialysis. All patients listed for their first single kidney transplant between January 2000 and September 2019 were included. The primary outcome was mortality. Time-to-death from listing was modelled using weighted estimation of Cox regression to account for non-proportional hazards. We explored adjusted models factoring for age (at listing), sex, ethnicity, cause of kidney failure and treatment type (LDO kidney versus SCD kidney versus remaining on dialysis). Analyses were performed using RStudio (version 2022.07.2) and the coxphw package for survival analyses.

Results: Of 32,155 waitlisted kidney failure patients, 18,796 (58.5%) received a kidney transplant (734 LDO kidneys and 18,062 SCD kidneys). LDO kidney transplantation constituted only 8.8% of all living donor kidney transplant activity (n=8,317). In a weighted Cox regression model, compared to receiving a SCD kidney, recipients of LDO kidneys had lower all-cause mortality (Hazard Ratio 0.68, 95% CI 0.53-0.89, $p<0.001$) while remaining on the waiting list had the highest all-cause mortality (Hazard Ratio 9.31, 95% CI 8.48-10.22, $p<0.001$).

Discussion: Recipients of LDO kidneys experienced lower mortality versus waiting for a SCD cadaveric kidney or remaining on the waiting list. In keeping with the latest NHSBT ten-year strategy to expand live donor transplantation, older live donor options should be explored, as they offer an excellent treatment option for waitlisted kidney transplant candidates.



Categories: Living donation (living donor and recipient selection (all organs) options for donation - donor care - outcomes)

M06: Development and validation of a novel HLA molecular mismatch algorithm for alloimmune risk stratification in kidney transplantation

Dr Hannah Charlotte Copley[1,2,3], Dr Chris Wiebe[4,5], Dr Jon Jin Kim[6,1], Miss Miriam Manook[1], Eleanor Williams[7], Dr Irina Mohorianu[7], Professor Dr Dietrich Kabelitz[8], Dr Andrew Leach[2], Dr Peter Nickerson[4,5], Mr Vasilis Kosmoliaptsis[1,3,9]

[1]Department of Surgery, University of Cambridge, Addenbrooke's Hospital, Cambridge, United Kingdom. [2]European Molecular Biology Laboratory - European Bioinformatics Institute (EMBL-EBI), Wellcome Trust Genome Campus, Hinxton, United Kingdom. [3]National Institute for Health and Care Research Blood and Transplant Research Unit in Organ Donation and Transplantation, University of Cambridge, Cambridge, United Kingdom. [4]Department of Medicine, University of Manitoba, Winnipeg, Canada; Shared Health Services Manitoba; Department of Immunology, University of Manitoba, Winnipeg, Canada. [5]Department of Immunology, University of Manitoba, Winnipeg, Canada. [6]Department of Paediatric Nephrology, Nottingham University Hospital, Nottingham, United Kingdom. [7]Wellcome/MRC Cambridge Stem Cell Institute, Jeffrey Cheah Biomedical Centre, University of Cambridge, Cambridge, United Kingdom. [8]Institute of Immunology, Christian-Albrechts University Kiel, Kiel, Germany. [9]NIHR Cambridge Biomedical Research Centre, Cambridge, United Kingdom

Abstract

Introduction: Development of prognostic biomarkers for alloimmune risk stratification to guide personalised recipient care is an unmet need in kidney transplantation.

Methods: We used the Amino-Acid-Mismatch-Score (AAMS), Electrostatic-Mismatch-Score (EMS3D) and NetMHCIIpan molecular HLA mismatch (molMM) algorithms and examined model discrimination for predicting de novo donor-specific-antibody (dnDSA) at the single HLA level in an experimental sensitisation training dataset (patients subjected to standardised donor lymphocyte injections, mismatched HLA n=665). Risk thresholds for HLA-DR/DQ mismatch were derived and externally validated in two extensively-phenotyped kidney transplant cohorts (Manitoba, n=856, Denver n=404) and in the NHSBT kidney transplant registry (2000-2020, n=27,028).

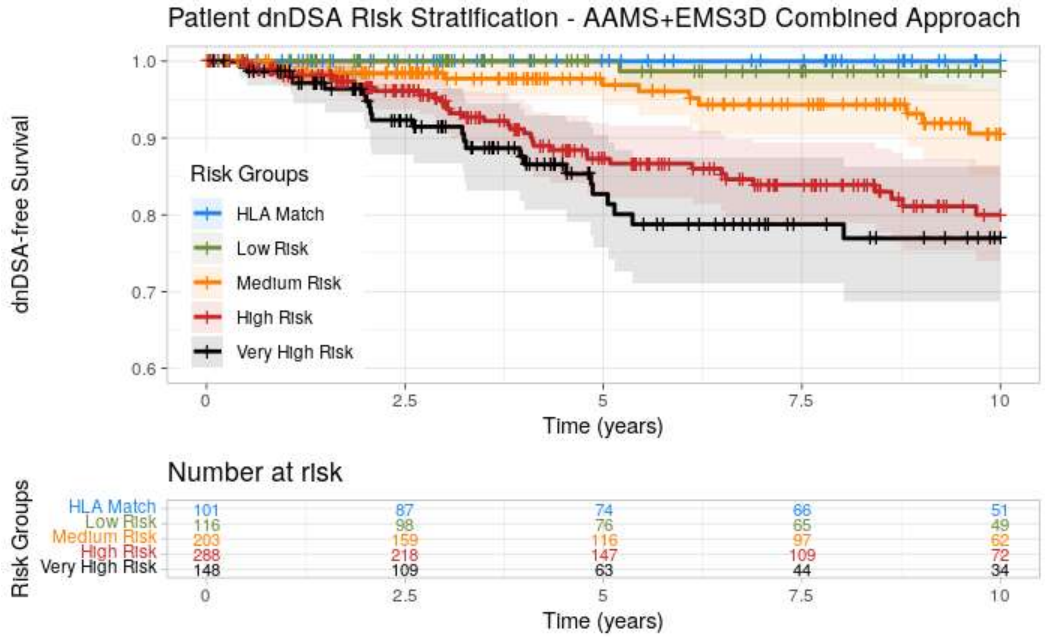
Results: External validation (Manitoba cohort, 10-year follow-up) of experimentally-derived HLA-DR/DQ molMM risk thresholds showed all algorithms had good discrimination performance for dnDSA prediction (HLA-DQ AUC:0.78-0.80; HLA-DR AUC:0.76-0.81). AAMS and EMD3D enabled improved risk stratification at the patient level (low-medium-high risk groups for HLA-DR+DQ dnDSA), compared to NetMHCIIpan (p=NS). Importantly, combining AAMS+EMS3D enhanced discrimination performance than either algorithm alone and identified a larger group of patients at very-low risk of Class-II dnDSA development (Table-1, Figure.1). In multivariate analyses, the combined AAMS+EMS3D molMM risk stratification correlated with primary alloimmune events including dnDSA (p=0.00038), TCMR (p<0.001), ABMR (p=0.0049) and all-cause graft loss (p=0.0038). Further validation in an ethnically diverse cohort (Denver) confirmed the association dnDSA risk (p<0.0001). Finally, patient stratification in the UK registry cohort using the combined molMM model showed significant association with all-cause graft loss (p<0.001).

Discussion: We developed and validated a novel molMM algorithm, incorporating information from HLA amino acid sequence and tertiary structure, that may be used as a prognostic biomarker of primary alloimmunity risk and to enrich prospective clinical trials in kidney transplantation.

Table 1. Low Risk Patient Stratification (HLA-DR/DQ dnDSA development) by model (Manitoba Kidney transplant cohort)

Model	Low Risk Patient Numbers / Total HLA-Mismatched Patients (Percentage)	dnDSA incidence (10yrs post-transplant)
AAMS	44 / 755 (5.8%)	0.0%
EMS3D	40 / 755 (5.2%)	0.0%
NetMHCIIpan (1000nM peptide threshold)	75 / 755 (9.9%)	4.0%
AAMS+EMS3D Combined Approach	116 / 755 (15.4%)	1.3%

Figure.1. Kaplan-Meier Curves of HLA-DR/DQ dnDSA-free Survival in Manitoba Kidney transplant cohort.



Categories: H&I (HLA typing - crossmatching - immunologically complex recipients)

M07: Prolonged duration normothermic perfusion of the kidney prior to transplantation – preliminary data from a phase 1 clinical trial

Mr Richard Dumbill[1,2], Mr Simon Knight[1,2], Mr James Hunter[1,2], Mr John Fallon[1,2], Mr Daniel Voyce[3,4], Mr Jacob Barrett[4], Mr Matt Ellen[4], Ms Annemarie Weissenbacher[5], Professor Rutger Ploeg[1,2], Professor Constantin Coussios[3,4], Professor Peter Friend[1,2,4]

[1]Nuffield Department of Surgical Sciences, University of Oxford, Oxford, United Kingdom. [2]Oxford Transplant Centre, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom. [3]Oxford Institute of Biomedical Engineering, University of Oxford, Oxford, United Kingdom. [4]OrganOx Ltd., Oxford, United Kingdom. [5]Medical University of Innsbruck, Innsbruck, Austria

Abstract

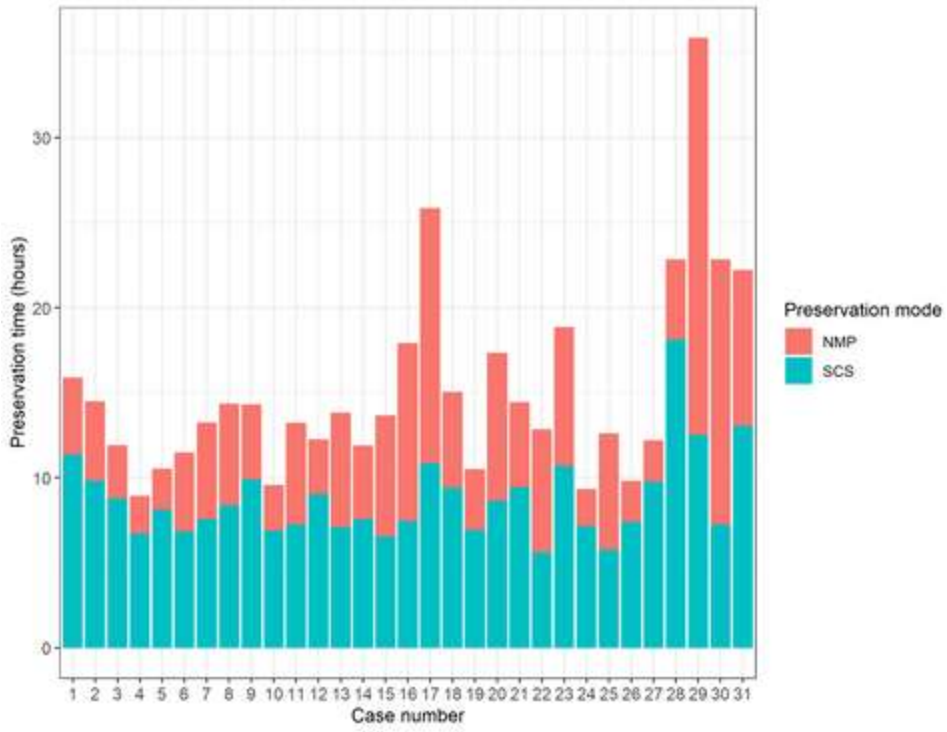
Introduction: Normothermic Machine Perfusion of the Kidney (NMP-K) prior to transplantation offers multiple potential domains of benefit, including reduction of preservation injury, organ assessment, optimisation of logistics, and as a platform for delivery of therapeutics. Previous clinical reports have been limited to a short duration of perfusion, and anatomically suitable organs. Normothermic Kidney Perfusion Phase 1 (NKP1) is a single centre trial investigating the safety and feasibility of prolonged duration NMP-K following static cold storage, using an automated mobile system (OrganOx, UK) designed for 24-hour perfusion.

Methods: Target recruitment is 36 patients. Perfusion duration is determined primarily by logistical considerations, with maximum permissible perfusion times increasing from 6 to 12 to 24 hours in consecutive study phases (each n=12). Kidneys are prepared, cannulated, and then perfused at 37°C with red cell based perfusate, and urine recirculation. Immediately prior to implantation, the kidney is removed from the device and cold-flushed. Comparison has been made to historical controls, ratio 1:2, selected by a pre-defined matching algorithm.

Results: 31/36 deceased-donor kidney transplants have so far been performed after NMP-K. Minimum perfusion time was 2h11, maximum 23h22 (Fig. 1). 25 patients have reached 30-day follow-up with 100% dialysis independence, and no adverse events related to the technique. Cold ischaemia times (CIT) were substantially shorter than typical for our centre (8h47 vs mean 14h18, control pool n=762). Total preservation time was median 15h14 (range 9h45-37h19). Measures of early graft function are comparable to a control cohort matched on cold ischaemia time (Table 1).

Discussion: Based on these preliminary data, prolonged duration NMP-K appears safe and feasible. In a real-world setting it enables a reduction in cold ischaemia time as well as a prolongation of total preservation time, thereby facilitating daytime operating. This platform also provides opportunities for ex-vivo assessment and treatment of deceased donor kidneys prior to transplantation.

Fig. 1: Preservation Duration by Case



	NKP1 (n=31)	Controls (n=62)
Matching criteria		
CIT, hh:mm, mean (sd)	08:47 (02:33)	09:15 (02:25)
DRI, mean (sd)	1.42 (0.62)	1.36 (0.57)
Induction agent	22 Alemtuzumab 9 Basiliximab	44 Alemtuzumab 18 Basiliximab
Donor type, DCD, n (%)	12 (38.7)	24 (38.7)
Outcomes		
DGF (dialysis in first 7 days)	11 (35.5)	25 (40.3)
Day 2 creatinine reduction ratio, mean (sd)	0.35 (22)	0.18 (0.30)
30-day eGFR, mean (sd)	46.1 (15.6)	44.7 (22.0)
3-month eGFR, mean (sd)	49.8 (16.0)	49.9 (20.5)

Categories: Organ preservation and retrieval (novel technologies - NORS - donor surgery)

M08: Diagnostic application of gene expression analysis in renal transplant biopsies with histological features of antibody-mediated rejection

Dr Jack Beadle[1,2], Dr Artemis Papadaki[1], Dr Frederic Toulza[1], Dr Michelle Willicombe[3,1], Dr Candice Roufosse[1]

[1]Imperial College London, London, United Kingdom. [2]West London Renal and Transplant Centre, London, Uganda. [3]West London Renal and Transplant Centre, London, United Kingdom

Abstract

Introduction: The Banff Classification for Allograft Pathology permits the use of gene expression in the diagnosis of antibody-mediated rejection (AMR) of kidney transplants, but a predictive set of genes for classifying biopsies with 'incomplete' phenotypes has not been studied in clinical practice. We aimed to develop a gene score that could classify biopsies with features of AMR and identify biopsies at higher risk of allograft loss.

Methods: RNA was extracted from a continuous retrospective cohort of 349 biopsies randomised into 'Discovery'(n=220) and 'Validation'(n=129) cohorts. The biopsies were divided into three histological groups: those that fulfilled the complete 2019 Banff Criteria for active AMR (AMR,n=31), those with histological features of AMR, but not meeting the full criteria (Susp-AMR, n=50), and those without features of active AMR (No-AMR, n=269). Gene expression analysis using the 778-gene B-HOT NanoString panel was carried out. LASSO Regression was performed to identify a parsimonious set of genes predictive of AMR.

Results: We identified 9 genes that were predictive of active AMR, and modelled a probability score that showed excellent accuracy (0.9189) in the validation cohort. This score was strongly correlated with histological features of AMR and was significantly different in varying transplant biopsy phenotypes (Fig 1). In biopsies suspicious for AMR, a high AMR Gene Score was predictive of allograft loss, compared to biopsies with a low gene score (Fig2a, p=0.0002) regardless of the presence of a detectable DSA, or microvascular inflammation scores. Across all biopsies, the addition of gene score improved the prediction of allograft loss compared to histological features alone (Fig2b)

Conclusion: Gene expression in biopsy samples identifies an AMR gene signature which can help classify biopsies with incomplete AMR phenotypes into groups which correlate strongly with histological features and outcomes. This needs to be further assessed to enable clinical implementation of validated transcript analysis in biopsies.

Fig 1

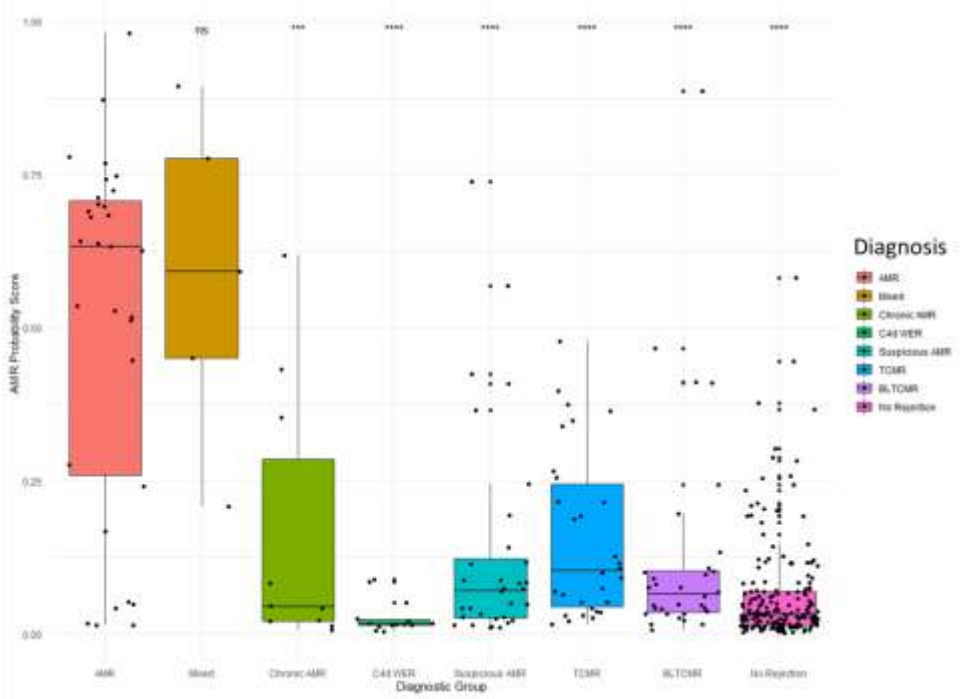
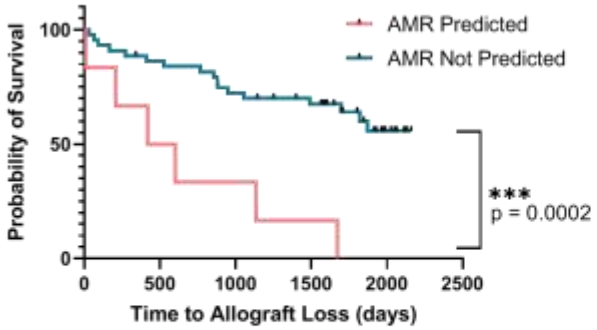
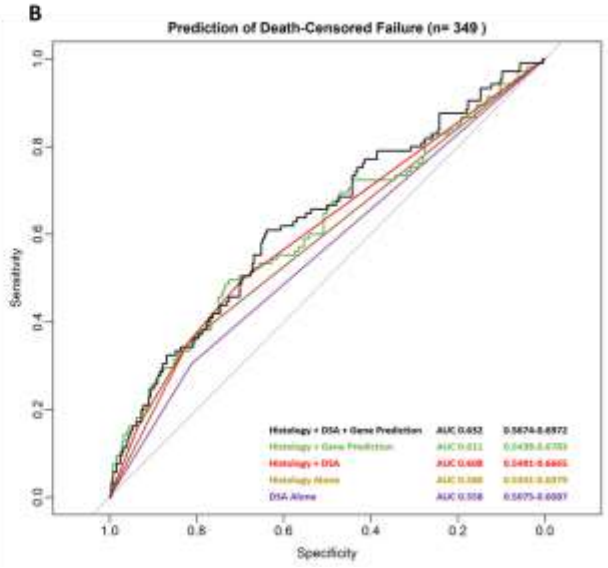


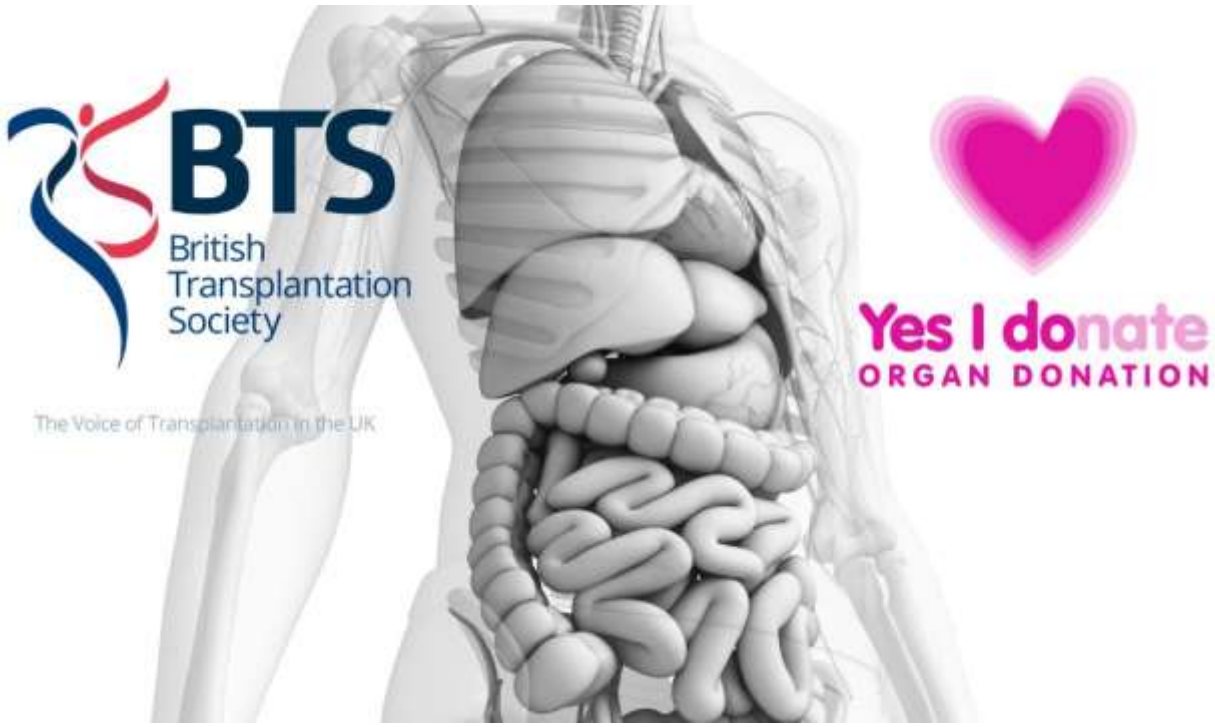
Fig 2. A



B



Categories: Basic and translational science (as per category - all science)



CALNE WILLIAMS MEDAL PRESENTATIONS

CW01: Racial disparities in outcomes after liver transplantation in the United Kingdom: a registry analysis

Mr Balaji Mahendran[1,2], Mr Samuel Tingle[1,2], Mr Abdullah Malik[1,2], Mr Rodrigo Figuerido[1], Mr John Hammond[1], Prof Steven White[1], Mr Aimen Amer[1], Mr Gourab Sen[1], Prof David Talbot[1], Mr Rohan Thakkar[1], Dr Jingky Lozano-Kuehne[3], Prof Derek Manas[1], Mr Colin Wilson[1,2]

[1]Department of HPB & Transplant Surgery, Freeman Hospital, Newcastle, United Kingdom. [2]Blood and Transplant Research Unit, Newcastle University, Newcastle, United Kingdom. [3]Population Health Sciences Institute, Newcastle University, Newcastle, United Kingdom

Abstract

Introduction: Liver transplantation (LT) is the only life-saving treatment option available for patients with end stage liver disease. The current UK offering system has been thought to be the most equitable way of distributing liver grafts around the population. However, there is a paucity of data on the outcomes following LT between different ethnicities in the UK. This study aimed to examine this data retrospectively using registry data.

Methods: The National Health Service Blood and Transplant (NHSBT) registry on adult liver transplantation between 2006 and 2019 was interrogated with multivariable analysis techniques. We used multiple-imputation for missing data, and adjusted regression models to assess impact of recipient ethnicity on transplant outcomes. Backwards stepwise selection was used to select variables to include in multivariable models.

Results: 9217 adult liver transplant recipients were included. In a multivariable model, when adjusting for a wide range of factors including grade of liver failure, indication for transplantation, donor type, transplant year, donor cause of death, graft steatosis and cold ischaemic times, Black recipients had significantly poorer 1 year graft failure rates when compared to white recipients (HR 1.59, 95% CI 1.33-2.22, p=0.007). This effect was not seen in other minority ethnic groups Donor ethnicity did not affect 1 year graft survival.

Discussion: Black recipients suffer from significantly poorer 1 year graft survival rates. Health outcome disparities amongst different ethnicities are well known, especially in the US population. However this difference within the UK LT population is striking. There might be a hitherto under-studied impact of immunological factors such as HLA mismatches in the LT population. High-quality research is required to explore pertinent socio-economic determinants of health outcomes alongside immunological reasons for these differences.

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

CW02: Outcomes of liver retransplantation from donation after circulatory death livers using normothermic regional perfusion

Mr Rohit Gaurav[1], Dr Gwilym Webb[2], Mr Andrew Butler[1], Ms Lisa Swift[1], Dr Harry Spiers[1], Ms Corrina Fear[1], Ms Rachel Webster[1], Prof Chris Watson[1]

[1]Roy Calne Transplant Unit, Addenbrooke's Hospital, Cambridge University NHS Trust, Cambridge, United Kingdom. [2]Cambridge Liver Unit, Addenbrooke's Hospital, Cambridge University NHS Trust, Cambridge, United Kingdom

Abstract

Introduction: The national liver offering scheme allocates livers according to transplant benefit score and tends to bias against offering livers for retransplantation. We reviewed our retransplantation experience using livers donated after circulatory death (DCD) and recovered using normothermic regional perfusion (NRP).

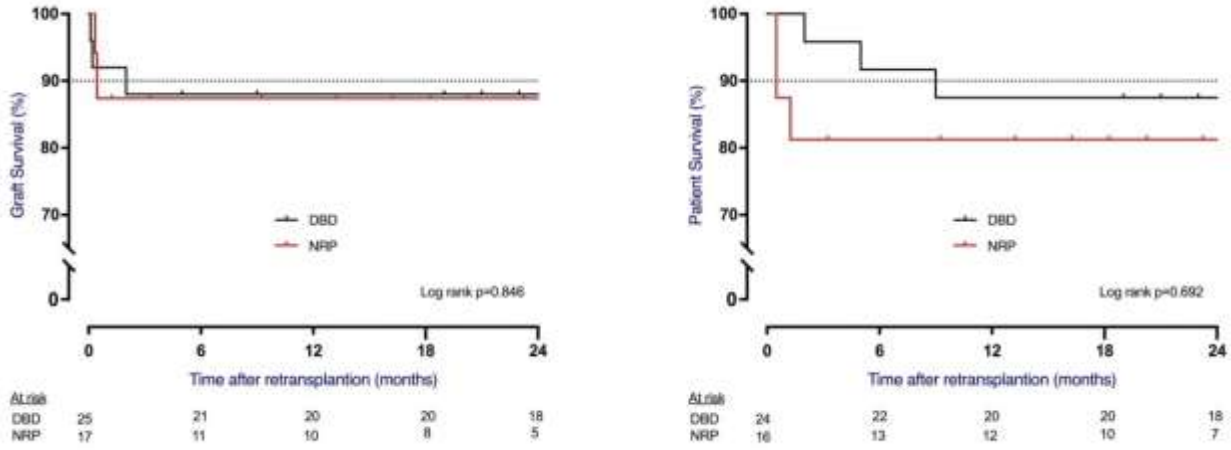
Methods: Retrospective analysis of liver transplantation at our institute from May 2017 till December 2021. Patients undergoing liver retransplantation with NRP livers were included in the study. This group was compared with the contemporaneous liver retransplantation from donation after brain death (DBD) donors.

Results: Of the 117 NRP livers transplanted in Cambridge till December 2021, 17 were used for retransplantation in 16 patients. Ischaemic cholangiopathy (IC) was the most common indication (41%). Two were for patients listed superurgently, one each for hepatic artery thrombosis (HAT) and hyperacute rejection. All transplants were classified as “futile” by the UK DCD score. Ex situ normothermic perfusion was additionally used in 4 recipients. There were two graft losses in follow-up: HAT and delayed hyperacute rejection. The patient with rejection received a second NRP graft on day 9 but died immediately of multiorgan failure. There were further two deaths: day 31 death due to COVID and another intraoperative death due to bleeding.

During the study period, there were 25 retransplants using DBD livers in 24 patients, with IC as most common indication (36%). No difference in early graft function compared to NRP (Table). There were 5 graft losses, 2 with primary nonfunction, one antibody mediated rejection, one chronic rejection and one cholangiopathy. One year graft and patient survival were similar between the groups (Figure).

Discussion: Livers recovered from DCD donors using NRP appear to be an excellent source of livers for retransplantation.

Parameters	NRP (n=17)	DBD (n=25)	p-value
Donor age, years	55 (36 - 57)	45 (37 - 55)	0.324
DRI (Feng et al, AJT2006)	2.2 (1.9 – 2.5)	1.6 (1.4 – 2.0)	0.001
Superurgent listing	2 (12%)	7 (28%)	0.270
CIT, hrs	7.8 (5.2 - 9.8)	9.2 (7.8 - 11.4)	0.099
Ex situ normothermic perfusion	4 (24%)	6 (24%)	0.999
Recipient age, years	49 (40 - 60)	49 (34 - 58)	0.785
UKELD	55 (52 – 63)	53 (50 – 58)	0.198
Peak ALT in first week	468 (243 – 880)	581(260 – 877)	0.548
MEAF score	3.8 (2.3 – 5.6)	4.7 (2.8 – 6.5)	0.364
NAS (%)	3 (18%)	3 (12%)	0.672
ITU stay, days	3 (1 - 5)	3 (2 - 11)	0.560
Hospital stay, days	26 (20 - 34)	20 (14 - 30)	0.067
Values are medians (interquartile range) or number (percentage) Alanine transaminase (ALT); Cold ischaemia time (CIT); Donor risk index (DRI); Model for early allograft function (MEAF); Non-anastomotic biliary stricture (NAS)			



Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

CW03: Waiting for a liver transplant: Should waiting time count?

Manoj Thillai[1,2], Ian Currie[1,2], Ewen Harrison[1,2], Ben Stutchfield[1,2]
[1]Edinburgh Transplant Centre, Edinburgh, United Kingdom. [2]University of Edinburgh, Edinburgh, United Kingdom

Abstract

Introduction: In the UK DBD donor livers are matched to blood group and weight compatible recipients with the highest Transplant Benefit Score (TBS). Waiting time is not included in TBS, meaning patients with low scores may not receive a transplant via TBS allocation. This study investigates the effect of allocating additional points for time on the waiting list.

Methods: A simulated national waiting list (WL) was generated in RStudio based on UK transplant activity. Simulated donors were sequentially matched to appropriate simulated recipients with the highest TBS. Patients were added to the WL at the end of each experimental week, continuing for 520 weeks. Patients then received 10 or 20 points per week (PPW) on the WL. These three scenarios (0, 10, 20 PPW) were repeated 20 times each. Proportion of patients not transplanted within 5 years and time to transplant for the top 10% of TBS scores was assessed.

Results: Across each of the 60 simulations (n=20 for each scenario) between 10,311 and 10,437 simulated patients were transplanted over 10 years. TBS of transplanted patients were comparable to real-world patients (Figure 1). With 0 additional PPW a median of 7.6% of patients remained on the WL at 5 years and 5.6% at 10 years (Figure 2). With additional PPW all patients were transplanted by 5 years. With 10 PPW more patients were waiting for transplant at 1 year (median=21%) than either 0 (median=15%) or 20 points (median=11%). Median time to transplant for patients in the top 10% TBS at listing was 2 weeks for 0 PPW (IQR=2-2), 2 weeks for 10 PPW (IQR=2-4) and 15 weeks for 20 PPW (IQR=9-19).

Discussion: Additional points for time on the waiting list may facilitate access to transplant for all while still enabling rapid access to transplant for those with the highest TBS.

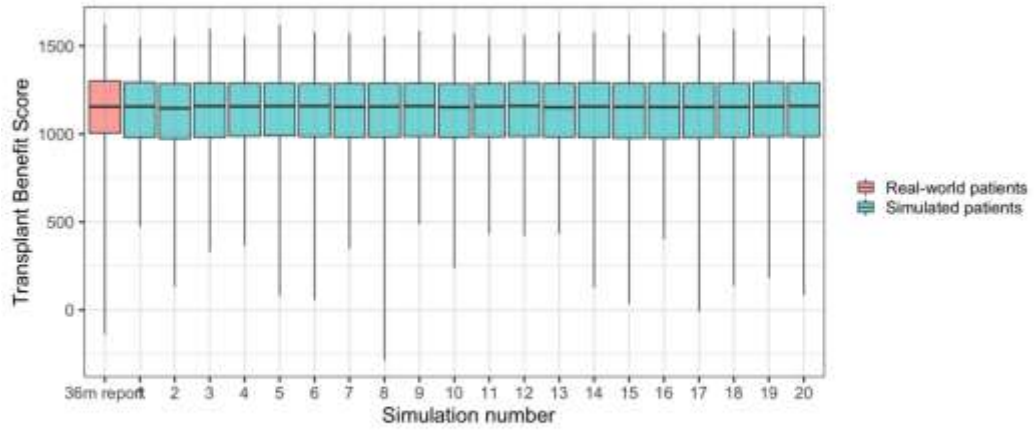


Figure 1: Boxplot showing Transplant Benefit Score of real-world patients transplanted in the first 3 years since TBS implementation (36 month report, red) compared to TBS of patients transplanted within each simulation (blue). Data shown for the 0 additional points per week scenario.

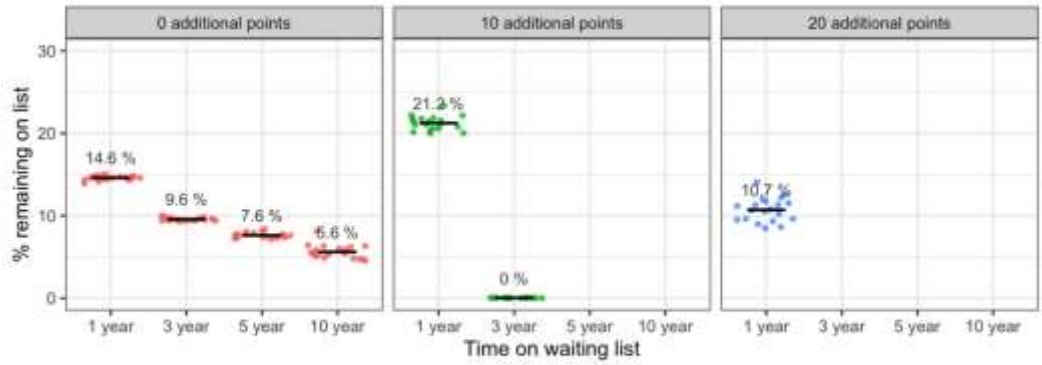


Figure 2: Median proportion of patients remaining on the waiting list at 1, 3, 5, and 10 years across each simulation (n=20 simulations per scenario)

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

CW04: Donor liver blood tests do not predict liver transplant outcomes – UK Registry Cohort Study

Mr Samuel Tingle[1], Miss Rebecca Bramley[1], Dr Michael Goodfellow[1], Miss Emily Thompson[1], Mr Balaji Mahendran[1], Dr Stuart McPherson[2], Prof Steve White[1], Mr Colin Wilson[1]

[1]NIHR BTRU in Organ Donation and Transplantation, Newcastle, United Kingdom. [2]Department of Hepatology, Freeman Hospital, Newcastle, United Kingdom

Abstract

Introduction: The demand for liver transplantation continues to increase. Safely improving organ utilisation is therefore a global priority. Donor serum transaminase levels are often used to decline organs, despite minimal evidence to support such decisions. We aimed to investigate the impact of donor 'liver blood tests' on transplant outcome.

Methods: The NHS registry on adult liver transplantation between 2016 and 2019 was reviewed retrospectively. We used multiple-imputation for missing data, and adjusted regression models to assess impact of donor 'liver blood tests' on transplant outcome.

Results: 3299 adult liver transplant recipients were included (2530 following brainstem death, 769 following circulatory death). Peak alanine transaminase (ALT) ranged from 6-5927U/L (median=45). Donor cause of death significantly predicted donor ALT; donation after hypoxic brain injury was associated with a 4.2-fold increase in peak ALT compared to intracranial haemorrhage (adjusted P<0.001). On multivariable analysis, transaminase level (ALT or aspartate aminotransferase) failed to predict graft survival, primary non-function, 90-day graft loss or mortality. This held true in all examined subgroups; steatotic grafts, donation following circulatory death, hypoxic brain injury donors, and donors where ALT was still rising at the time of retrieval. Even grafts from donors with extremely deranged ALT (>1000), display excellent post-transplant outcome (Figure 1). In contrast, donor peak alkaline phosphatase was a significant predictor of graft loss (aHR=1.808, 1.016-3.216, P=0.044).

Conclusion: Donor transaminases do not predict post-transplant outcomes. When other factors are favourable, livers from donors with raised transaminases can be accepted and transplanted with confidence. Such knowledge should improve organ utilisation decision-making and prevent future unnecessary organ discard. This provides a safe, simple and immediate option to expand the donor pool.

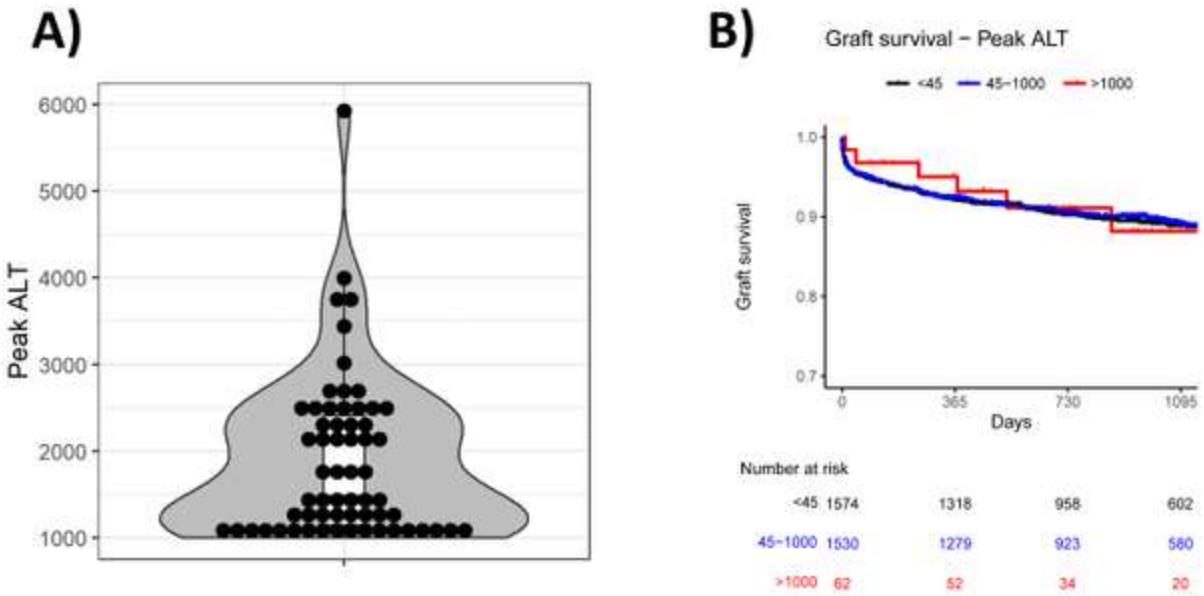


Figure 1– analysis of patients with peak-ALT greater than 1000. A) violin plot showing peak-ALT distribution. B) Kaplan-Meier plot of graft survival in patients with peak-ALT <45, 45-1000 and greater than 1000 (Logrank P=1.000).

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

CW05: Normothermic machine preservation of large DBD liver grafts is associated with early allograft dysfunction

Mr Angus Hann[1,2], Mr Jameel Alfarah[1], Mr George Clarke[1,2], Ms Leah Ramdharry[1], Ms Anisa Nutu[1], Mr Ishaan Patel[1], Mrs Hermien Hartog[1,2], Mr Hynek Mergental[1,2], Ms Rebeca Sanabria-Mateos[1], Mr John Isaac[1], Mr David Bartlett[1], Dr Owen Cain[3], Dr Rachel Brown[3], Prof Keith Roberts[1], Prof Desley Neil[3,2], Prof Thamara Perera[1,2]

[1]The Liver Unit, Birmingham, United Kingdom. [2]Institute of Immunology and Immunotherapy, University of Birmingham, Birmingham, United Kingdom. [3]Department of cellular pathology, Queen Elizabeth Hospital Birmingham, Birmingham, United Kingdom

Abstract

Introduction: Normothermic machine perfusion (NMP) provides a continuous supply of oxygen and metabolic substrates. Despite liver grafts varying in size, the maximal volume of blood delivered via the portal vein with the Organox Metra® cannot be adjusted. We hypothesized that larger livers preserved via NMP are more susceptible to preservation-reperfusion injury (PRI) and early allograft dysfunction (EAD) due to portal hypoperfusion.

Methods: A retrospective study of DBD livers that underwent NMP (Organox Metra®) and transplantation at a single UK centre between Nov-18 and Sep-21. NMP preserved livers were divided based on weight, being less (NMP-<1700g) or more (NMP-≥1700g) than 1700grams. In addition, a group of cold stored DBD livers ≥1700g transplanted between Jan-17 and Jan-18 was included (SCS-≥1700g). Primary outcomes were PRI and EAD, as evidenced by day-1 alanine aminotransaminase (ALT) and the Model for Early Allograft Function (MEAF) score respectively.

Results: The NMP-<1700g, NMP-≥1700g and SCS-≥1700g groups consisted of 56, 32 and 26 livers respectively. The donors of both the NMP and SCS livers ≥1700g were taller and heavier(1A-B). The Donor Liver Index (1C) and NMP duration (1D) of the NMP livers were similar. The proportion of biopsy proven steatosis is demonstrated in figure 1E. The cold ischaemic time was significantly longer in the SCS-≥1700g group (1F). Despite this, day-1 ALT for NMP-≥1700g grafts [743 IU/L (428-1388)] was similar to the SCS-≥1700g group [764 (480-1632] (2A) but significantly higher than the NMP-<1700g [394 (197-801)] (2A) group. Furthermore, the MEAF score was significantly higher in the NMP-≥1700g [4.8 (3.7-6.2)] group (2B). Day-1 ALT for NMP preserved livers correlated with graft weight (2C) but not the SCS grafts (2D)

Discussion: Livers preserved via NMP ≥1700g experience greater PRI and more severe EAD. The preservation benefits of NMP appear to be lost for larger grafts.

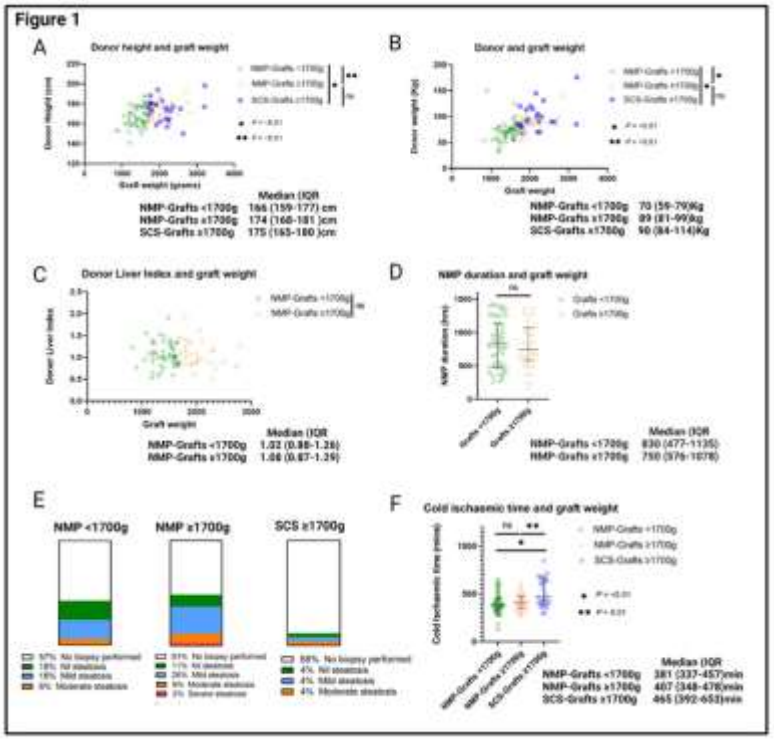
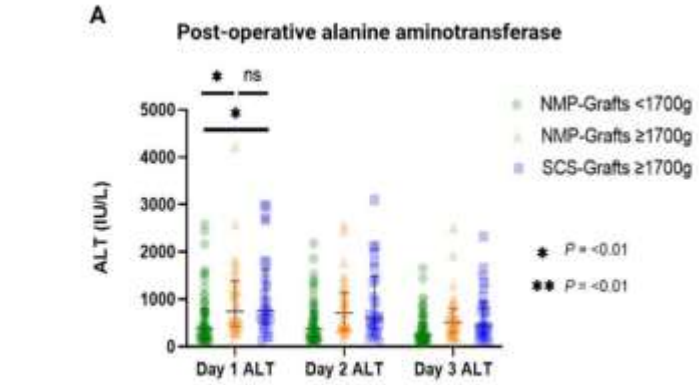
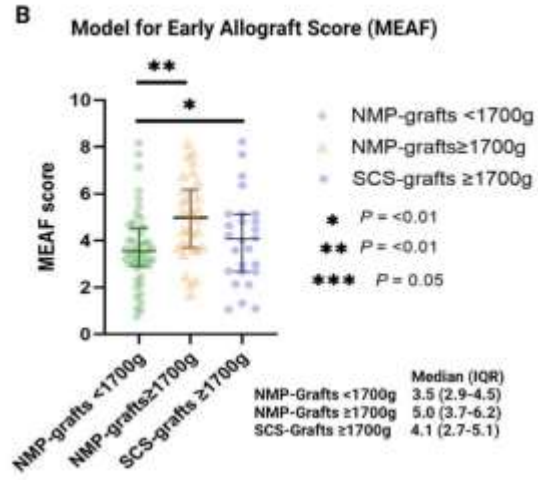
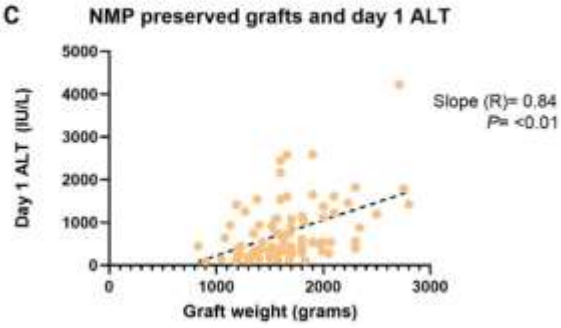
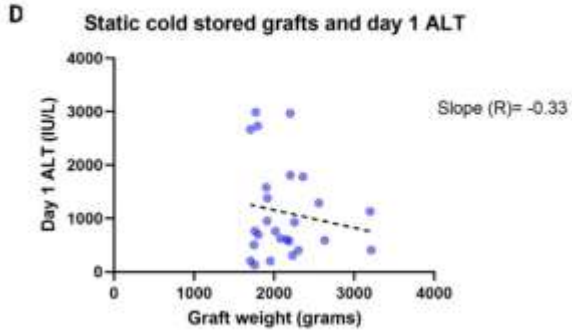


Figure 1
A
Donor height and graft weight
Graft weight (grams)
Median (IQR)
NMP-Grafts <1700g 166 (159-177) cm
NMP-Grafts ≥1700g 174 (168-181)cm
SCS-Grafts ≥1700g 175 (165-180)cm
B
Donor and graft weight
Graft weight
NMP-Grafts <1700g 70 (59-79)Kg
NMP-Grafts ≥1700g 89 (81-99)kg
SCS-Grafts ≥1700g 90 (84-114)Kg
C
Donor Liver Index and graft weight
Graft weight
Median (IQR)
NMP-Grafts <1700g 1.02 (0.88-1.26)
NMP-Grafts ≥1700g 1.08 (0.87-1.29)
D
NMP duration and graft weight
Median (IQR)
NMP-Grafts <1700g 830 (477-1135)
NMP-Grafts ≥1700g 750 (376-1078)
E
NMP <1700g
NMP ≥1700g
SCS ≥1700g
F
Cold ischaemic time and graft weight
Median (IQR)
NMP-Grafts <1700g 381 (337-457)min
NMP-Grafts ≥1700g 407 (348-478)min
SCS-Grafts ≥1700g 465 (392-653)min


A
Post-operative alanine aminotransferase
ALT (IU/L)
Day 1 ALT
Day 2 ALT
Day 3 ALT
NMP-Grafts <1700g
NMP-Grafts ≥1700g
SCS-Grafts ≥1700g
P = <0.01
P = <0.01
NMP-Grafts <1700g 394 (198-801) 371 (176-739) 247 (148-518)
NMP-Grafts ≥1700g 743 (428-1388) 713 (382-1129) 509 (308-794)
SCS-Grafts ≥1700g 764 (480-1632) 615 (370-1495) 439 (252-936)


B
Model for Early Allograft Score (MEAF)
MEAF score
NMP-grafts <1700g
NMP-grafts≥1700g
SCS-grafts ≥1700g
P = <0.01
P = <0.01
P = 0.05
Median (IQR)
NMP-Grafts <1700g 3.5 (2.9-4.5)
NMP-Grafts ≥1700g 5.0 (3.7-6.2)
SCS-Grafts ≥1700g 4.1 (2.7-5.1)


C
NMP preserved grafts and day 1 ALT
Day 1 ALT (IU/L)
Graft weight (grams)
Slope (R)= 0.84
P= <0.01


D
Static cold stored grafts and day 1 ALT
Day 1 ALT (IU/L)
Graft weight (grams)
Slope (R)= -0.33

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

CW06: Infection incidence and antibiotic pharmacokinetics during *ex situ* normothermic machine perfusion of deceased donor livers

Mr M Saeed Qureshi[1], Mr Rohit Gaurav[2], Mr Andrew J Butler[1], Miss Lisa Swift[1], Miss Corrina Fear[1], Dr Alan Noel[3], Dr Heather Elliott[4], Dr Nicholas Brown[5], Prof Christopher J. E. Watson[1]

[1]The Roy Calne Transplant Unit, Addenbrooke's Hospital, Cambridge University Hospitals NHS Trust, Cambridge, UK; University of Cambridge Department of Surgery, Cambridge, UK, Cambridge, United Kingdom. [2]The Roy Calne Transplant Unit, Addenbrooke's Hospital, Cambridge University Hospitals NHS Trust, Cambridge, UK; University of Cambridge Department of Surgery, Cambridge, UK, Cambridge, United Kingdom. [3]Southmead Hospital, Bristol, Bristol, United Kingdom. [4]Southmead Hospital, Bristol, Bristol, United Kingdom. [5]Univsity of Cambridge Hospitals, Cambridge, United Kingdom

Abstract

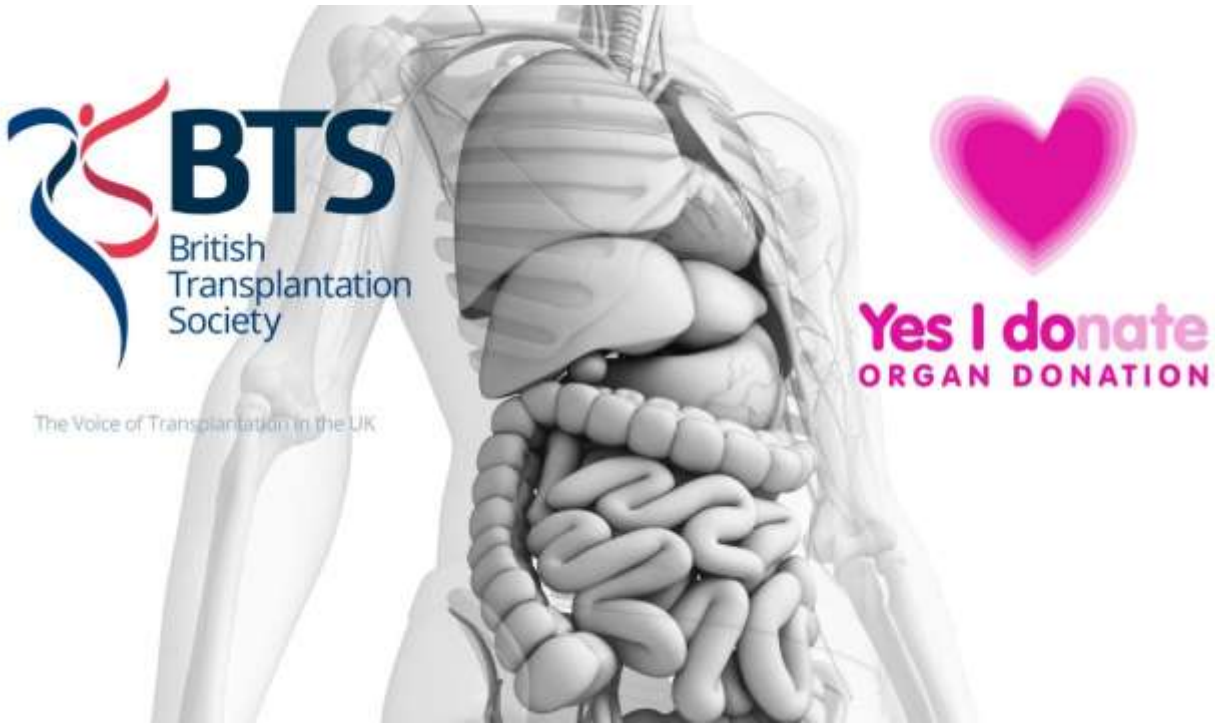
Background: Normothermic ex situ liver perfusion (NESLiP) provides an excellent culture medium for micro-organisms from the donor, and transmission to the recipient is associated with life-threatening sepsis. Various antimicrobial regimens have been applied empirically during NESLiP, but the pharmacokinetics of antimicrobials during NESLiP are unknown. We reviewed the efficacy of our antimicrobial policy during NESLiP, which involves a single administration of meropenem and fluconazole (100mg each) at the start of perfusion, and determined the pharmacokinetics of these drugs during perfusion.

Methods: Infection prevalence following NESLiP was assessed by reviewing cultures of perfusate taken before and at the end of NESLiP. Antimicrobial levels were measured from perfusate samples taken at intervals during perfusion. Perfusate comprised packed red cells in either Gelofusine or 5% Human Albumin Solution.

Results: 281 deceased livers underwent NESLiP between Jan 2019 and Aug 2022. Transport fluid cultures were performed in 240 (85.4%) livers, of which 16 (6.6%) grew micro-organisms. At the end of perfusion, micro-organisms were present in only one perfusate from those livers (candida glabrata, sensitive to fluconazole at >32µg/ml). No recipient infection was identified. Pharmacokinetics were determined in 8 perfusions lasting >10hours. Meropenem concentration was a median 18.6µg/ml, (IQR 10.5-28.6) at 2 hours, and 10.7µg/ml (IQR6-14) at 10 hours; fluconazole concentration was a median 26.0µg/ml (IQR23.1-28.9) at 1 hour, and 24.3µg/ml (IQR18.2-26.6) at 10 hours.

Conclusions: Appropriate antimicrobial prophylaxis during NESLiP of deceased donor livers is effective in preventing infection and the transmission of infection from donors. For the treatment of candida albicans, target inhibitory fluconazole concentrations are >8µg/ml suggesting 100mg is recognised to be an adequate dose. For treatment of pseudomonas, target meropenem concentrations are >8µg/ml, while for E.coli they are >2µg/ml. Thus 100mg meropenem is sufficient to treat E.coli, but probably too little to confidently treat pseudomonas, and meropenem would need repeat dosing during prolonged perfusions.

Categories: Organ preservation and retrieval (novel technologies - NORS - donor surgery)



FREE COMMUNICATIONS

ORAL PRESENTATIONS

O01: Ex-situ reperfusion injury/inflammation: immuno-molecular profiling of human livers during normothermic machine perfusion

Withdrawn

O02: Increase in inflammation/fibrosis genes associated with normothermic machine perfusion of human liver allografts is attenuated by the addition of a leukocyte filter

Dr Kasra Bahadori[1,2,3], Dr John Ferdinand[2,3], Miss Mia Cabantous[2,3], Dr Andrew Butler[1,3], Dr Foad Rouhani[3], Professor Christopher Watson[1,3], Professor Menna Clatworthy[3,1,2]

[1]Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom. [2]MRC Laboratory of Molecular Biology, Cambridge, United Kingdom. [3]University of Cambridge, Cambridge, United Kingdom

Abstract

Introduction: Organ transplantation is a life-saving treatment for patients with end-stage liver disease, but organ shortage is a major challenge. In order to increase the number of organs available for transplantation, ex situ normothermic perfusion (ESNP) has been developed as a platform to evaluate and recondition livers prior to transplantation.

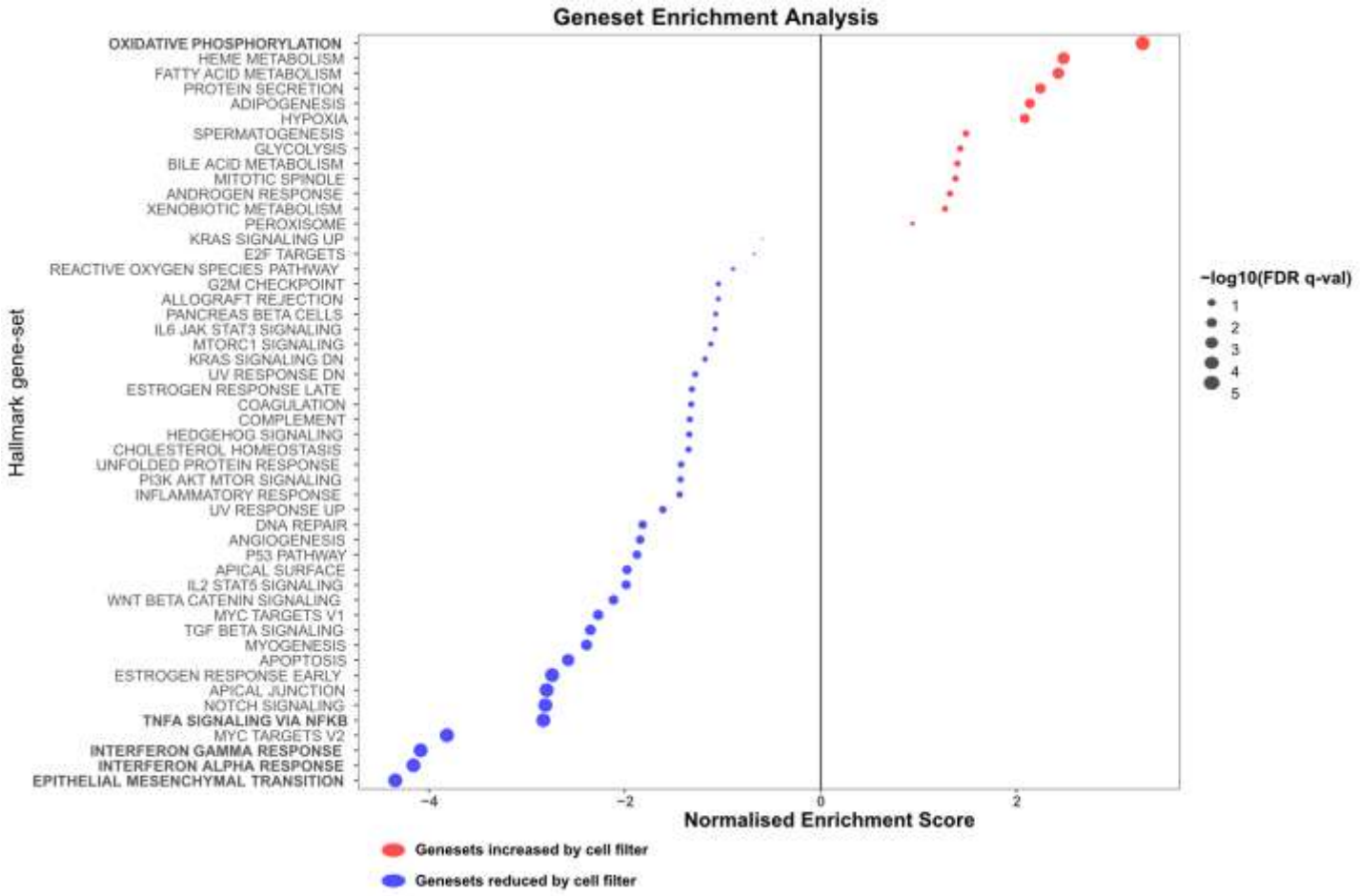
ESNP enables controlled reperfusion following a period of cold ischaemia and provides an opportunity ameliorate reperfuson injury by removing pro-inflammatory, cell damage-associated molecules and leucocytes that can further exacerbate organ inflammation.

In this study, we assessed the bulk transcriptomes of human liver samples to profile molecular responses to organ perfusion and to determine the effect of leucocyte depletion during ESNP.

Methods: Liver biopsies were taken at the start and end of ESNP with (n=8) or without (n=8) the addition of a leukocyte filter to the circuit, or pre-ESNP and post-reperfusion (n=7 livers).

RNA was extracted, sequenced, and data analyzed using the R statistical environment. Differential gene expression was analyzed using the DESeq2 package and geneset enrichment analysis was performed using the GSEA software with genes from the MSigDB database.

Results: Comparing pre- and post-perfusion samples without a leucocyte filter, we found increased expression of several genesets including ‘inflammation’, ‘epithelial-mesenchymal transition’ and ‘allograft rejection’ pathway genes and a decrease in a number of metabolic pathway genes. Enrichment of these genesets was also associated with adverse clinical parameters such as the development of post-transplant bile-duct cholangiopathy and high serum ALT, which were also associated with lower expression of ‘oxidative phosphorylation’ genes during perfusion. The addition of a leucocyte filter attenuated these perfusion-associated changes in gene expression (Figure 1).



Discussion: The removal of leukocytes from the perfusion circuit during ESNP reduces the induction of genes associated with adverse clinical outcomes and may therefore be beneficial for human livers undergoing ESNP prior to transplantation.

Categories: Basic and translational science (as per category - all science)

O03: Peripheral blood signatures of clazakizumab in late antibody-mediated kidney transplant rejection

Dr Roy Zhang[1], Dr John Ferdinand[1], Professor Georg Bohmig[2], Professor Klemens Budde[3], Dr Konstantin Doberer[2], Professor Philip Halloran[4], Professor Menna Clatworthy[1,5]

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Abstract

Introduction: Antibody-mediated rejection (ABMR) is a significant cause of late kidney allograft failure, with no proven treatment. A recent phase 2 randomised pilot trial (n=20) showed that clazakizumab, a high affinity monoclonal antibody against interkeukin-6, has therapeutic potential in late ABMR (Doberer *et al. JASN* 2021), but its effects on human immunity are incompletely understood. To address this, and guide its development for future clinical use, we investigated the effect of clazakizumab on peripheral blood transcriptomes.

Methods: 20 kidney transplant recipients with donor-specific antibody-positive late ABMR were randomised to receive either placebo or 25mg clazakizumab (4-weekly subcutaneous injections) for 12 weeks (Phase A), before receiving clazakizumab during a 40-week open-label extension (Phase B). Peripheral blood was obtained at weeks 0, 12 and 52 and processed for bulk RNA-sequencing. Transcriptional changes were assessed with differential gene expression and pathway analysis. Weighted gene co-expression network analysis (WGCNA) was used to explore how gene modules associated with clinical outcomes.

Results: During Phase A, clazakizumab downregulated the expression of several immune signatures, including 'FcγR mediated phagocytosis', 'complement' and 'natural killer (NK) cell mediated cytotoxicity', compared to placebo, consistent with suppression of important antibody effector functions (Figure 1). However, surprisingly, continuation of clazakizumab during phase B led to a rebound increase in these pathways. WGCNA identified several modules that correlated with clazakizumab treatment (Figure 2), some of which co-correlated with paired kidney biopsy molecular ABMR scores, demonstrating the potential for peripheral blood transcriptomic assessment to reflect kidney pathology. Modules downregulated with short-term clazakizumab treatment, but associated with a higher biopsy molecular ABMR score, were enriched for platelets and monocyte genes.

Discussion: Our work reveals the molecular effects of clazakizumab on peripheral blood immune cells, that may capture ABMR progression in the kidney. We also highlight the possibility of a rebound effect with long-term clazakizumab treatment.

Figure 1:

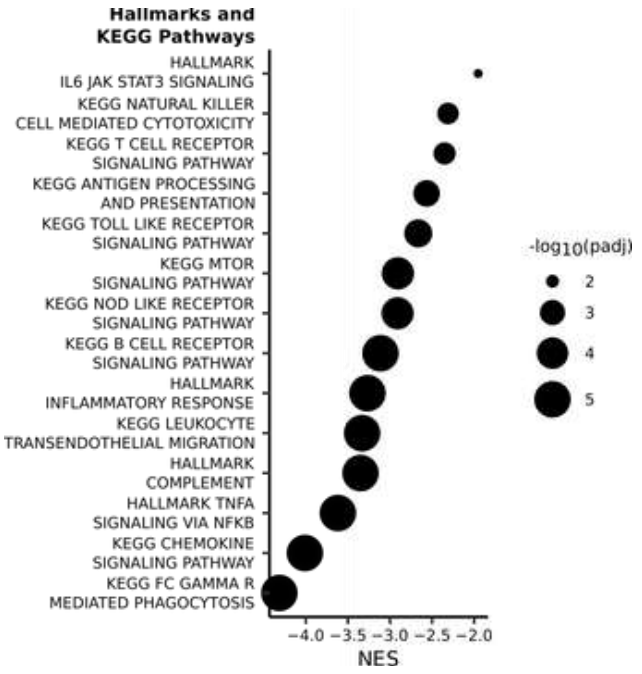
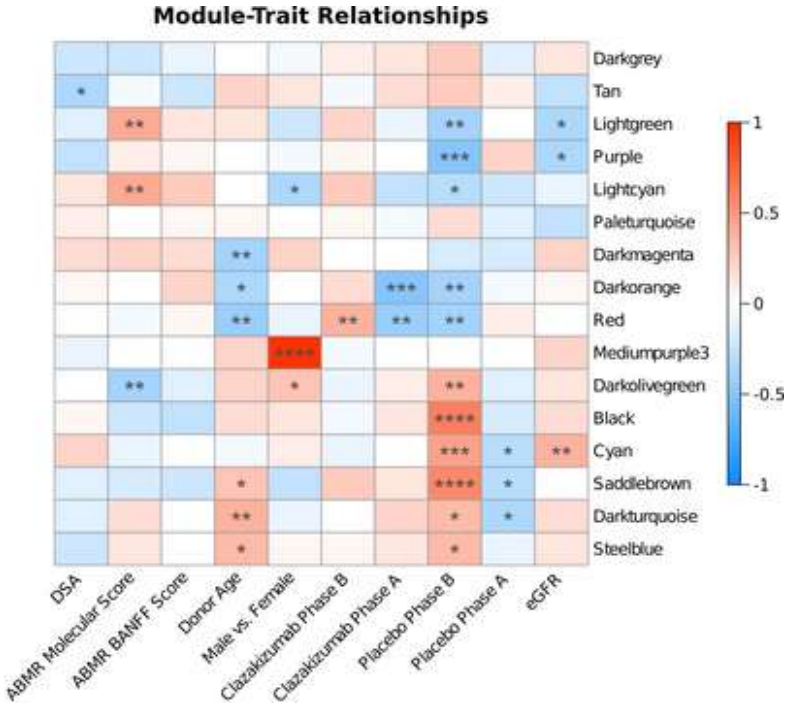


Figure 2:



Categories: Basic and translational science (as per category - all science)

O04: Hypothermic oxygenated perfusion to improve donor heart quality

Dr Lu Wang[1], Dr Nicholas Chilvers[1], Dr Margaret Huang[2], Ms Lucy Bates[1], Mr Chong Yun Pang[1], Dr Chelsea Griffiths[1], Ms Marnie Brown[1], Dr Ming Yang[3], Prof Christian Frezza[3], Prof Mike Murphy[2], Prof Guy MacGowan[1], Prof Simi Ali[1], Prof John Dark[1]

[1]Newcastle University, Newcastle upon Tyne, United Kingdom. [2]University of Cambridge, Cambridge, United Kingdom. [3]University Hospital Cologne, Cologne, Germany

Abstract

Introduction: Hypothermic oxygenated perfusion (HOP) of hearts was designed to improve donor heart quality and transplant outcomes through minimising the ischaemic insult during preservation. This study aimed to compare left ventricular (LV) function of the human hearts preserved by HOP and static cold storage (SCS) and explore the mechanistic explanations.

Methods: Eight adult human hearts (5 donation after brainstem death (DBD) and 3 donation after circulatory death (DCD)), unsuitable for transplantation, were retrieved and perfused continuously with oxygenated blood-based perfusate at 8°C, for a median of 315mins [interquartile range (IQR): 270-380mins]. Five DBD hearts were stored by SCS for 274mins [IQR: 245-282mins]. Immediately after preservation, LV biopsies were taken for examining cell death pathways by immunofluorescence, measurement of succinate and ATP/ADP, and untargeted metabolomic analysis. All hearts were then reperfused on a modified Langendorff system at 37°C. Pressures generated by LV contracting against a latex balloon with increasing volume were recorded.

Results: All DCD hearts were successfully reanimated after HOP preservation. Compared to the SCS hearts, the HOP hearts had significantly better unloaded contractility (Figure 1), relaxation and developed pressure (all $p<0.001$). After preservation, the HOP hearts had less succinate accumulated ($p=0.002$) (Figure 2), higher ATP/ADP ($p<0.001$), and less phosphorylated-MLKL ($p=0.005$), the downstream molecule of activated necroptosis pathway. The metabolomic analysis showed that the HOP hearts utilised glucose for aerobic metabolism during preservation and contained more phosphocreatine, which is crucial for energy transfer in cardiomyocytes, and less 7,8-dihydrobiopterin, which promotes superoxide production upon reperfusion.

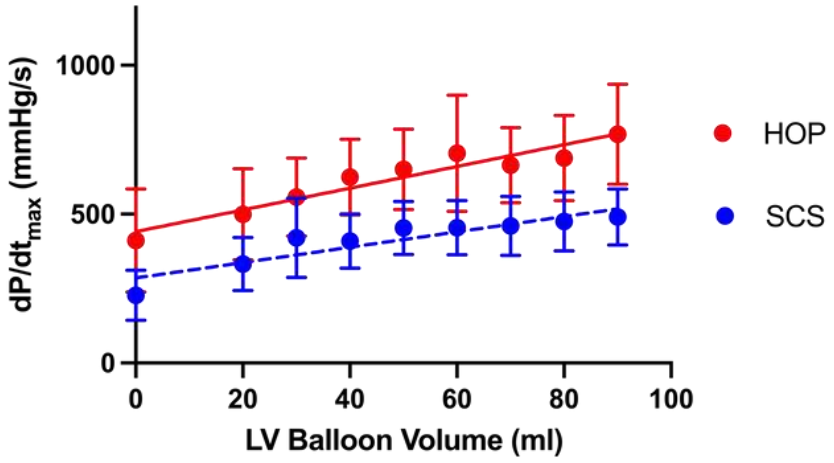


Figure 1. The left ventricular contractility of the hearts preserved by the hypothermic oxygenated perfusion (HOP) (n=8) and static cold storage (SCS) (n=5) at 1 hour of normothermic reperfusion

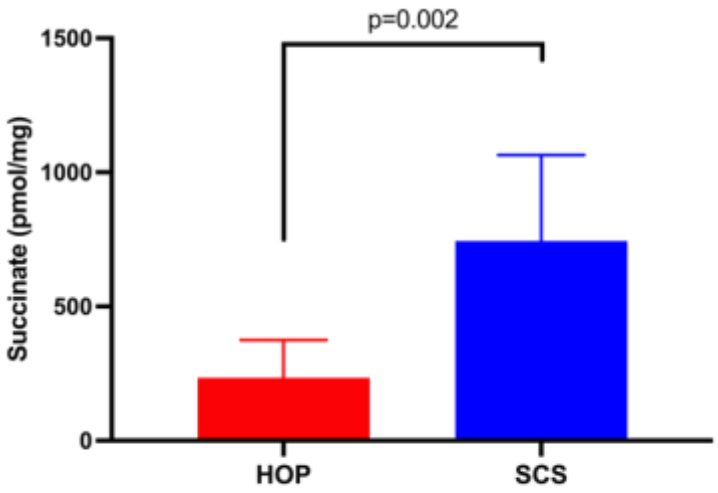


Figure 2. The levels of succinate accumulated in the left ventricles of the hearts preserved by the hypothermic oxygenated perfusion (HOP) (n=8) and static cold storage (SCS) (n=5) at the end of preservation

Discussion: This study demonstrated for the first time that HOP can safely preserve DCD heart. The hearts preserved by HOP had better LV function, probably due to a combination of less mitochondrial dysfunction, fewer loss of cardiomyocytes through necroptosis, and superior energy and metabolite profile. This novel perfusion system has significant promise in clinical heart preservation.

Categories: Basic and translational science (as per category - all science)

O05: OTDT Together – Realising our combined potential to save and improve more lives

Mr Ben Cole[1], Mrs Clare Denison[2], Ms Tracey Hammerton[1], Ms Kelly Crawford[3], Mrs Karen Quinn[4]

[1]NHSBT, Birmingham, United Kingdom. [2]NHSBT, London, United Kingdom. [3]NHSBT, Barnsley, United Kingdom. [4]NHSBT, Cambridge, United Kingdom

Abstract

Introduction: During the summer of 2022 NHSBT stocks of corneas for transplantation reached critical levels, with nearly 6000 patients waiting for a transplant and so the OTDT Together programme was asked to refocus our scope to identify ways to support an increase in ocular donations. The Programme underwent a restructure, aligning workstreams to current and new ocular donation pathways. (See Fig.1)

Methods / Case Presentation: As part of the Organ Donation Services Team referral workstream, two proofs - of-concept for new referral pathways for ocular/tissue donors were adopted by the embedded Specialist Nurse Organ Donation (SN-ODs) team at Royal Stoke University Hospital.

1. Progression of donor referrals unsuitable for solid organ donation as a possible ocular/tissue donor.
2. Undertaking triage and assessment of possible donors for ocular/ tissue donation from a list of recently deceased patients and referral of those suitable for donation to the National Referral Centre (NRC).

A review of GDPR guidelines was initiated in conjunction with both NHSBT and Trust Information Governance Teams to ensure that the new referral pathways were compliant, and a revised Memorandum Of Understanding (MOU) was issued and signed by both NHSBT and Trust representatives.

Results / Outcome: Initiation of these proofs-of-concept began on the 5th September 2022 and has so far resulted in increased collaboration between the SN-OD and NRC teams, with an additional 40 referrals assessed and 11 donors converted to date. (Fig 2)

The involvement of embedded SN-OD teams in identification and assessment of possible ocular/tissue donors alongside continued dialogue between the teams has resulted in additional ocular/tissue donor assessment that would previously not have been possible within this hospital.

The evolution of the proofs-of-concepts have allowed a better understanding of individual roles across the deceased donation pathway and have empowered colleagues to make appropriate decisions to achieve agility and efficiency within OTDT.

WORKSTREAMS (aligned to TES referral pathways)	High Level Process Area – WORK PACKAGES		
	REFERRAL	CONSENT/AUTHORISATION	RETRIEVAL
Organ Donor – Unsuitable	• ODSTs to optimise referrals for tissue/eye donation (WP 2 & 3b)	• ODSTs to approach/consent for tissue/eye donation (WP2 & 3b)	
Hospitals – 'ODST/Traditional' sites	• ODSTs to establish new hospital referral pathways • ODSTs to improve referrals from existing traditional hospitals		• Establish alternative retrieval model – SNODs. • Establish additional retrieval capacity – Third parties (non-ERS).
Hospitals – 'TES/RTDN' sites	• RTDNs to improve referrals from existing TES hospital sites		
Partners/Hospices	• RTDNs to improve referrals from existing sites. • RTDNs to establish new referral pathways with hospices.		
ERS 6 x bespoke action plans	• ERS to meet referral SLAs.	• ERS schemes to consent (x2). • Scotland ODST to authorise for SNBTS. (WP6)	

	Total Referrals by Month									Total Donations by Month				
	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22
Royal Stoke University Hospital (Total)	**13**	**6**	**19**	**11**	**16**	**0**	**0**	**0**	**0**	**3**	**1**	**11**	**2**	**2**
Royal Stoke (Bereavement list)	1	3	13	7*	13	0	0	0	0	0	1	5	0*	2
Royal Stoke (Unsuitable for Organs)	7	3	3	2	2	0	0	0	0	1	0	3	0	0
Royal Stoke (Non proceeding Organs)	0	0	0	1	0	0	0	0	0	0	0	0	1	0
Royal Stoke (proceeding Organs)	5	0	3	1	1	0	0	0	0	2	0	3	1	0

Categories: Tissue donation & transplantation (tissue donors, recipients & retrieval, e.g: corneas, skin, heart valves)

O06: Outcomes and clinical course in end stage kidney disease secondary to rare diseases

Dr Kerry-Lee Rosenberg[1], Dr Maria Kiliaris[1], Dr George Greenhall[2], Professor Detlef Bockenhauer[3], Dr Mark Harber[1], Dr Philip Masson[1]

[1]Royal Free London NHS Foundation Trust, London, United Kingdom. [2]Barts Health NHS Trust, London, United Kingdom. [3]Great Ormond Street Hospital for Children NHS Foundation Trust, London, United Kingdom

Abstract

Introduction: Rare diseases have a prevalence of 12% amongst adults and 54% amongst children with end stage kidney disease (ESKD). Evidence examining outcomes after ESKD in these patients is sparse. We aimed to describe the clinical course of rare disease for people with ESKD in the United Kingdom (UK), including access to transplantation.

Methods: We performed a retrospective cohort study using data from the UK Renal Registry for adult patients with ESKD secondary to rare disease commencing kidney replacement therapy (KRT) between 1997 and 2015. We undertook descriptive analyses for key outcomes including age at transplantation, first KRT modality, time on KRT prior to transplantation and total number of kidney transplants individuals received over a lifetime. Results were expressed as means and standard deviation (SD) or medians and interquartile ranges (IQR) depending on distribution of data, with tests of difference reported with statistical significance.

Results: 3687 patients were included. Median age at commencement of KRT was 40 years (IQR 29 - 53). 20.5% of patients were pre-emptively transplanted. 54.2% of patients received a transplant and median age at transplantation was 38 years (IQR 28 - 50). Mean time on KRT prior to transplantation was 21.3 months (SD 29.2). People with Alport's Disease starting KRT were younger than those with congenital abnormalities of the kidneys and urinary tract (CAKUT) or Dents/Lowe ($p<0.001$). People with Autosomal Recessive Polycystic Kidney Disease were most likely to be pre-emptively transplanted ($p<0.001$). Those with congenital nephrotic syndrome and CAKUT were most likely to receive multiple transplants ($p=0.005$).

Table 1: Characteristics of patients with End Stage Kidney Disease secondary to rare diseases

	Congenital Nephrotic Syndrome	CAKUT[1]	ARPKD[2] and HNF1B[3]-associated	ADTKD[4] and nephronophthisis	Atypical Haemolytic Uraemic Syndrome	Alports Disease	Cystinosis and Fabry's Disease	Hyperoxaluria and Dents/Lowe	Total	p-value
Ethnicity n (%)										
White	78 (67.2)	2383 (81)	36 (76.6)	72 (77.4)	112 (80.6)	208 (81.3)	31 (79.5)	28 (66.7)	**2950 (80)**	**<0.001[7]**
Black	10 (8.6)	70 (2.4)	1 (2.1)	3 (3.2)	4 (2.9)	6 (2.3)	0	3 (7.1)	**97 (2.6)**	
South Asian	18 (15.5)	245 (8.3)	4 (8.5)	6 (6.5)	3 (2.2)	13 (5.1)	7 (17.9)	4 (9.5)	**300 (8.1)**	
Other	1 (0)	38 (1.3)	0	4 (4.3)	3 (2.2)	6 (2.3)	0	2 (4.8)	**61 (1.7)**	
Unknown	3 (2.59)	216 (7.3)	6 (12.8)	8 (8.6)	17 (12.2)	23 (8.9)	1 (2.6)	5 (11.9)	**279 (7.6)**	
Age commenced KRT[5], median (IQR)	38.5 (27.5 – 55.5)	41 (30 – 53)	38 (26 – 54)	43 (30 – 54)	37 (28 – 53)	52.5 (23 – 67)	40 (24 – 54)	41 (32 – 51)	**40 (29 – 53)**	**<0.001[7]**
Age at death, median (IQR)	57 (38.5 – 71.5)	63 (52 – 76)	66.5 (57 – 69.5)	59 (52 – 72)	61 – 18.5	77 (60 – 88)	60 (39 – 64)	67 (59 – 70)	**65 (52 – 76)**	**0.434[7]**
n[8]	12	102	4	8	21	15	6	5	**453**	
First KRT modality n (%)										
Haemodialysis	63 (54.3)	1435 (48.6)	19 (40.4)	43 (44.1)	98 (70.5)	121 (42.3)	16 (40)	33 (78.6)	**1826 (48.5)**	**<0.001[7]**
Peritoneal Dialysis	34 (29.3)	892 (30.2)	11 (23.4)	38 (40.9)	20 (14.4)	91 (35.6)	16 (40)	3 (7.1)	**1105 (30)**	
Transplant	19 (16.4)	628 (21.3)	17 (36.2)	14 (15.1)	21 (15.1)	44 (17.2)	7 (18)	6 (14.3)	**756 (20.5)**	
Total	116	2955	47	93	139	256	39	42	3687	
%	3.15	80.13	1.27	2.52	3.77	6.94	1.06	1.14	100	

1 Congenital abnormalities of the kidneys and urinary tract
2 Autosomal recessive polycystic kidney disease
3 Hepatocyte nuclear factor – 1B
4 Autosomal dominant tubular kidney disease
5 p-value calculated using a chi-squared test
6 Kidney replacement therapy
7 p-value calculated using a Kruskal-Wallis Test
8 Number of patients deceased during study period

Table 2: Transplantation in rare renal diseases

	Congenital Nephrotic Syndrome	CAKUT[1]	ARPKD[2] and HNF1B[3]-associated	ADTKD[4] and nephronophthisis	Atypical Haemolytic Uraemic Syndrome	Alports Disease	Cystinosis and Fabry's Disease	Hyperoxaluria and Dents/Lowe	Total	p-value
Age at transplantation, median (IQR)	38 (28 – 53)	39 (29 – 50)	34.5 (25 – 53)	45 (30 – 54)	33 (25 – 46)	32 (25 – 43)	32 (21 – 43)	38 (28 – 50.5)	**38 (28 – 50)**	**<0.001**[7]
Time on KRT[5] prior to first transplant, months (mean +- SD)	25.7 +- 30.8	20.7 +- 29.8	12.2 +- 15.8	19.6 +- 21.7	27.9 +- 28	20.6 +- 27	7.6 +- 11.6	21.1 +- 19.9	**21.3 +- 29.2**	**0.028**[7]
Graft survival time, months (mean +- SD)	27.3 +- 37.2	50.6 +- 47.1	29.8 +- 46.3	39.5 +- 30.6	44.7 +- 53.9	58.1 +- 45.4	84.5 +- 2.1	2.0 +- 3.5	**48.4 +- 46.2**	**0.195**[7]
n[8]	12	402	8	11	18	29	2	3	**517**	
Survival time from transplantation to death, years (mean +- SD)	6.8 +- 7.2	6.9 +- 5	7	4.3 +- 3.1	6.3 +- 7.1	6.0 +- 6.1	6	0.3	**6.5 +- 4.9**	**0.889**[7]
n[9]	4	128	1	4	6	4	1	1	**171**	
Number of transplants in lifetime n (%)										**0.005**[10]
1 transplant	81 (95.8)	2051 (89.4)	39 (63.8)	66 (71)	80 (37.6)	197 (77)	25 (64.1)	23 (54.8)	**2677 (54.23)**	
2 transplants	3 (2.6)	144 (4.9)	8 (8.53)	4 (4.3)	8 (5.8)	18 (7)	0	1 (2.4)	**188 (3.81)**	
3 transplants	1 (0.86)	3 (0.17)	0	0	0	0	0	0	**6 (0.12)**	

1 Congenital abnormalities of the kidneys and urinary tract
2 Autosomal recessive polycystic kidney disease
3 Hepatocyte nuclear factor – 1β
4 Autosomal dominant tubular kidney disease
5 p-value calculated using a Kruskal-Wallis Test
6 Kidney replacement therapy
7 p-value calculated using one-way ANOVA
8 Number of patients with grafts failure during study period
9 Number of patients deceased during study period
10 p-value calculated using a chi-squared test

Discussion: People with ESKD secondary to rare disease start KRT earlier and die younger than average people starting KRT, with important differences in graft survival based on underlying disease. Understanding the likely life-course of children with rare kidney diseases would inform policy, guide health service planning and inform parents, allowing individualised, joint decision-making.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

O07: An audit of the diagnosis of death using neurological criteria following therapeutic decompressive craniectomy

Dr James Schneider, Dr Jennifer Overend, Dr Lynne Barrass

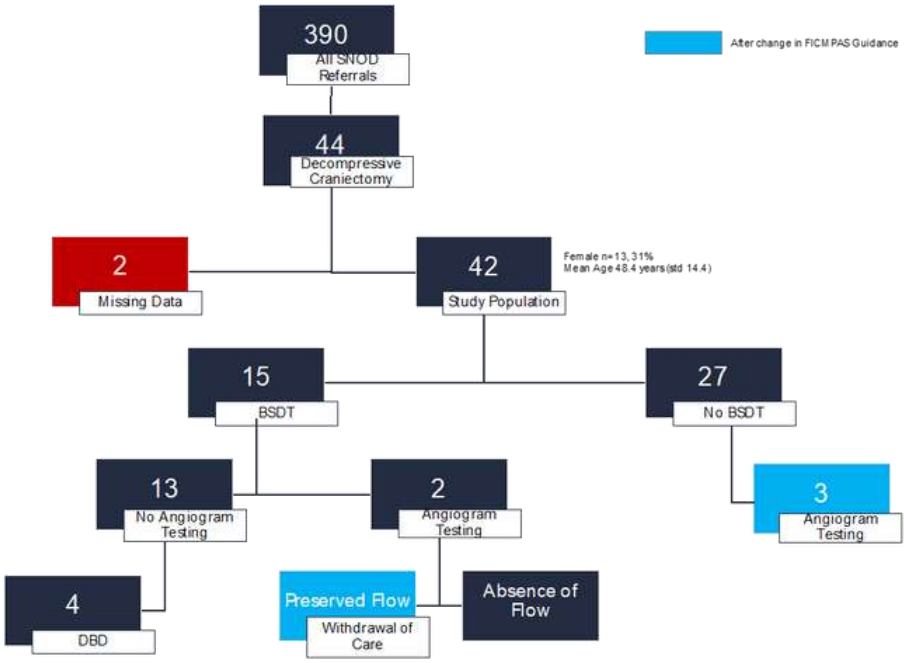
Barts Health NHS Trust, London, United Kingdom

Abstract

Introduction: In 2021, therapeutic decompressive craniectomy (TDC) was added to the list of red flag patient groups for the Diagnosis of Death using Neurological Criteria (DNC) in the UK. The use of ancillary investigation such as CT angiography to demonstrate absence of cerebral blood flow is now recommended for DNC after TDC. Our audit reviews all cases of TDC at our centre over a 5-year period to review practice before and after the additional FICMPAS guidance publication in January 2022, and reflects on the use of ancillary testing.

Method: Data was collected retrospectively using the Specialist Nurse Organ Donation referrals database over the period from January 2018 – July 2022. All adult patients who had TDC were included. We reviewed the notes of these patients in more detail recording the use of ancillary testing, DNC and organ donation.

Results: Our audit demonstrated that ancillary testing was not being used to support DNC following TDC in 13 out of 14 of cases prior to 2022. Following the change in guidance, of the patients who showed absence of brainstem reflexes on informal testing, 3 out of 4 underwent ancillary testing. These 3 patients did not proceed with BSDT in keeping with new guidance due to their ancillary tests demonstrating preservation of cerebral blood flow.



Discussion: Although patients who have TDC account for <1% of all confirmations of DNC in the UK, it is important that our diagnosis of death is robust in these cases. Increased use of ancillary testing in this cohort

may impact on end-of-life care and type of organ donation. The requirement for ancillary testing to support DNC may mean that BSDT will not proceed in many TDC patients. Potentially, this will impact on donation numbers with fewer donations after brainstem death and increased length of intensive care stay in this patient cohort.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

O08: Expansion of "REACH Transplant" initiative: Home-based living donor kidney transplantation (LKDT) education for patients in Scotland

Mrs Orla Hobson[1], Dr Jen Lumsdaine[1,2], Mrs Linda White[3], Mr Gabriel Oniscu[1]

[1]Edinburgh Transplant Centre, Edinburgh, United Kingdom. [2]Living Donation Scotland, Scottish Government, United Kingdom. [3]Organ Donation Policy Team, Scottish Government, United Kingdom

Abstract

Background: Renal Education and Choices @ Home (REACH) Transplant is a Scotland-wide home education initiative aiming to increase LDKT rates and reduce inequality of access. Tailored, timely information is provided to suitable patients, and their support network, in patients' homes. A pilot of REACH Transplant in NHS Lothian achieved a significant improvement in patient knowledge and a significant shift towards more favourable attitudes to LDKT (Figures 1&2 below).

Case Presentation: Nurse specialists are now being recruited in the nine Scottish renal units, comprising 5.0 WTE (with coverage allocated on the basis of the local RRT population, and geographical and socio-economic characteristics), supported by a programme lead.

The nurses will be employed by their local NHS Boards and will work closely with existing teams to (i) implement mandated recording of transplant consideration and decisions, (ii) identify patients that would benefit from home education about LDKT, (iii) deliver informal education sessions in patients' homes, which members of their support network can attend, and (iv) act as a point of contact for patients and potential living donors, in order to optimise pathways.

Outcome: It is anticipated that home education will continue to contribute to overcoming known barriers to accessing LDKT. However, evaluation of the outcomes of REACH Transplant will be key with an initial priority of designing a robust evaluation strategy, using recognised quality improvement processes.

Discussion: The Scotland-wide implementation of REACH Transplant means that all patients living in Scotland who would benefit from LDKT will have a timely opportunity to fully explore this option. It is likely that the benefits will be greatest for those least likely to access LDKT, including those belonging to an ethnic minority and those affected by deprivation.

Figure 1.

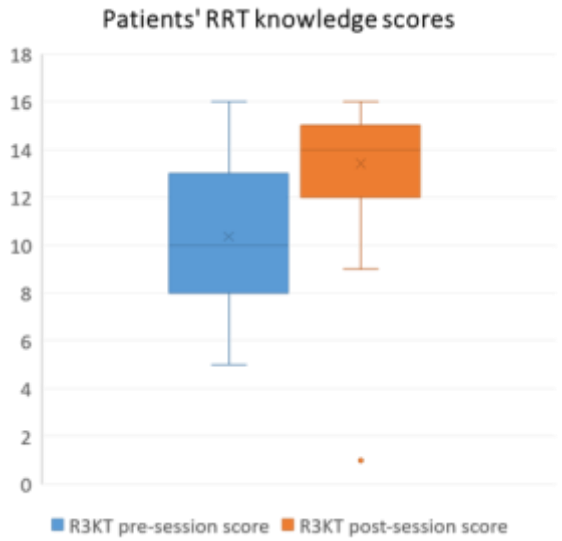
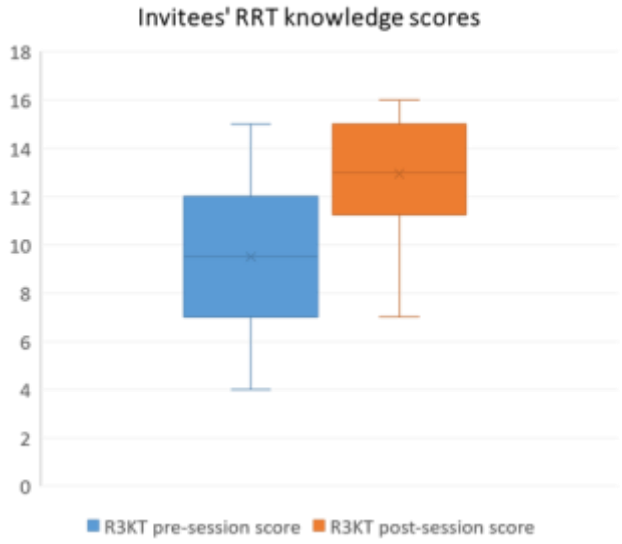


Figure 2



Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

O09: Occult fibrin in deceased donor livers is associated with transplant failure and cholangiopathy

Prof Chris Watson[1,2], Mr Stephen MacDonald[2], Mr Christopher Bridgeman[2], Ms Lisa Swift[2], Ms Corrina Fear[2], Dr Will Thomas[2], Dr Theodora Foukaneli[2], Ms Linda Selves[2], Mr Rohit Gaurav[2], Mr Andrew Butler[1,2]

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

Abstract

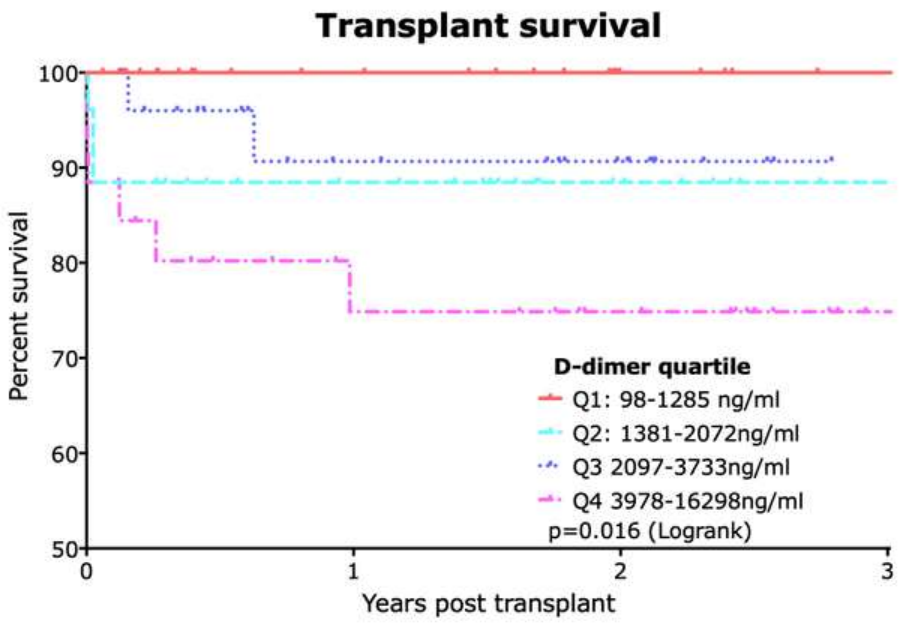
Introduction: Microthrombi within the peribiliary vascular plexus have been cited as a cause of cholangiopathy in deceased donor livers. In order to examine this further, we looked for D-dimers, products of fibrin breakdown, in the perfusate of livers undergoing normothermic machine perfusion (NMP).

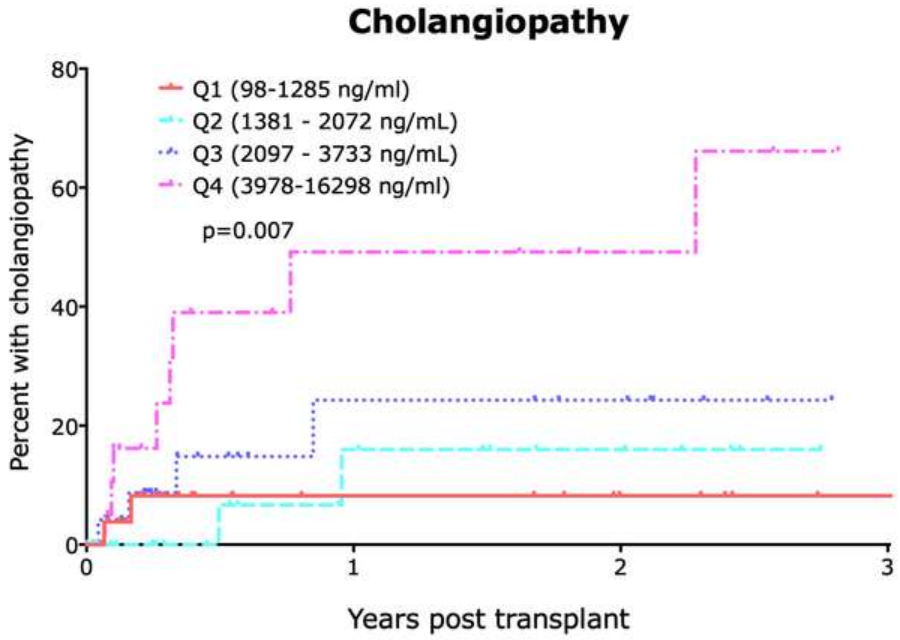
Methods: D-dimer concentrations were measured in the perfusate sampled after 2 hours of liver NMP on the Organox *metra*. Of these, 103 livers were transplanted. The transplanted livers were divided into quartiles according to D-dimer release, and the incidence of non-anastomotic strictures (NAS) and transplant survival compared.

To assess whether fibrin was formed before NMP, D-dimers were also sampled in the effluent of 50 livers following flushing with Hartmann's solution before NMP.

Results: 153 livers were studied, and comprised 55 DBD, 71 nonNRP DCD, and 27 NRP DCD. D-dimers were present in the perfusate of all livers in varying quantities, with the livers recovered by NRP releasing the least. Livers in the lowest D-dimer concentration quartile had a transplant survival (graft survival not censored for death) of 100%, and 11% incidence of NAS. Livers in the the quartile with the highest D-dimers had a 50% incidence of NAS and 75% transplant survival. The differences in NAS and transplant survival between quartiles was highly significant (Logrank p=0.007 and p=0.016 respectively). When livers undergoing NRP before NMP were excluded, there remained a significant effect of D-dimers on transplant survival and NAS.
D-dimers were present in the Hartman's effluent in varying concentrations.

Conclusion: Deceased donor livers carry a variable burden of occult fibrin which appears to form during ischaemia. This fibrin appears to contribute to the occurrence of non-anastomotic strictures and transplant failure. The data suggest that fibrinolytic therapy may be a beneficial adjunct to normothermic machine perfusion.





Categories: Organ preservation and retrieval (novel technologies - NORS - donor surgery)

O10: Paediatrics: Advancing multidisciplinary simulation to meet emerging needs and change donation culture

Jill Featherstone

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Abstract

Introduction: The NHSBT National Deceased Donation Course is now well-established, and a much-respected multidisciplinary course for ICM trainees. It offers the next generation of intensivists a comprehensive foundation in organ donation practice and has contributed to attitudinal shifts in making organ donation and involvement of the specialist nurse a routine in end-of-life considerations for adults. The 2019 UK Paediatric and Neonatal Deceased Donation Strategy highlighted that there was a demonstrable inequality in paediatrics in this respect and an acute need for organs for children. In response, adaptions to this course enabled paediatric trainees and both specialist and critical care nurses a more bespoke experience for their learning.

Case presentation: Quality and deliverability were assured by comprehensive scoping of content, facilities, centre choice and faculty provision. Robust scenario building and incremental improvements based on feedback and testing gave confidence to the delivery which now equals that of the adult provision.

Outcome: Course feedback demonstrates these changes are highly valued and the mixed disciplinary learning is identified as beneficial to all. The bespoke simulation scenarios have led to trainees to feel more confident in their own donation practice, more knowledgeable and, particularly, are more willing to seek the support and expertise of a specialist nurse when planning palliation of children and infants.

Discussion: With an equality in learning provision now available to paediatric trainees and the confidence and energy delegates are expressing around incorporating organ donation into their practice, there is optimism that this will continue the positive impact of the National Deceased Donation Course. For NHSBT's specialist nurses particularly, it provides an opportunity to simulate donation within this discipline and develop their own confidence in these rarer donations. It is also an opportunity to demonstrate their expertise and for both disciplines to have confidence in collaborative future working.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

O11: Assessment of regional outcomes of paediatric renal transplantation in the UK

Mr Hemant Sharma, Dr Kunal Kapoor, Dr Bhavesh Devkaran, Mr Sanjay Mehra

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Abstract

Background: <25%of UK children commencing RRT receive a pre-emptive transplant in UK. Disparities have been reported amongst gender and ethnic groups. Pediatric patients on the waiting list has increased over last 5 years.

Aim: To assess the paediatric renal transplant rates in the UK since year 2000 the regional graft outcomes of the paediatric renal transplant in the UK since year 2000 and determine the predictors of survival at 30 days, 1 year , 5 years.

Methods: We harmonized the NHSBT Data to shortlist the paediatric renal transplants performed in the UK from year 2000-2019. The Predictors of Transplant outcomes were evaluated by five classifiers including logistic regression, SVM, random forest, K-Nearest neighbour matching and adaptive boosting. Random Forest Model had the best performance validated by RMSE. Rattle R/ JASP was used to derive Variables of importance. Survival outcomes and predictors data mined from MLA were further mined with Cox Regression.

Results: A total of 2610 pediatric transplants were reoprted to NHSBT (year 2000-2019). London region did the maximum transplants (N= 854) followed by Northern and Yorkshire (N=347) and Northern region (N= 340). High Volume centre doing living donors had a considerable better survival compared to others. On Regression analysis the better graft survival was correlated to recipient age group >8 years (p <0.001), CIT <12 hr (p= 0.02), Transplant year -2010 onwards (p <0.01), ethnically matched donor- recipient (p= 0.01), HLA NHSBT group 1 and 2 (p=0.04) and high volume centres (> 15 pediatric transplants/annually).

Conclusions: Superior outcomes were reported from high volume centres and transplants done after year 2010. Immunologically well matched kidneys and low CIT predicts better survival.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

O12: The use of donor-derived cell-free deoxyribonucleic acid (ddcfDNA) for diagnosing rejection in paediatric solid organ transplants (SOT) recipients: A systematic review and meta-analysis of diagnostic test accuracy (DTA) studies

Dinarda Ulf Nadobudskaya[1], Prof Stephen Marks[2], Maya Banerjee[3], Aarif Ali[3]

[1]Student, Great Ormond Street Institute of Child Health, London, United Kingdom. [2]Great Ormond Street Hospital for Children, London, United Kingdom. [3]Student, University College London Medical School, London, United Kingdom

Abstract

Introduction: Biopsies are the gold standard to diagnose allograft rejection, although they are invasive, carry procedural risk, and are inconvenient, especially for paediatric patients. Less-invasive tests using novel biomarkers, such as ddcfDNA, have been developed as an alternative to biopsy. This study aims to review the evidence regarding the test performance of ddcfDNA to diagnose rejection in paediatric SOT recipients and map it according to the potential sources of heterogeneity.

Methods: This study was registered to PROSPERO (CRD42022348131). All published primary studies evaluating ddcfDNA to diagnose rejection in paediatric SOT recipients were eligible. A search was done in Cochrane, Pubmed, Embase, Web of Science, and registries (ClinicalTrial.Gov and WHO ICTRP), including records from inception up to 09 September 2022. We assessed the risk of bias and applicability using the Quality Assessment of Diagnostic Accuracy Studies 2 (QUADAS-2) tool. Meta-analysis was done by using the Rutter-Gatsonis model.

Results: The review included seven studies (677 kidney, heart, liver, and lung transplant recipients) comparing ddcfDNA fraction to biopsy-proven (n=5) and clinical rejection (n=2). The studies used four assays that utilise sequencing and quantitative genotyping. All studies were at unclear or high risk of bias in one or more QUADAS-2 domains. Random effects meta-analysis (5 studies, 337 samples) revealed heterogeneity around the summary sensitivity (78.9 [95%CI:67.8–86.9]%) and specificity (84.8 [95%CI:65.4–94.2]%) of ddcfDNA to diagnose biopsy-proven rejection. Exploratory subgroup analysis showed similar performance in different clinical contexts, SOT type, and rejection type, except for higher specificity in studies using plasma samples compared to those using whole blood.

Discussion: A low certainty evidence showed ddcfDNA had 78.9% sensitivity and 84.8% specificity to diagnose any biopsy-proven rejection in paediatric SOTs. A negative ddcfDNA test may be useful to prevent unnecessary biopsy; however, a positive ddcfDNA test cannot solely replace biopsy to diagnose rejection.

Table 1. Reported diagnostic test performance for all rejection

Study	TP	FP	TN	FN	Sn (%)	Sp (%)	PPV (%)	NPV (%)	AUC
A. Biopsy-proven rejection									
Puliyanda (2021)	26	0	4	3	89.66	100	100*	50*	0.99
Zhao (2021)	8	2	36	3	72.70	94.70	80	92.30	0.88
Richmond (2022)	16	49	95	5	76	65	25	95	0.79
Richmond (2020)[b]	11	2	27	6	65	93	83.03*	81.80	0.81
Feingold (2022)	6	11	26	1	85.71*	70.27*	35.29*	96.30*	n/c
B. Clinical rejection									
Preka (2020)	n/a	15	178	n/a	n/c	92.23*	n/c	n/c	n/r
Deshpande (2022)	18	182	230	1	95	56	9	99	0.81

AUC=Area under the receiver operating curve, FN=false negative, FP=false positive, NPV=negative predictive value, PPV=positive predictive value, Sn=sensitivity, Sp=specificity, TN=true negative, TP=true positive

n/c=not calculable; n/a=not available

[b]Plasma only

*Own calculation

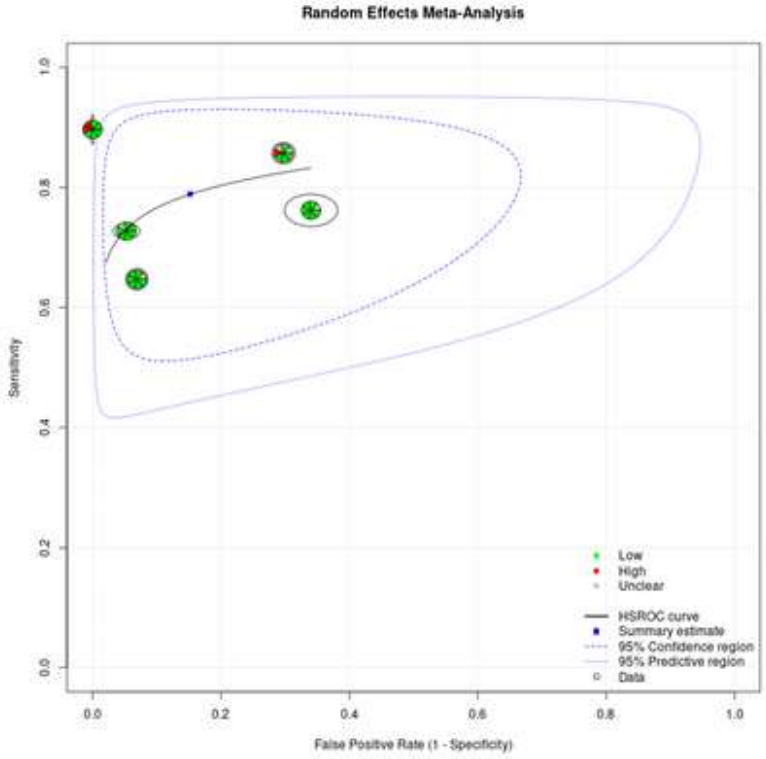


Figure 1. Summary of ROC curves estimated from all studies with 95% confidence and prediction region. The figure was made by using MetaDTA to highlight the QUADAS-2 assessment result regarding risk of bias and applicability. HSROC=hierarchial summary ROC.

Categories: Basic and translational science (as per category - all science)

O13: Investigating outcomes in the use of increased risk donor organs in paediatric solid-organ transplantation: a systematic review

Miss Sruthi Kallath[1], Miss Maya Banerjee[1], Mr Aarif Ali[1], Professor Stephen Marks[2]

[1]University College London, London, United Kingdom. [2]Great Ormond Street Hospital, London, United Kingdom

Abstract

Introduction: Solid-organ transplantation (SOT) is the gold-standard treatment for end-stage organ failure. However, an insufficient supply of organs results in long waiting list times, complications, and death. Increasing the utilisation of organs from increased risk donors (IRD), which carry increased risk of HIV, Hepatitis B and/or C, is a potential method to better utilise organs already present within the donor pool.

Methods: Systematic review using pre-defined methodology followed by fixed-effects meta-analyses for each outcome where possible, and narrative or tabular syntheses where not. Patient outcomes in IRD organ use were compared to patient outcomes in either non-IRD organ use or remaining on the transplant waiting list, for prospective paediatric SOT recipients.

Results: 1,753 results were retrieved from initial searches, with six studies included in this systematic review. The use of IRD organs compared to non-IRD organs observed no difference in patient survival, allograft survival, or transplant waiting list time. The use of IRD organs observed significantly improved patient survival (HR: 0.52, CI: 0.37-0.73, two studies) and reduced transplant waiting list time, compared to remaining on the transplant waiting list. One incident of donor-to-recipient disease transmission was reported, however no information regarding organ risk-status or post-transmission outcomes were reported.

Discussion: Results suggest that IRD organs may be a beneficial equivalent to non-IRD organs, in appropriate circumstances (i.e., when remaining on the transplant waiting list may be detrimental to potential recipients). This does not necessarily suggest that the routine and indiscriminate acceptance of all IRD organs would observe the same patient benefits. Instead, careful consideration of donor and recipient factors (i.e., age, antigen mismatch, imminent loss of dialysis access, risk of death) is required to objectively evaluate the risks and benefits of IRD organ use in the clinical context. Future high-quality international studies across more organ-types are needed to further establish clinical applicability.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

O14: Molecular HLA mismatching for prediction of primary humoral alloimmunity and graft function deterioration in paediatric kidney transplantation

Dr Jon Jin Kim[1,2], Dr Alexander Fichtner[3], Dr Hannah Copley[1], Dr Loren Gragert[4], Dr Kai Krupka[3], Prof Burkhard Toenshoff[3], Mr Vasilis Kosmoliaptsis[1]

[1]Department of Surgery, University of Cambridge, Cambridge, United Kingdom. [2]Nottingham University Hospital, Nottingham, United Kingdom. [3]Department of Pediatrics, University Children's Hospital Heidelberg, Heidelberg, Germany. [4]School of Medicine, Tulane University, New Orleans, USA

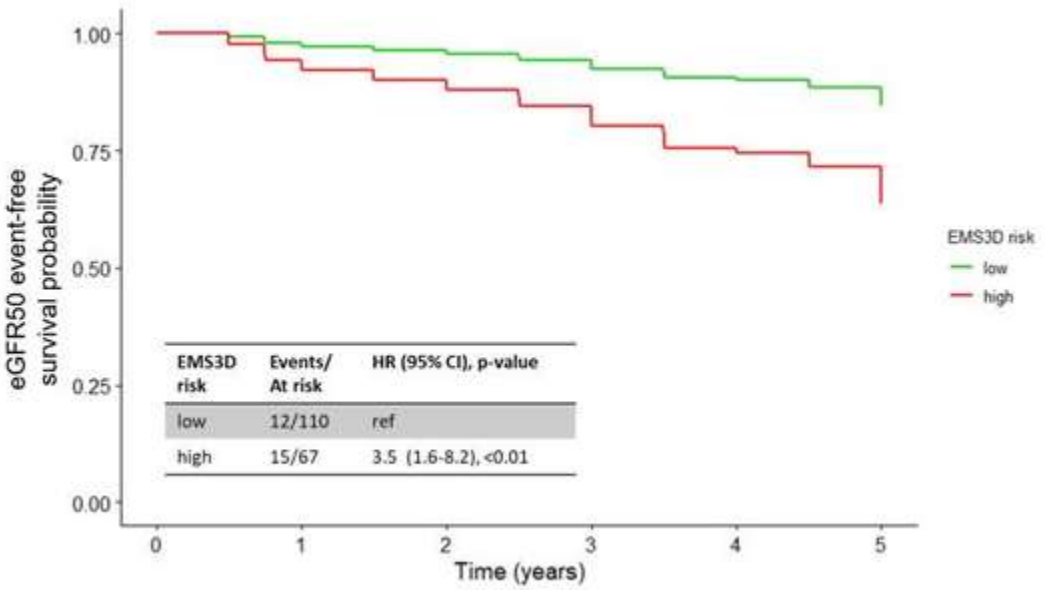
Abstract

Introduction: Rejection remains the main cause of allograft failure in paediatric kidney transplantation and is driven by donor-recipient HLA mismatching. Modern computational algorithms enable assessment of HLA mismatch immunogenicity at the molecular level (molecular-mismatch, molMM). Whilst molMM has been shown to correlate with alloimmune outcomes, evidence demonstrating improved prediction performance against traditional antigen mismatching (antMM) is lacking.

Methods: We analysed 177 patients from the CERTAIN registry (median follow-up 4.5 years). molMM scores included Amino-Acid-Mismatch-Score (AAMS), Electrostatic-Mismatch-Score (EMS3D) and netMHCIIpan (netMHC1k: peptide binding affinity ≤1000 nM; netMHC: binding affinity ≤500 nM plus rank <2%). We stratified patients into high/low-risk groups based on risk models of DSA development.

Results: Donor-specific HLA antibodies (DSA) predominantly targeted the highest scoring molMM donor antigen within each HLA locus. MolMM scores offered superior discrimination versus antMM in predicting de novo DSA for all HLA loci; the EMS3D algorithm had particularly consistent performance (area under the receiver operating characteristic curve (AUC) >0.7 for all HLA loci vs. 0.52-0.70 for antMM). ABMR (but not TCMR) was associated with HLA class II molMM scores (AAMS, EMS3D and netMHC1k). Patients with high-risk HLA-DQ molMM had increased risk of graft function deterioration (50% reduction in baseline eGFR (eGFR50), adjusted HR: 3.5, 95% CI 1.6-8.2 high vs. low EMS3D, Figure). Multivariable modelling of the eGFR50 outcome using EMS3D HLA-DQ stratification showed better discrimination (AUC EMS3D vs. antMM at 2 years: 0.81 vs. 0.77, at 4.5 years: 0.72 vs. 0.64) and stratified more patients into the low-risk group, compared to traditional antMM.

Conclusion: Molecular mismatching was superior to antigen mismatching in predicting humoral alloimmunity. Molecular HLA-DQ mismatching appears to be a significant prognostic factor for graft function deterioration in paediatric kidney transplantation.



Categories: H&I (HLA typing - crossmatching - immunologically complex recipients)

O15: Kidney graft outcomes following paediatric blood group incompatible transplantation – a comparative study using UNOS database analysis

Mr Pankaj Chandak[1,2], Mr Ioannis Kostakis[3], Miss Mikaela Charalambides[1,4], Mr Petrut Gogalniceanu[1], [1], Dr Jelena Stojanovic[5], Mr Francis Calder[1], Mr Ioannis Loukopoulos[1], Mr Nicos Kessaris[1]

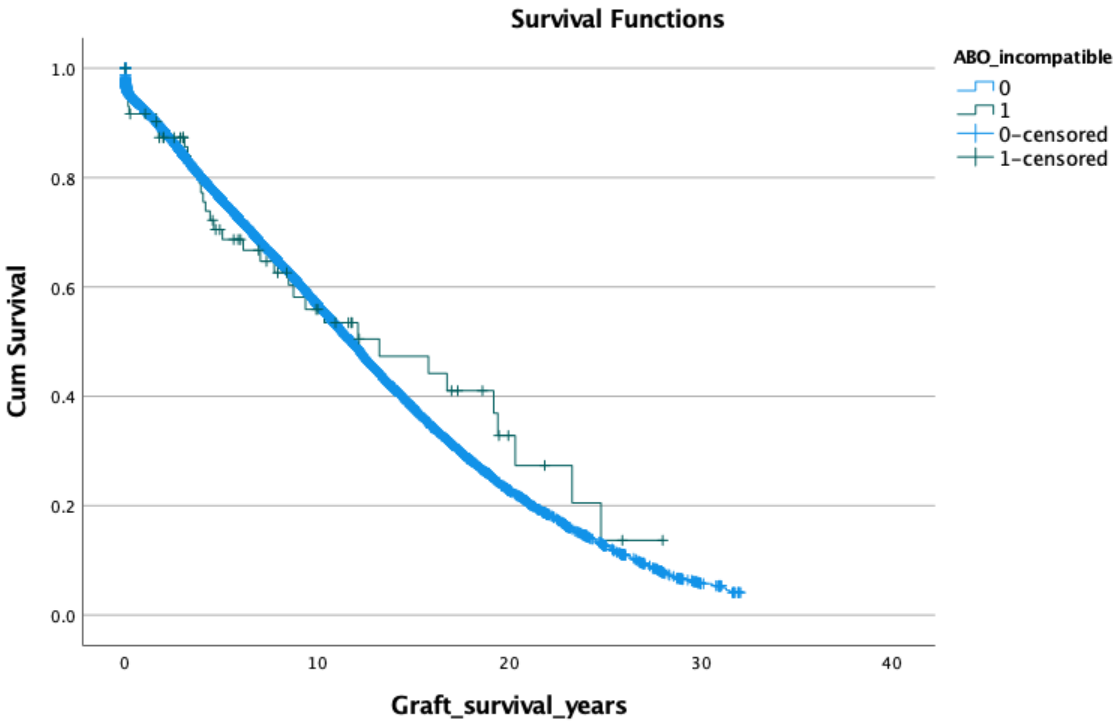
[1]Guy's Hospital, London, United Kingdom. [2]Royal London Hospital, London, United Kingdom. [3]Royal Free Hospital, London, United Kingdom. [4]King's College London, London, United Kingdom. [5]Great Ormond Street Hospital, London, United Kingdom

Abstract

Introduction: Blood group incompatible (ABOi) kidney transplantation is used on some occasions in the paediatric population when a compatible transplant is impossible. The aim of this study is to explore kidney graft outcomes following ABOi kidney transplantation and compare that to blood group compatible (ABOc) transplants following the analysis of a large database.

Methods: Data were retrieved and analysed on ABOi and ABOc kidney transplants performed in paediatric recipients (younger than 18 years old) from October 1987 until September 2020, from the United Network for Organ Sharing (https://unos.org/). SPSS v28 was used for statistical analysis.

Results: There were 23886 ABOc kidney transplants (F=9777, median age 12, IQR 7-15) and 73 ABOi kidney transplants (F=29, median age 14, IQR 9-16). The blood groups of those who had an ABOi transplant were, blood group A=10, B=19 and O=44. There were 5 cases of delayed graft function in the ABOi group and 2132 in the ABOc group (p=0.682). There was no graft thrombosis in the ABOi group. In comparison, there were 457 cases of graft thrombosis in the ABOc group (p=0.652). There was one case of primary non-function in the ABOi group and 254 in the ABOc group (p=0.543). The median creatinine at discharge following ABOi transplantation was 0.90 mg/dL (IQR 0.6-1.42), whereas the median creatinine following ABOc transplantation was 0.89 mg/dL (IQR 0.5-1.30) [p=0.551]. Finally, Kaplan-Meier Survival analysis showed no significant difference between the ABOc and ABOi transplants (Log Rank of <0.487).



Discussion: Paediatric kidney graft outcomes after ABOi transplantation were similar to those after ABOc transplantation in this large comparative study. Despite the limitations of large database analysis, this outcome is reassuring for clinical teams and families who have to balance whether to proceed to a blood group incompatible transplantation or not, when other options are limited.

Categories: H&I (HLA typing - crossmatching - immunologically complex recipients)

O16: Enzymatic conversion of human blood group A kidneys to universal blood group O

Miss Serena MacMillan[1], Dr Sarah Hosgood[1], Dr Peter Rahfeld[2,3], Dr Spence S. Macdonald[2,3], Professor Jayachandran N. Kizhakkedathu[4], Professor Steven G. Withers[2], Professor Michael Nicholson[1]

[1]Department of Surgery, University of Cambridge, Cambridge, United Kingdom. [2]Department of Chemistry, University of British Columbia, Vancouver, Canada. [3]Avivo Biomedical Inc., Vancouver, Canada. [4]Department of Pathology and Laboratory Medicine, Centre for Blood Research, University of British Columbia, Vancouver, Canada

Abstract

Introduction: The ABO blood group restriction on the allocation of donor organs leads to waiting time disadvantages for individuals of more restrictive blood types. Here, we outline the first preclinical use of two enzymes derived from *Flavonifractor plautii* to convert human blood group A kidneys to the universal blood group O during normothermic machine perfusion.

Methods: Five biological pairs of human blood group A kidneys which were rejected for transplantation were accepted to this study, of which three pairs were allocated to acellular normothermic machine perfusion (NMP) for 6hrs, and two to hypothermic machine perfusion (HMP) for 24hrs. In each pair, one kidney was treated with 1mg/L of each of FpGalNAc deacetylase and FpGalactosaminidase. The contralateral kidney was perfused without enzyme as a control. Cortical biopsies were collected throughout perfusion and assessed for the presence of the blood group A antigens using immunofluorescence microscopy.

Results: After 2hrs of NMP, a maximum loss of 83.3-84.4% of blood group A antigen expression in the renal vasculature was observed compared to pre-treatment levels ($p = 0.0285$, RM-ANOVA with Dunnett's multiple comparisons test) while no significant changes were observed in control kidneys ($p = 0.999$). For HMP, a maximum loss of 80.8-86.7% blood group A antigens was observed after 6hrs in the two treated kidneys examined, with no decrease observed in the contralateral controls. Haemodynamic perfusion parameters were stable in both cohorts, with no significant difference between control vs treated kidneys.

Discussion: Our results show an average loss of over 80% of blood group A antigens in as little as 2hrs of NMP, and 6hrs of HMP. Both of these approaches are clearly feasible for translation into clinical practice. This strategy paves the way for the first clinical studies and could herald the start of a new era that transforms donor organ allocation in kidney transplantation.

Categories: Basic and translational science (as per category - all science)

O17: Interactions between pregnancy, sex, and early rejection determine long-term graft survival in HLA antibody incompatible (AiT) renal transplantation

Prof David Briggs[1,2], Prof Nithya Krishnan[3], Dr Mason Phillpott[4], Prof Rob Higgins[4], Dr Natasha Khovanova[4], Dr Sunil Daga[5]

[1]NHSBT, Birmingham, United Kingdom. [2]UUniversity of Birmingham, Birmingham, United Kingdom. [3]University Hospitals Coventry and Warwick, Coventry, United Kingdom. [4]Warwick University, Coventry, United Kingdom. [5]St Jame's University Hospital, Leeds, United Kingdom

Abstract

Introduction: Sensitisation against HLA from pregnancy disadvantages female patients by reducing access to a compatible transplant and by the high risk considered when transplanting against a repeat, foetal mismatch. We investigated the early donor-HLA-specific response in terms of antibody dynamics and early rejection (ER), how they differ in males and females and how these factors relate to graft survival (GS).

Methods: 134 patients were transplanted against donor-HLA-specific antibodies (DSA) following plasmapheresis in most cases. 43 cases were excluded due to insufficient follow-up data. We were able to assign a cause of primary sensitisation in 73. Standard triple imunosuppression and Basilixumab were used in most cases. Lymphocyte depletion was used to treat ER episodes rather than prevention. Post-transplant DSA dynamics were classified by unsupervised machine learning into five distinct DSA response groups (Table 1).

Results: We saw no difference in ER between males and females overall, but males with ER had significantly poor GS compared with females (Fig 1a). Pregnancy sensitised females had the highest rate of ER (18/24), significantly more than the transplant plus transfusion sensitised cases (21/49; p=0.014). Superior GS was seen with pregnancy sensitised females (Fig1b), with significantly better GS than non-pregnancy sensitised females (p=0.029), with males in between. Overall, the post-transplant DSA responses are significantly different between the sexes with females having higher proportions of modulating responses (Table 1). Pregnancy sensitisation is particularly associated with a rapid DSA rise and fall.

Discussion: Our analysis challenges the notion that pregnancy is a risk factor in HLA-AiT. Specific immune regulation originating during pregnancy may allow and control the DSA rebound and modulation. Excluding rejection prophylaxis by permitting this response might be beneficial, promoting better GS in pregnancy sensitised recipients. Such regulation will be absent in males, and in these recipients, ER is clearly harmful for GS and here ER prophylaxis may be needed.

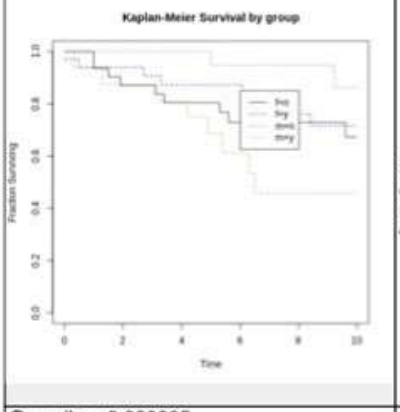
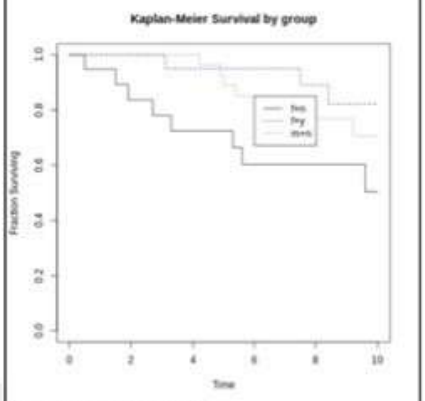
Fig 1a. Sex and impact of ER on 10-year graft survival f=female, m=male y= with early rejection, n=no early rejection.	Fig1b. Source of sensitisation and 10-year graft survival. f=female; y=pregnancy sensitised, n=non-pregnancy sensitised
	
Overall; p=0.028985. m+y vs m+n p-value: 0.003 m+y vs f+y; p=0.049.	Overall; p-value: 0.061. f+n vs f+y; p=0.029.

Table 1 Early post-transplant donor-specific antibody responses

	Number of cases in each response group					Significance
	no response	fast modulation	slow modulation	rise to sustained	sustained	
• **Sex**						**p=0.008**
Female recipients	12	12	21	5	7	
Male recipients	7	2	6	10	9	
• **Female only**						**ns**
Pregnancy sensitised	4	8	5	1	1	
Non-pregnancy sensitised	3	3	5	2	2	

Categories: Basic and translational science (as per category - all science)

O18: Desensitization and belatacept-based maintenance therapy in pregnancy sensitized monkeys receiving a kidney transplant

Dr Miriam Manook[1,2], Dr Danae Olaso[2], Dr Imran Anwar[2], Janghoon Yoon[2], Isabel Delaura[2], Yeeun Bae[2], Dr Dimitrios Moris[2], Dr Brian Shaw[2], Mingqing Song[2], Dr Alton. B Farris[3], Dr Annette Jackson[2], Dr Jean Kwun[2], Dr Stuart Knechtle[2]

[1]University of Cambridge, Cambridge, United Kingdom. [2]Duke University, Durham, USA. [3]Emory University, Atlanta, USA

Abstract

Introduction: Amongst sensitized patients awaiting a transplant, females are disproportionately represented, partly due to pregnancy induced allosensitization. Non-human primate (NHP) models have relied on juvenile males to test desensitization strategies. Here, using female NHPs sensitized by pregnancy alone, we examined the efficacy of co-stimulation blockade and proteasome inhibition as a desensitization therapy.

Methods: Three (3) animals received no desensitization (control) and seven (7) animals received weekly Carfilzomib (CFZ, 27mg/m2) and belatacept (Bela, 20mg/kg) as desensitisation prior to kidney transplantation. All animals received renal allografts from flow crossmatch positive and maximally MAMU mismatched donors with evidence of repeated mismatches based on offspring MAMU typing. Controls and three (3) desensitised animals received tacrolimus-based maintenance immunosuppression (tacrolimus/MMF/steroid). Four (4) desensitised animals received belatacept (20mg/kg monthly) in addition to triple therapy as maintenance. Comparison was made with skin sensitised male controls who did not receive desensitisation, (n=5).

Results: Pre-transplant, multiparous females had less circulating donor specific antibody (DSA) when compared to males. While multiparous females receiving desensitisation showed significantly prolonged graft survival compared to sensitised males (MST= 4d vs. 63d, p=0.01), there was no survival benefit over pregnancy sensitized controls (MST= 11d vs. 63d, p=0.98). The addition of belatacept to post-transplant maintenance significantly prolonged graft survival (MST>164d) and also suppressed post-transplant DSA and follicular helper T cells (TfH).

Discussion: Pregnancy sensitised females retain capacity to respond through allospecific memory B cells, despite low levels of circulating DSA. Pre-transplant therapy with proteasome inhibition and costimulation blockade, in combination with the addition of costimulation blockade to post-transplant maintenance therapy demonstrates great potential to reduce antibody-mediated rejection in sensitised recipients.

Categories: Basic and translational science (as per category - all science)

O19: Targeting mitochondrial metabolism to treat ischaemia reperfusion injury using translational models of kidney transplantation

Miss Margaret Huang[1,2], Miss Winnie Lei[1,3], Dr Hiran Prag[4], Dr Krishnaa Mahbubani[1], Dr Ming Yang[5], Professor Christian Frezza[5], Professor Michael Murphy[2], Professor Kourosh Saeb Parsy[1]

[1]University of Cambridge Department of Surgery, Cambridge, United Kingdom. [2]MRC Mitochondrial Biology Unit, Cambridge, United Kingdom. [3]The Milner Therapeutics Institute, Cambridge, United Kingdom. [4]University of Cambridge Department of Medicine, Cambridge, United Kingdom. [5]CECAD, Cologne, Germany

Abstract

Introduction: Oxidative damage following ischaemia reperfusion injury (IRI) is initiated by a burst of reactive oxygen species (ROS) generated by reverse electron transport (RET) in mitochondria. RET is driven by complex II-mediated oxidation of the mitochondrial metabolite succinate, which accumulates extensively in ischaemic tissues. We use translational models of kidney transplantation to identify conserved metabolic changes between mice, pigs, and humans, and examine the efficacy and mechanism of protection afforded by inhibition of complex II using the small molecule inhibitor disodium malonate (DSM).

Methods: Mouse and pig bilateral kidney IRI and pig and human ex vivo normothermic machine perfusion models were used to temporally resolve changes in succinate metabolism. Further experiments using the mouse model examined key metabolic pathways, with and without DSM treatment, through untargeted metabolomics analysis and pathway modelling using Boolean simulation with prior knowledge networks.

Results: Kidney succinate metabolism was highly conserved between mice, pigs, and humans during IRI (Fig 1). Administration of DSM prior to kidney IRI in mice inhibited complex II (untreated vs treated normoxic kidney malonate concentration p=0.0002; succinate concentration p=0.0015; n=3-4) and was protective (24-hour serum creatinine after untreated vs treated with IRI p=0.0012; n=5-6; Fig 2). DSM reduced ROS generation upon reperfusion and induced changes to key metabolic pathways similar to those observed in ischaemia. The computational model supported our hypotheses and identified key enzyme targets for validation.

Discussion: DSM not only protects against IRI through inhibition of ROS production but also leads to metabolic rewiring via pharmacological preconditioning. Together, these data increase our understanding of the mitochondrial mechanisms underpinning IRI and facilitate clinical translation of DSM as a safe and effective therapy in kidney transplantation.

Figure 1. Tissue succinate concentrations in mouse, pig, and human kidneys during normoxia, ischaemia (mouse – 20 minutes, n=4; pigs and humans – 30 minutes, n=3-4), 5 minutes reperfusion and 60 minutes reperfusion. Two-way ANOVA with multiple comparisons and Tukey's test.

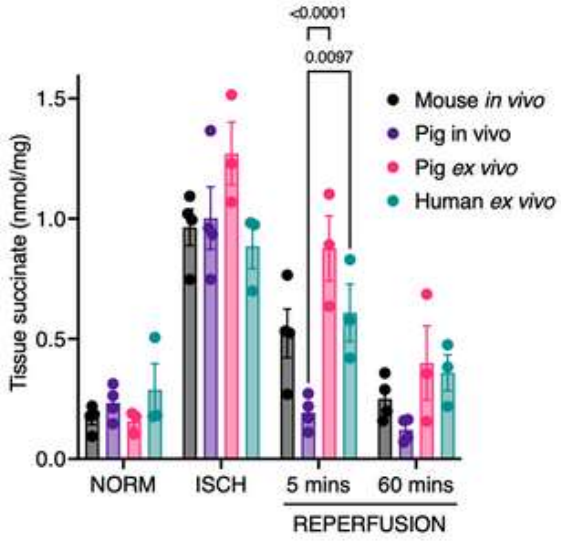
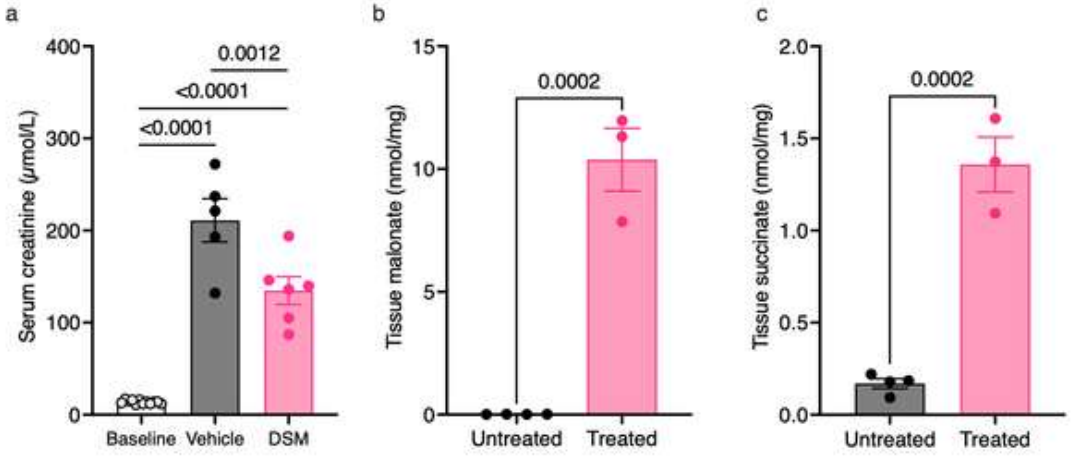


Figure 2(a) Serum creatinine in mice at baseline and 24 hours after treatment with vehicle or DSM followed by 20 minutes ischaemia (n=5-12; one-way ANOVA with multiple comparisons and Tukey's test); (b) Tissue malonate concentration in normoxic mouse kidneys following no treatment or treatment with DSM, (n=3-4; unpaired t-test); (c) Tissue succinate concentration in the same mouse kidneys from (b).



Categories: Basic and translational science (as per category - all science)

O20: Removal of circulating nucleosomes/neutrophil extracellular traps (NETs) reduces ex-situ reperfusion injury in porcine DCD livers preserved with normothermic machine perfusion (NMP)

Dr Fungai Dengu[1], Dr Hussain Abbas[1], Mr Jeremy Schofield[2], Dr Reza Morovat[3], Professor Alberto Quaglia[4,5], Dr Guozheng Wang[2], Dr Simon Abrams[2], Professor Cheng-Hock Toh[2], Dr Andrew Aswani[6], Professor Peter Friend[1]

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Abstract

Introduction: DCD and extended-criteria donor livers are extremely susceptible to reperfusion injury, even in the context of normothermic machine perfusion (NMP) occurring ex-situ. This ex-situ reperfusion injury (ERI), driven by the release of damage-associated molecular patterns (DAMPs) including nucleosomes/NETS, into the circuit upon reperfusion and can result in poor functional metrics ex-situ with subsequent organ discard. We aimed to assess the impact of removing circulating nucleosomes/NETS during NMP on ex-situ function and subsequent reperfusion in a large animal DCD liver perfusion model.

Methods: 12 DCD pig livers were included in the study. Nucleosomes/NETS were removed from the circulating perfusate using the NucleoCapture column that was integrated into the perfusion circuit and these livers were compared to NMP controls. Perfusate Nucleosomes/NETs, free-histone and cell-free DNA (cfDNA) were measured sequentially during perfusion (including pre and post-column). Perfusion parameters, functional assessment of the livers and histological features were assessed between groups. Statical analysis was performed using repeated measures ANOVA and t-test/Wilcoxons-test.

Results: NucleoCapture significantly reduced early circulating DAMPs across the column: cfDNA p=0.0087(1hr), Histone p=0.0087(1hr) and Nucleosomes p=0.033(2hr). This also corresponded with a significant improvement in early lactate clearance (0.5hrs p= 0.033, 1hr p=0.013, 2hr p=0.043) supported by improved haemodynamic perfusion metrics and no neutrophil infiltration on histological assessment. Warm and cold ischaemic times were comparable between groups. All livers produced bile and metabolised glucose.

Discussion: NucleoCapture effectively removes circulating nucleosomes/NETs from the perfusate during NMP, improving graft function and mitigating ERI. Application of this technology during NMP of DCD and extended-criteria donor livers could reduce organ discard due to poor function ex-situ and be pivotal in organ optimisation for transplantation.

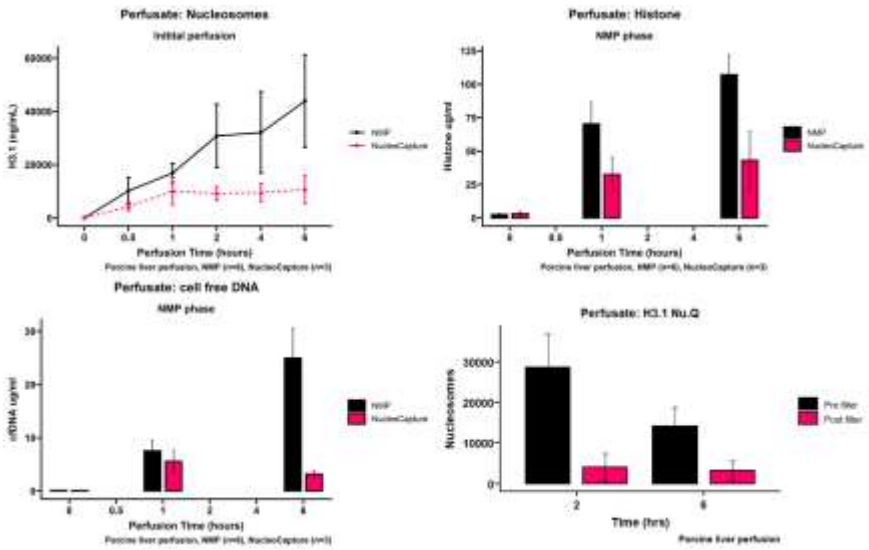


Figure 1: NucleoCapture significantly reduced circulating DAMPs in the perfusate and across the column.

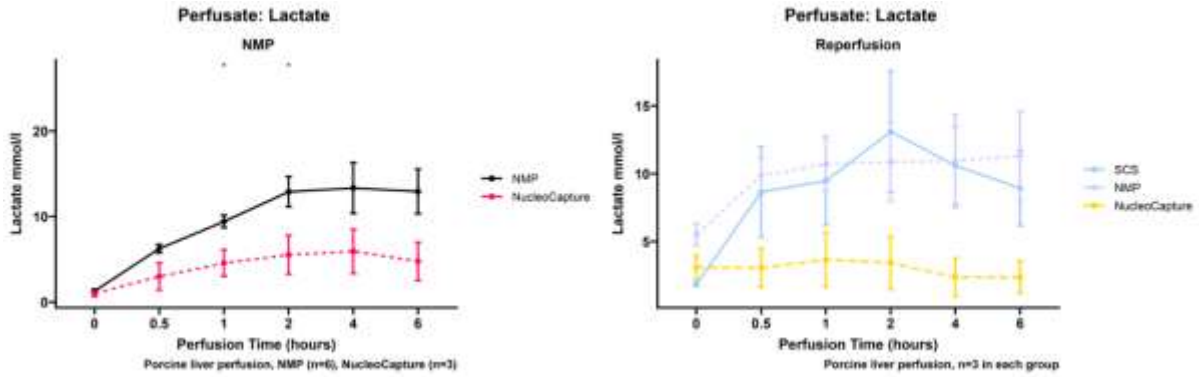


Figure 2: NucleoCapture livers had lower lactate levels during perfusion and reperfusion.

Categories: Basic and translational science (as per category - all science)

O21: Impaired oxygen release kinetics compromise the ability of stored red cells to oxygenate tissue during normothermic machine perfusion of the kidney

Mr Richard Dumbill[1,2], Ms Julija Rabcuka[3], Mr Simon Knight[1,2], Mr James Hunter[1,2], Mr John Fallon[1,2], Mr Daniel Voyce[4,5], Mr Jacob Barrett[5], Mr Matt Ellen[5], Ms Annemarie Weissenbacher[6], Professor Rutger Ploeg[1,2], Professor Constantin Coussios[4,5], Professor Pawel Swietach[3], Professor Peter Friend[1,2,5]

[1]Nuffield Department of Surgical Sciences, University of Oxford, Oxford, United Kingdom. [2]Oxford Transplant Centre, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom. [3]Department of Physiology, Anatomy, and Genetics, University of Oxford, Oxford, United Kingdom. [4]Oxford Institute of Biomedical Engineering, University of Oxford, Oxford, United Kingdom. [5]OrganOx Ltd., Oxford, United Kingdom. [6]Medical University of Innsbruck, Innsbruck, Austria

Abstract

Introduction: Extracorporeal storage of red blood cells (RBCs) results in biochemical and morphological abnormalities, collectively called the storage lesion. Recent data show that storage also affects oxygen handling, whereby RBCs take substantially longer to release haemoglobin-bound oxygen. Packed RBCs (pRBCs) are commonly used as an oxygen-carrier during normothermic machine perfusion (NMP). We sought to examine the effect of oxygen release kinetics on renal oxygen consumption during ex-vivo NMP of the kidney (NMP-K) as part of an ongoing phase 1 clinical trial investigating the safety and feasibility of prolonged NMP-K before transplantation (NKP1).

Methods: NMP-K was performed prior to transplantation in accordance with the NKP1 protocol. Paired arterial and venous blood gas samples were drawn during perfusion and immediately analysed for oxygen content (ABL-90 FLEX blood gas analyser). Aliquots of RBCs were analysed for oxygen release kinetics (single-cell oxygen saturation imaging). Urine and perfusate creatinine and sodium concentrations were measured using standard techniques.

Results: Renal oxygen consumption (vO2') was low across all cases (mean 3.45±1.41 ml/min). Ex-vivo creatinine clearance varied widely (0-20.2 ml/min). Function was substantially impaired in RBCs used in perfusion (Fig. 1). There was no correlation between vO2' and urine production, creatinine clearance, or tubular sodium reabsorption. However, there was a strong negative correlation between the time-constant of O2 release (tau) from RBCs and renal oxygen consumption (slower release correlating with lower oxygenation, Fig. 2). There was some evidence that over time RBCs gradually recover function.

Discussion: The lack of association between ex-vivo renal function and oxygen consumption might suggest a pathological impairment of the kidney's ability to utilise oxygen ex-vivo. Our results show that at least in part this is due to slower oxygen release from stored RBCs. This is the first demonstration that storage lesion reduces tissue oxygenation because of impaired oxygen release.

Fig. 1: Measured Oxygen Release Times. Comparison shown between recipient blood, and RBCs during perfusion

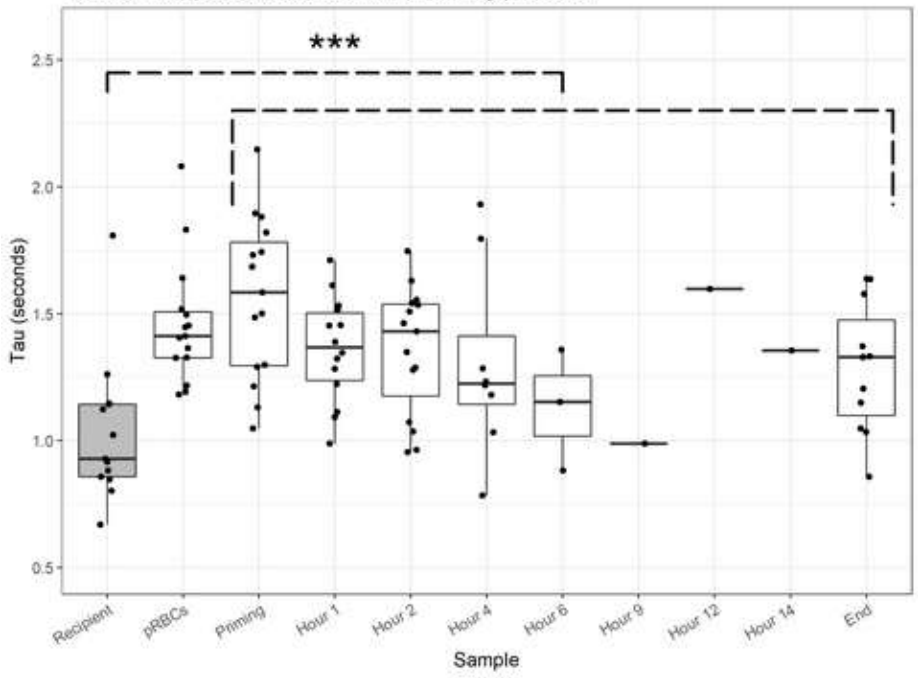
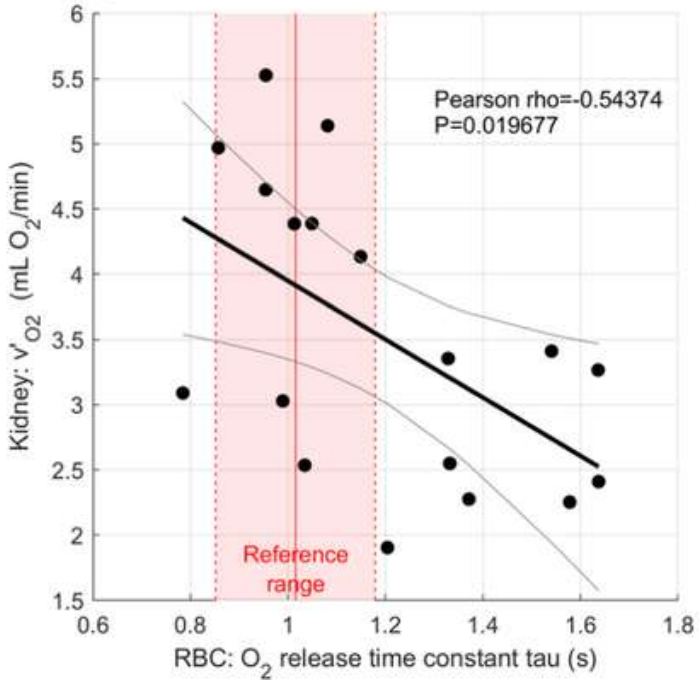


Fig. 2: Low oxygen consumption is partly explained by slow oxygen release



Categories: Basic and translational science (as per category - all science)

O22: UK clinicians' experiences of heart and lung utilisation decision making

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Abstract

Introduction: Changing donor demographics affect the acceptability of thoracic organs for transplantation and organ utilisation is low. Without a better understanding of how clinicians make decisions, we cannot design effective interventions to improve utilisation. The aim of this study was to critically examine accounts of utilisation decision making in heart and lung transplantation, to aid development of interventions to target organ utilisation.

Methods: Qualitative semi-structured interviews were performed with nine consultant cardiothoracic transplant surgeons and 10 cardiothoracic recipient coordinators. Purposive sampling was used to gain a range of experience, from all UK lung and/or heart transplant centres. An inductive thematic analysis was performed.

Results: Six themes were identified including anticipation of outcomes, micro-culture, motivation, data, experiential learning and out-of-hours. Clinicians acknowledged a high level of unpredictability in the anticipation of outcomes. This is reinforced by the micro-culture of the institution (including scrutiny, collective responsibility and past experiences) and external factors (resource implications of a poor outcome for example) that will determine the acceptability of an organ to an individual clinician. The impact of out-of-hours working on decision making approach (multi-clinician decision making is more common during working hours) and concepts of data availability, accuracy and reliability, factor heavily in practice. Whilst the motivation to transplant can be affected by all these factors, the influence of intrinsic motivation, the desire to transplant those recipients with whom relationships are built, was recognised. The perceived value of transplant within the institution, and conflicting priorities, impacts motivation, self-efficacy and appetite for risk. Acquisition of decision-making skills in thoracic organ utilisation is experiential.

Discussion: Named patient offering, improved allocation, collective responsibility and shared decision making, facilitated by day-time offering, education interventions and strategies to address the high level of subjectivity surrounding anticipation of outcomes, provide potential targets for intervention to improve thoracic organ utilisation current UK practice.

Categories: Clinical - heart and lung (heart and lung transplant - surgery - recipient clinical care and management)

O23: Development of a 'Liver Atlas' using over 1,000 consecutive deceased donor livers to identify hepatic steatosis prior to retrieval

Mr Hussain Abbas[1], Dr Sadr Shaheed[1], Dr Letizia Lo Faro[1], Mr Fungai Dengu[1], Mr Carlo Ceresa[1], Dr Reza Morovat[2], Mr Simon Knight[1], Professor Leanne Hodson[3], Dr Quin Wills[4], Professor Rutger Ploeg[1], Professor Peter Friend[1]

[1]Nuffield Department of Surgical Sciences, Oxford, United Kingdom. [2]Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom. [3]Oxford Centre for Diabetes, Endocrinology and Metabolism, Oxford, United Kingdom. [4]Ochre Bio Ltd, Oxford Science Park, Oxford, United Kingdom

Abstract

Background: Hepatic steatosis is associated with poor liver transplantation outcomes. This study describes the development of a first large-scale 'Liver Atlas' of deceased donor livers to: (i) investigate the incidence of biopsy-confirmed steatosis; (ii) identify pre-retrieval predictors of steatosis severity, and; (iii) evaluate the impact of steatosis severity on organ retrieval, utilisation and graft/recipient outcome.

Methods: Consecutive biopsies from 1,048 deceased donors collected between 2017-2019 were requested from the national Quality in Organ Donation (QUOD) bioresource. Steatosis severity was quantified using imageDx™ AI-based image analysis of H&E stained slides. 906 out of 1,048 donor livers had sufficient tissue for histological assessment and were included in the final analysis with none (n=670), mild (n=102), moderate (n=81) and severe steatosis (n=53).

Results: Whilst anthropometric and biochemical pre-retrieval predictors demonstrated significant differences between imageDx™ scores, multivariate regression analysis demonstrated that only GGT was useful in differentiating between steatosis severity: mild-moderate (P=0.059) and mild-severe steatosis (P=0.001) (Table 1 & 2). Overall, 685/906 livers (75.6%) were retrieved with intent to transplant with none (n=522), mild (n=71), moderate (n=57) and severe steatosis (n=35). A poor concordance was found between retrieval surgeon's macroscopic 'fat' assessment and imageDx™ scores: none (n=298, 57%), mild (n=31, 44%), moderate (n=23, 40%) and severe steatosis (n=10, 29%). The proportion of retrieved livers resulting in transplantation significantly decreased with increasing steatosis severity which was associated with a non-significant reduction in 12-month graft and patient survival (Table 1).

Conclusion: This 'Liver Atlas' supports utilisation of pre-retrieval steatosis predictors and routine retrieval biopsy to avoid unnecessary liver discards. Transcriptomic analysis (deep genomic phenotyping) of this cohort is also being undertaken to map independent signatures associated with increasing steatosis severity. In the future, this will enable targeted ex-situ optimisation/therapeutic intervention to improve utilisation of the high-risk (moderate-severe) steatosis category.

Histological steatosis degree (imageDx™ score, 0-3)					
Pre-retrieval steatosis predictors, Mean [±SD] & Transplant Outcomes, Number [%]	**None (0)**	**Mild (1)**	**Moderate (2)**	**Severe (3)**	***P* - value**
Body Mass Index, BMI (m^2)	26.2 [±4.9]	28.5 [±4.5]	29.1 [±4.7]	30.4 [±6.4]	<0.001
Waist Circumference (cm)	94 [±15]	103 [±16]	103 [±12]	107 [±15]	<0.001
Fatty Liver Index (FLI)	28.9 [±27.5]	41.7 [±29.1]	50.2 [±29.2]	57.8 [±31.2]	<0.001
Hepatic Steatosis Index (HSI)	36 [±8.6]	39.2 [±8.9]	37.6 [±7.2]	39.8 [±9.9]	<0.001
GGT (U/L)	96.8 [±135]	95.3 [±128.6]	159.8 [±217]	205.5 [±349.7]	<0.001
Total triglycerides (mmol/L)	1.38 [±0.82]	1.65 [±0.95]	1.86 [±1.75]	1.98 [±2.43]	<0.001
Insulin (pmol/L)	223.7 [±292.1]	281 [±333.1]	254.3 [±248.4]	379.5 [±381.3]	0.003
Liver Retrieved	522 [78]	71 [70]	57 [70]	35 [66]	0.051
Liver Transplanted	472 [90]	57 [80]	35 [61]	15 [43]	<0.001
12-month graft survival	442 [94]	55 [96]	31[89]	13 [87]	0.339
12-month patient survival	433 [91]	50 [88]	30 [86]	13 [87]	0.469

Table 1: Pre-retrieval predictors of steatosis demonstrating significant difference across four groups (none, mild, moderate and severe). A significant reduction in organ utilisation (demonstrated by number of livers transplanted) with increasing steatosis severity.

Histological steatosis degree (imageDx™ score, 0-3)					
Multivariate regression (Bonferroni) *P* – value		**None (0)**	**Mild (1)**	**Moderate (2)**	**Severe (3)**
Body Mass Index, BMI (m^2)	**None**	-	<0.001	<0.001	<0.001
	Mild	<0.001	-	1.0	0.183
	Moderate	<0.001	1.0	-	0.609
	Severe	<0.001	0.183	0.609	-
Waist Circumference (cm)	**None**	-	<0.001	<0.001	<0.001
	Mild	<0.001	-	1.0	0.431
	Moderate	<0.001	1.0	-	0.451
	Severe	<0.001	0.431	0.451	-
Fatty Liver Index (FLI)	**None**	-	<0.001	<0.001	<0.001
	Mild	<0.001	-	0.539	0.013
	Moderate	<0.001	0.539	-	0.803
	Severe	<0.001	0.013	0.803	-
Hepatic Steatosis Index (HSI)	**None**	-	0.002	0.721	0.013
	Mild	0.002	-	1.0	1.0
	Moderate	0.721	1.0	-	0.9
	Severe	0.013	1.0	0.9	-
GGT (U/L)	**None**	-	1.0	0.005	<0.001
	Mild	1.0	-	0.059	0.001
	Moderate	0.005	0.059	-	0.960
	Severe	<0.001	0.001	0.960	-
Total triglycerides (mmol/L)	**None**	-	0.128	0.001	0.001
	Mild	0.128	-	1.0	0.498
	Moderate	0.001	1.0	-	1.0
	Severe	0.001	0.498	1.0	-
Insulin (pmol/L)	**None**	-	0.8	1.0	0.003
	Mild	0.8	-	1	0.293
	Moderate	1.0	1.0	-	0.197
	Severe	0.003	0.293	0.197	-

Table 2: Multivariate regression analysis (with post-hoc Bonferroni correction) demonstrating performance of pre-retrieval predictors in differentiating steatosis severity between steatosis grades.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

O24: Long term effects of composite warm and cold ischaemic time in deceased donor kidney transplantation

Dr Christopher Seet, Mr Ismail Mohamed, Mr Muhammad Khurram

Royal London Hospital, London, United Kingdom

Abstract

Introduction: Cold (CIT) and warm ischaemic time (WIT) are independent predictors of poor outcomes after kidney transplantation. However, their combined effect has not been studied in large cohorts. We aimed to determine if a composite measure of combined WIT and CIT is a predictor of kidney transplant outcomes.

Methods: We performed a registry analysis of 26,583 adult kidney transplants from 2000-2018 using the UK Transplant Registry. CIT and WIT were each assessed separately, as well as a combined factor. The WIT threshold was 35 minutes, and CIT threshold was 12 hours for DCD and 15 hours for DBD transplants. Univariate and multivariate analyses were performed comparing outcomes based on WIT or CIT alone, and as a combined factor, adjusting for donor and recipient factors including age, sex, ethnicity, primary renal disease, dialysis modality and cRF. The main outcomes were 3, 12, and 60-month creatinine, delayed graft function (DGF), primary non-function (PNF), and long term graft survival (up to 20 years follow up).

Results: Increased CIT or WIT alone were associated with poorer early graft function. DGF or PNF rates were generally higher, although this was not consistently observed across all groups (Table 1). When analysed as a composite factor, there was a more consistent effect seen in grafts with both increased CIT and WIT compared to either factor alone, with poorer 3 and 12-month creatinine, and increased risk of DGF and PNF (Table 2). Graft survival was also poorest in grafts with raised CIT and WIT, while grafts with low CIT and low WIT performed best.

Discussion: Longer composite times have stronger adverse effects on graft outcomes compared to either ischaemic times alone. While it may not always be possible to reduce both CIT and WIT due to logistics or technical complexities, reducing just one of these factors can significantly improve outcomes.

Table 1. Comparison of prolonged CIT and WIT alone

	3m Cr*	P-value	12m Cr*	P-value	60m Cr*	P-value	DGF**	P-value	PNF**	P-value
DBD										
CIT >15h	1.037	<0.001	1.037	<0.001	1.033	<0.001	1.369	<0.001	1.227	0.076
WIT >35m	1.021	0.001	1.003	0.64	1.004	0.652	1.263	<0.001	1.520	<0.001
DCD										
CIT >12h	1.042	<0.001	1.040	<0.001	1.019	0.178	1.196	<0.001	1.530	0.005
WIT >35m	1.035	<0.001	1.033	<0.001	1.018	0.159	0.919	0.307	1.041	0.763

*Regression estimate; difference in serum creatinine compared to short CIT or short WIT. **Hazard Ratio, compared to short CIT or short WIT

Table 2: Outcomes based on composite WIT/CIT times.

	3m Cr*	P-value	12m Cr*	P-value	60m Cr*	P-value	DGF**	P-value	PNF**	P-value
DBD										
High WIT/High CIT	1.049	<0.001	1.034	<0.001	1.037	0.002	1.673	<0.001	1.802	<0.001
Low WIT/ High CIT	1.038	<0.001	1.041	<0.001	1.049	<0.001	1.296	<0001	1.228	0.31
High WIT/Low CIT	1.012	0.155	1.000	0.978	1.016	0.21	1.189	0.015	1.492	0.031
DCD										
High WIT/High CIT	1.070	<0.001	1.068	<0.001	1.031	0.103	1.484	<0.001	2.014	0.005
Low WIT/ High CIT	1.043	0.002	1.058	<0.001	1.034	0.096	1.176	0.052	2.206	0.002
High WIT/Low CIT	1.010	0.511	1.021	0.127	1.003	0.898	1.217	0.028	1.549	0.121

*Regression estimate **Hazard Ratio. Low CIT/Low WIT group used as baseline for all comparisons.

Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

O25: Neuroprognostication in Out of Hospital Cardiac Arrest patients following return of spontaneous circulation. The impact of decision making on the withdrawal of life-sustaining treatment

Dr Maria Rita Maccaroni[1], Dr Hannah Yonis[1], Dr Anuja Idage[1], Dr Gyanesh Namjoshi[1], Dr Thomas Keeble[1], Ms Emma Beadle[2], Mr Daryl Perilla[3], Dr Rupert Simpson[1], Dr Maxwell Damian[1]

[1]Essex Cardiothoracic Centre, Basildon, United Kingdom. [2]Essex cardiothoracic centre, Basildon, United Kingdom. [3]Essex Cardiothoracic centre, Basildon, United Kingdom

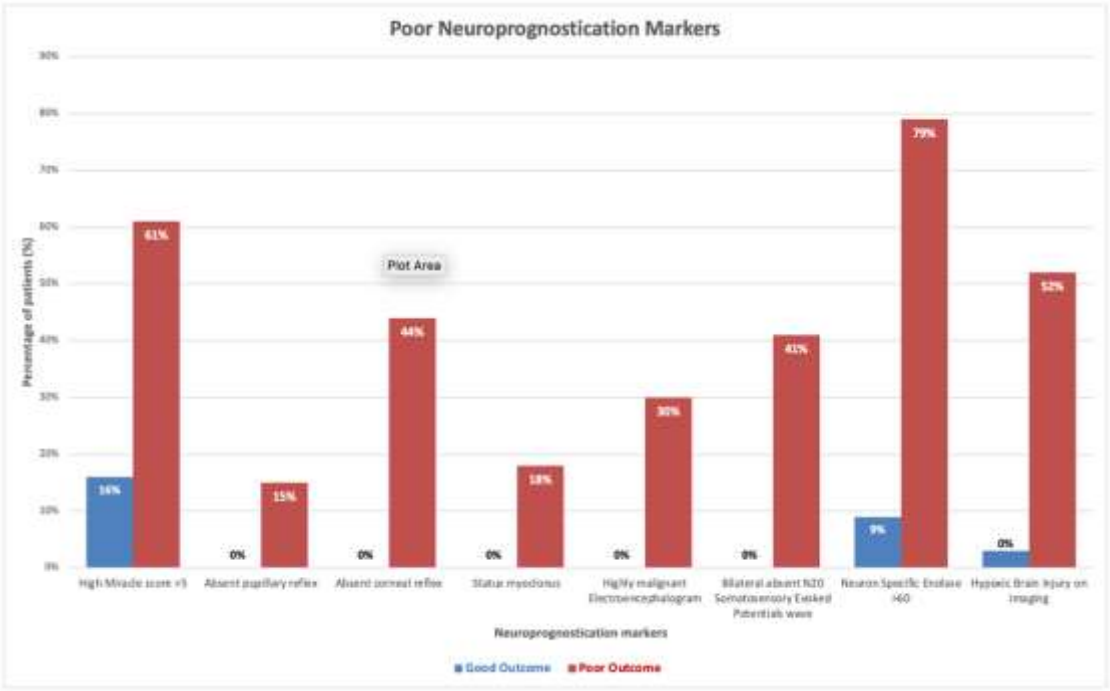
Abstract

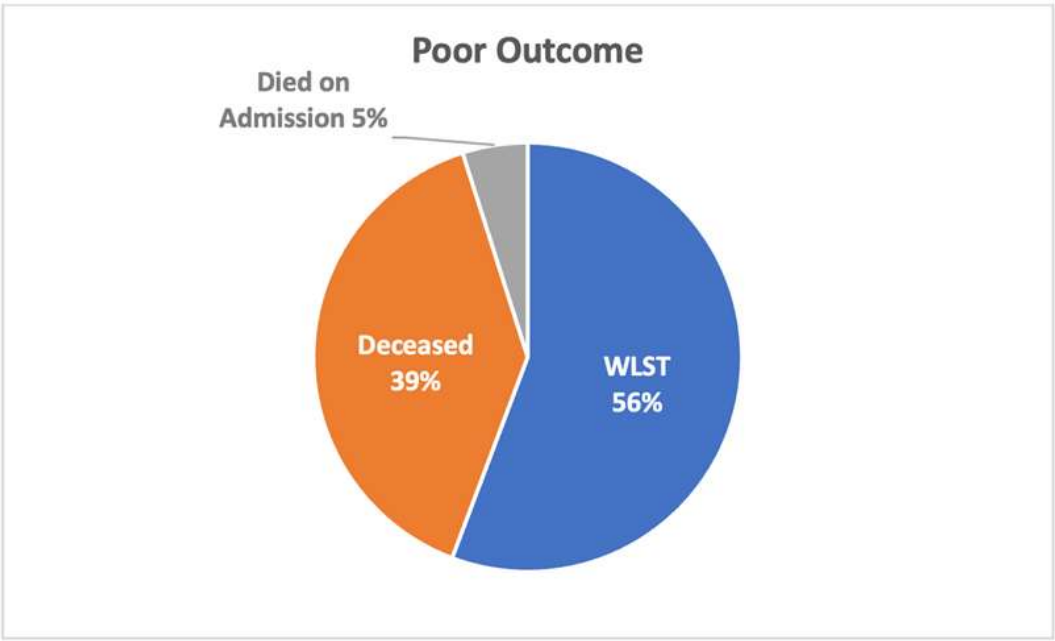
Introduction: Following an Out-of Hospital Cardiac Arrest (OHCA), about two-thirds of comatose patients admitted to intensive care do not survive due to hypoxic brain injury. Most neurological deaths occur following active withdrawal of life-sustaining treatment (WLST) due to poor neurological prognosis. It is fundamental to have a multimodal neuroprognostication algorithm supported by multidisciplinary meetings and the aim of this study is analyse its impact on decision making. This approach can reduce clinical bias, allow for timely decisions, avoid inappropriate WLST and avoid futile treatment in patients with poor prognosis. Timely WLST allows patients and families the opportunity for early consideration of organ donation.

Methods: This prospective observational study included all comatose OHCA patients admitted to our cardiac tertiary intensive care unit (ICU). A neuroprognostication score was calculated based on: clinical examination, neurophysiology (electroencephalogram and Somatosensory Evoked Potentials), Neuron-specific enolase biomarker and CT/MRI Head imaging.

Results: Data collection has been ongoing since June 2021 and includes 129 patients. These were divided into 2 groups: 'Good Outcome' (n=68) which includes all patients discharged from ICU and 'Poor Outcome' (n=61) which includes all patients who died. All patients with complete neuroprognostication from the WLST group had ≥2 markers of poor prognosis (see Figure 1&2). On average, prognostication was performed at 76 hours after admission and the multidisciplinary decision for WLST occurred at 6.6 days.

Discussions: Being able to make the right decision, for the right patient at the right time enhances best practice, allows for timely clinical decisions and avoids unnecessary prolonged ICU stay. The average ITU stay significantly decreased from 21 to 6.6 days. It is important to use a robust, structured, and multimodal neuroprognostication approach whereby each case is discussed in a multidisciplinary meeting. Lastly, effective decision making for WLST allows for early referral for organ donation with a collaborative approach.





Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

O26: Prediction of graft survival among living donor kidney transplant: an artificial intelligence approach

Dr Hatem Ali[1,2], Dr Mahmoud Mohammed[3], Prof David Briggs[4], PROF NITHYA KRISHNAN[1]

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Abstract

Introduction: The current available metrics for evaluation of outcomes of living donor kidney transplant before accepting the offer is the Living donor KDPI. It has limited discriminative power (C-Index =0.58) and not evaluated for accuracy of the predicted probabilities (how close the predicted risk to the actual risk). We aimed to use Artificial Intelligence to build a predictive model for living donor transplants that would achieve better discrimination and gives accurate predictions BEFORE transplantation proceeds.

Methodology: All living renal transplant patients who were: registered in the UNOS database between 1/1/2007 and 1/6/2021 and maintained on TAC/MMF immunotherapy were included in our study. We excluded patients with ABO incompatible transplant and those with age<18 years old. We used decision-based models (decision tree and XGBOOST) for prediction. We divided the data randomly into training and testing dataset with ratio 80:20. Training data is the set of the data on which the actual training takes place. The test set informs us about the final accuracy of the model after completing the training phase. We evaluated the models using Harrell C statistic for discrimination and Integrated Brier score for calibration.

Results: 61,322 patients included in our study. Follow up time was up to 15 years post-transplant. Harrell C score=0.65 (better than the current LD-KDPI at 0.58), indicating adequate discrimination power. Integrated Brier score=0.08, indicating adequate calibration.

Conclusion: The decision tree model shows very good discrimination and calibration power. It can aid the clinical decision for management and allocation of the living donor kidney transplant. Limitations: Lack of data about DSA. This data might improve the performance of the model. Also, Other Machine learning and AI models can show better outcomes

Categories: Living donation (living donor and recipient selection (all organs) options for donation - donor care - outcomes)

O27: National Coroner and Procurator Fiscal group

SNOD Samantha Halcrow

NHSBT, Leeds, United Kingdom

Abstract

Introduction: The National Coroner and Procurator Fiscal group was established in 2021. Led by a Regional Manager and the Specialist Nurse for Service Delivery, the group has representation from nurses across the Organ and Tissue Donation Teams Directorate (OTDT).

The purpose of the group was to standardise regional performance for OTDT in relation to reducing Clinical Governance (CG) events, increasing the permission rates for organ and tissue donation when donors are subject to Coroner and Procurator Fiscal involvement, and to increase the engagement with coroners and other disciplines for example the Police, Pathologists and Medical Examiners, reducing delays in obtaining coronial lack of objection, increasing organs available for transplantation.

Method: Data was collated through two modes, 1) A questionnaire, sent out nationally, to all members of the OTDT which focused on areas for development and positive practice sharing and 2) Evaluation of related CG's. Following this focus groups were created concentrating on 9 main themes.

Outcome: Since the development of the group there have been significant achievements made. We have established key contacts nationally within the coroner department and other disciplines enabling us to present on a national level and target a wider audience. This in turn has led to the opportunity to review the 'Chief Coroner Guidance No 26 (2017)' document and we have established regional expectations for OTDT on how to collaborate with key stakeholders.

Discussion: Gaining the opinions from members of OTDT nationally identified a variance in the collaboration with other disciplines and there remains many areas for development. The group are currently piloting a referral proforma and they are in the process of developing a national training package for a variety of disciplines. It is through practice sharing and providing feedback on CG events that we hope in the future we will see a reduction in these cases.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

O28: Pancreatic graft loss after Simultaneous Pancreas Kidney (SPK) transplant within first 90 days. Predictors beyond the surgical cause: A UNOS/OPTN data analysis

Mr Hemant Sharma[1,2], Dr Alp Sener[3], Dr Patrick Luke[3], Dr Abhishek Sharma[4]

[1]Ochsner Medical Center, New Orleans, USA. [2]Royal Liverpool University Hospital, Liverpool, United Kingdom. [3]University of Western Ontario, London, Canada. [4]Loyola University, Chicago, USA

Abstract

Background: Data on causal effects of variables to predict the early pancreatic graft loss in first 90 days is limited.

Aim: To predict the early pancreatic graft loss between 30 -90 days post SPK transplant by assessing the interaction of the variates.

Methods: SPK recipients with pancreas graft loss 03 months post SPK transplant were analysed from UNOS/OPTN database (1999-2015). Patients with graft loss within first 30 days were excluded from analysis to minimize the bias of surgical causes to graft loss.

Results: N=672 (DCD -168; DBD – 504) pancreas were lost within 30-90 days. DCD transplant, donor age >25 years, recipient age > 30 years, donor BMI> 30, recipient BMI>30, pancreas preservation time >4 hr, cold ischemia time >12 hr andrenal Tx rejection with first 30 days were independent predictors on univatiate analysis. ($p<0.05$). A hierarchical multiple regression was run to determine if the addition of donor BMI> 30, recipient BMI>30 improved the prediction of Graft loss at 90 days over and above DCD transplant, donor age >25 years, recipient age > 30 years alone. The full model of DCD transplant, donor age >25 years, recipient age > 30 years, donor BMI> 30, recipient BMI>30, pancreas preservation time >4 hr, cold ischemia time >12 hr and kidney transplant rejection with first 30 days to predict Pancreatic Graft loss at 90 days was statistically significant, $p < .0001$; adjusted $R2 = 0.610$. The assumption of normality was met-(QQ Plot).

Conclusions: Predictors determined by univariate analysis can affect the graft loss at 90 days but overall pooled interaction of predictors maximally influences the probability of pancreatic graft loss at 90 days post transplant.

Table 1: ANOVA

Model		Mean Square	F	Sig.
1	Regression	.556	4.074	.000[b]
	Residual	.137		
2	Regression	.601	4.711	.000[c]
	Residual	.138		
3	Regression	1.078	7.831	.000[d]
	Residual	.138		

Model 1:b Predictors: (pancreas graft Status -constant), DCD transplant, donor age >25 years, recipient age > 30 years

Model 2: c Predictors: (pancreas graft Status -constant), DCD transplant, donor age >25 years, recipient age > 30 years Calculated Donor BMI, Calculated Recipient BMI + donor BMI> 30, recipient BMI>30

Model 3: d Predictors: (pancreas graft Status -constant), DCD transplant, donor age >25 years, recipient age > 30 years Calculated Donor BMI, Calculated Recipient BMI + donor BMI> 30, recipient BMI>30 + pancreas preservation time >4 hr, cold ischemia time >12 hr and kidney transplant rejection with first 30 days

Categories: Clinical - pancreas and islet (pancreatic transplant (all types) - surgery - recipient clinical care and management)

O29: All ECD kidneys are equal but are some more equal than others? A population-cohort analysis of UK Transplant Registry data

Mr Kamlesh Patel[1], Ms Anna Brotherton[1], Ms Felicity Evison[1], Mr Tom Nieto[1], Mr Dilan Dabare[1], Dr Adnan Sharif[1,2]

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

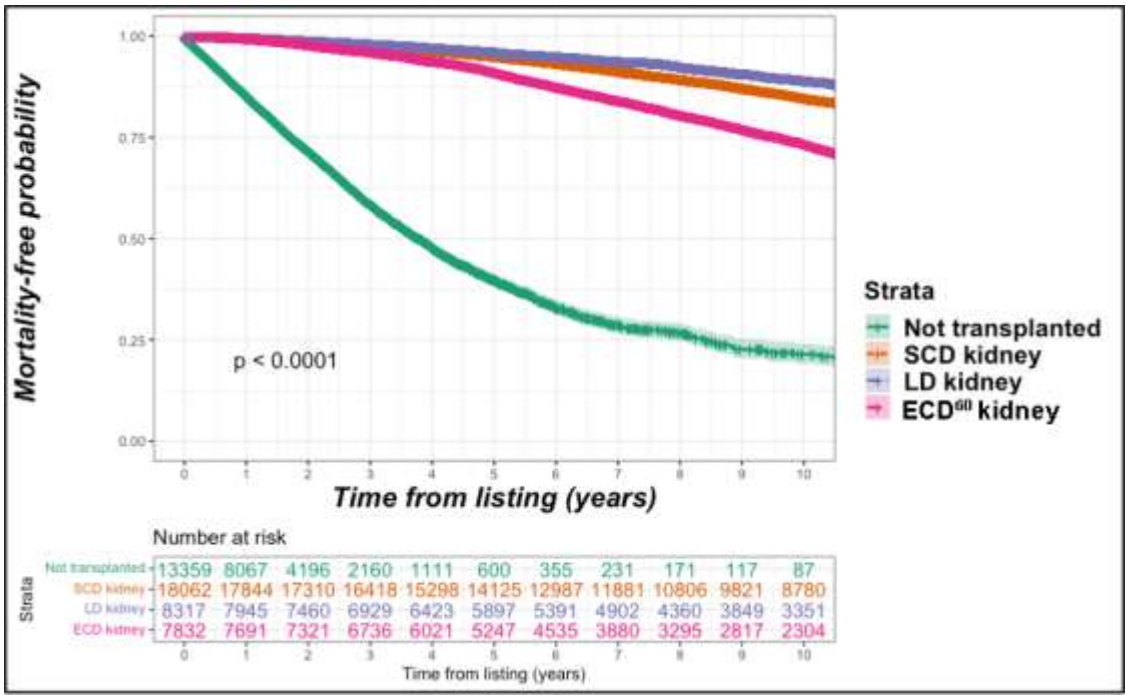
Abstract

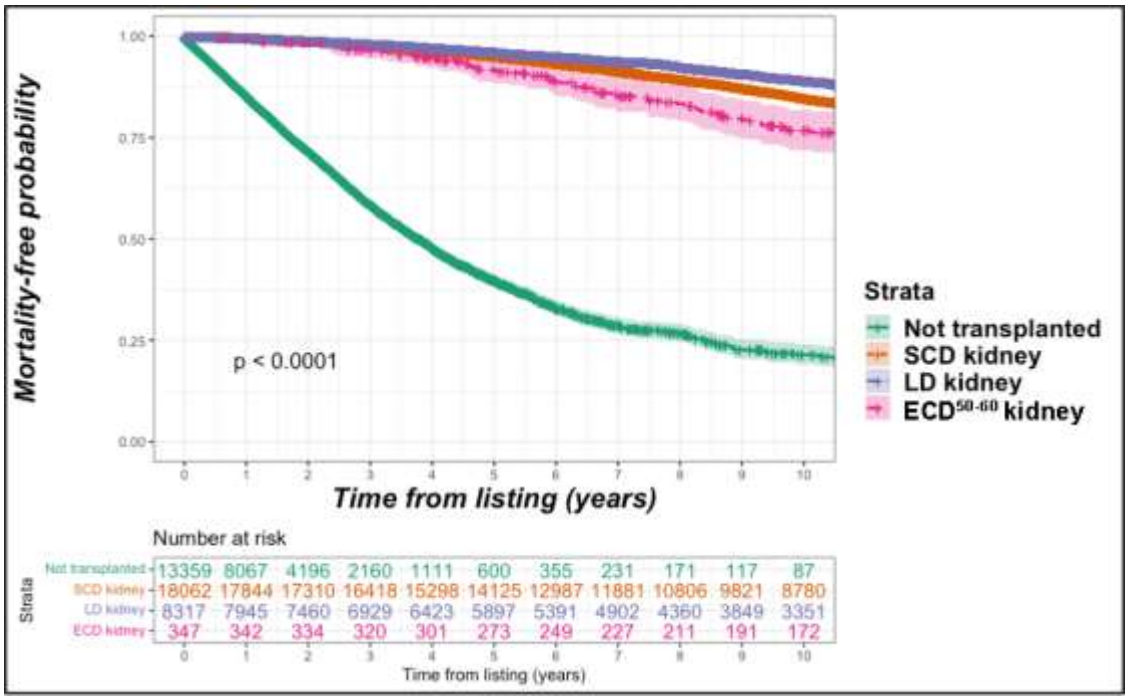
Introduction: Expanded criteria donor (ECD) kidneys are classified purely by age (≥60yrs) or partially age-based with additional criteria (age between 50-59yrs with two required from the following three; hypertension; raised creatinine and/or death from stroke). Survival outcomes for kidney transplant candidates (KTCs) dependent on which ECD kidney classification they receive is unknown. The aim of this analysis was to explore this using registry data, with ECD kidneys from donors aged ≥60yrs classified as ECD^{60} and other ECD kidneys classed as $ECD^{50\text{-}60}$.

Methods: A retrospective cohort study was undertaken of prospectively collected UK transplant registry data of all waitlisted KTCs on haemodialysis. All patients listed for their first single kidney transplant between January 2000 and September 2019 were included. The primary outcome was mortality. Time-to-death from listing was modelled using weighted estimation of Cox regression to account for non-proportional hazards. We explored adjusted models factoring for age, sex, ethnicity, cause of kidney failure and treatment type (living donor versus SCD kidney versus ECD^{60} or $ECD^{50\text{-}60}$ kidney versus remaining waitlisted). Analyses were performed using R (version 4.2.2).

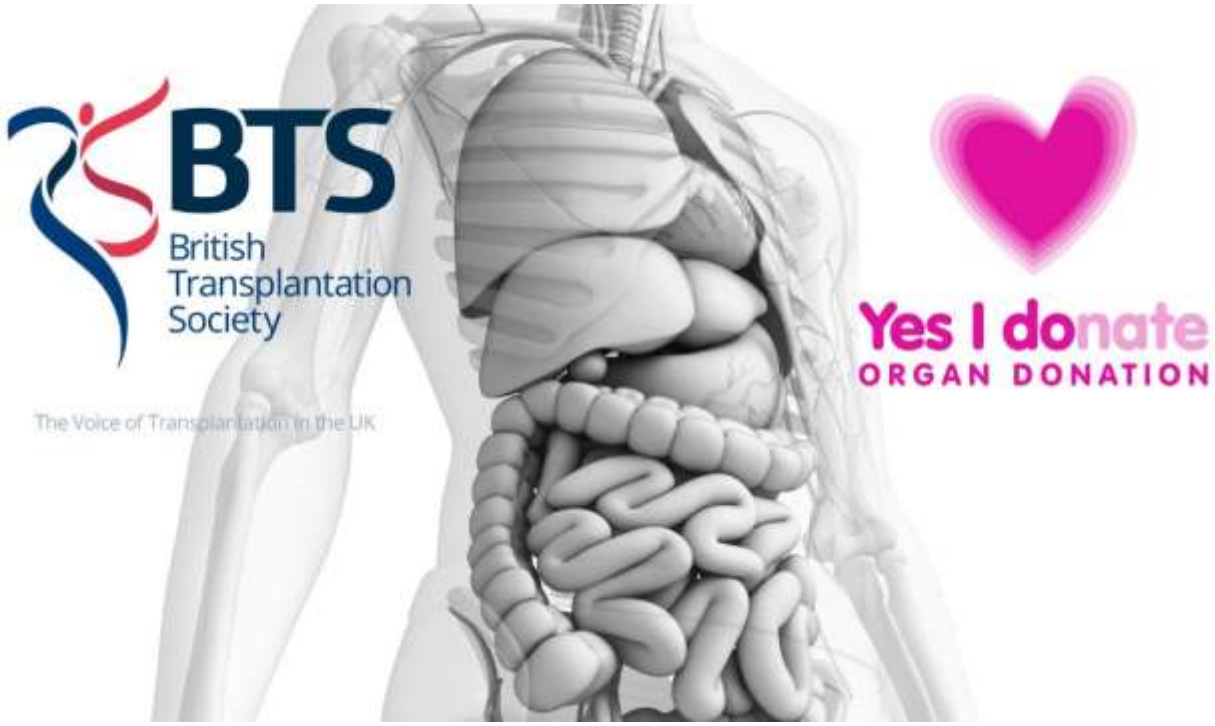
Results: Of 47,917 waitlisted patients, 34,558 (72.1%) received a kidney transplant (living donors; n=8,317, SCD; n=18,062 and ECD; n=8,179). In the ECD cohort, 7,832 were classified by donor age ≥60yrs (ECD^{60}) while 347 were classified by donor age 50-60yrs and additional criteria ($ECD^{50\text{-}60}$). Compared to SCD kidney recipients, ECD^{60} kidney recipients were associated with increased all-cause mortality after waitlisting (Hazard Ratio 1.23, 95% CI 1.07-1.42, p=0.004) but $ECD^{50\text{-}60}$ kidney recipients had no difference (Hazard Ratio 1.08, 95% CI 0.81-1.45, p=0.595). However, compared to dialysis, both ECD^{60} (Hazard Ratio 0.12, 95% CI 0.11-0.14, p<0.001) and $ECD^{50\text{-}60}$ (Hazard Ratio 0.12, 95% CI 0.09-0.16, p<0.001) kidney recipients had significantly lower all-cause mortality.

Discussion: ECD kidneys have stratified survival outcomes but any ECD kidney transplant lowers all-cause mortality compared to remaining waitlisted.





Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)



MODERATED POSTERS

MP01: Never Event(s) in solid organ transplantation: ABO incompatibility

Mrs Olive McGowan[1], Dr Gareth Jones[2], Mr Abbass Ghazanfar[3], Mr Khalid Sharif[4]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]Royal Free Hospital, london, United Kingdom. [3]St Georges Hospital, London, United Kingdom. [4]Birmingham Womens and Childrens Hospital, Birmingham, United Kingdom

Abstract

Introduction: Blood group compatibility is a major criterion for allocation of organs for transplantation. Although the barrier of ABO compatibility can be crossed, this is usually undertaken in planned and preconditioned cases. This paper outlines the case of unintentional ABO incompatible transplantation for 3 organ recipients.

Case Presentation: A patient admitted following significant trauma required multiple blood products to be transfused. Hypoxic brain damage confirmed, they were subsequently confirmed dead utilising neurological criteria. The patient proceeded to donation after brain death with liver and kidneys transplanted. The blood group was recorded as O on the hospital IT system. Two days later, the SNOD identified that the ABO of the donor had changed to B and alerted NHSBT.

The right kidney was transplanted to a 21-year-old blood group O recipient on dialysis. The implant was uneventful, the recipient had primary function. Day 4, the urine output dropped with a 50umol/l rise in creatinine. The patient was treated with IV steroid, plasma exchange and increased immunosuppression. They responded well and have a creatinine of 89umol/l two months post-transplant.

The left kidney was transplanted into a 61-year-old group O recipient on dialysis. The implant was uneventful. Day 2 post-transplant sudden reduction in urine output. Imaging showed graft thrombosis and the patient had a graft nephrectomy Biopsy; antibody mediated rejection.

The liver was transplanted into a group O paediatric who initially did well but showed signs of antibody mediated rejection and was treated with plasmapheresis and intravenous Immunoglobulin. The patient has had a complicated post-operative recovery.

Discussion: Areas highlighted for safety include;

- Some hospital Laboratory Information Management systems (LIMS) require blood group to be documented as O, to enable products to be issued for urgent use, practice varies across the UK.
- Guidance regarding mass transfusion requires reviewing
- Guidance in relation to blood group confirmation in organ donation required.

Categories: Case study submission (may include individual cases or shared learning experiences)

MP02: An evaluation of deprivation index of cardiothoracic donors and recipients, 'Are the poor serving the rich?'

Mr Daniel White, Mr Jordan Allen, Mr Joao Nunes

Royal Papworth Hospital, Cambridge, United Kingdom

Abstract

Introduction: Individuals from lower socio-economic areas have poorer access to healthcare than those from higher socio-economic areas, resulting in poorer health overall.

The author wished to examine the socio-economic status of donors and recipients to ensure that there was parity within transplantation.

The English indices of depravation 2019 was identified as the most appropriate data source for this study. This index provides a measure of relative levels of deprivation, giving an overall 'Index of multiple deprivation'.

Methods: Single centre retrospective cohort study of patients who received cardiothoracic transplantation between 1/4/2019 and 31/3/2022.

Data were included if there was a matched pair of recipient and donor postcodes from within England. Basic analyses were caried out to determine the difference in index of multiple deprivation between donor and recipient, as well as overall averages.

Results: During the study period there were 208 cardiothoracic transplants performed at this centre. Of these there were 182 pairs where data were available for both donor and recipient.

90 out of 182 (49.5%) transplants occurred where the donor was from a more deprived area.

The mean Index of multiple deprivation rank for donors and recipients were 16478 and 16603, respectively. The median average for England is 16422. The median Index of multiple deprivation rank for donors and recipients were 16694 and 15438 respectively.

Discussion: Reassuringly, there were no significant difference between donor and recipient indices of deprivation over the study period indicating that there is parity within transplantation at this centre. And on average donors do not come from any more deprived areas than recipients.

The difference between recipient mean and median index was surprising, but again reassuring that those from lower socio-economic backgrounds are not being disadvantaged. Further research is required in this area, such as comparing socio-economic status of donors who do, and do not, go on to donate.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

MP03: “It’s a lifestyle not a job” SN-ODs experiences of Vicarious Trauma and Emotional Wellbeing

Ms Alison Galloway Turner

NHS Blood and Transplant, Cambridge, United Kingdom

Abstract

Background: The role of the Specialist Nurse – Organ Donation (SN-OD) is a very emotive and high pressured role. SN-ODs work mainly with bereaved families and often in isolation, with many leaving the role in under four years. Very little research has been carried out within the UK to examine the emotional impact of this unique role on nurses or the prevalence of vicarious trauma.

Methods: As part of an MSc Psychology dissertation, a series of semi-structured interviews were carried out to examine eleven SN-OD’s lived experiences of their role. SN-ODs were recruited via social media and represented seven of the twelve national teams. An Interpretative Phenomenological Analysis was completed to identify and analyse themes.

Findings: Many SN-ODs experienced symptoms of vicarious trauma to varying degrees, however for most this was only identified with hindsight or by those around them. Alongside this many also experienced feelings of isolation, vulnerability and intrusion of work on their personal life. Feelings of isolation were consistent across all participants, both physical isolation and vulnerability, and a responsibility for the emotional wellbeing of families, staff, colleagues and one’s own family, leading to a sense of emotional isolation. However positive feelings around the role persisted due to the rewards of supporting donor families through their grief. All participants identified their main motivator as being able to support donor families, gaining personal reward from follow up contact with donor families.

Conclusions/Implications: All SN-ODs felt privileged to do their role, however there is undoubtedly an emotional burden. Ensuring greater access for SN-ODs to more regular and consistent supportive networks would help to reduce the sense of isolation and help teams identify when their colleagues are struggling. Also finding opportunities to maximise the positives may lead to more sustained workforce.

Categories: Psycho-social aspects (recipient - donor - family care- MDT (exclude clinical management)

MP04: Debriefing organ donation approach conversations: The design and implementation of the Post Approach Analysis Tool

Mrs Jenny Hughes

NHSBT, BARNSLEY, United Kingdom

Abstract

Introduction: To embed into practice, the Organ Donation (Deemed Consent) Act 2019, all donor family approach conversations were debriefed. Debriefing is a directed, intentional conversation that can be used for knowledge or skill attainment (Edwards, 2021). The debrief process was initially completed in a semi-structured way. However, it became apparent that a reflective model/tool would be beneficial, to ensure structure and consistency.

Debriefing is recognised as a critical part of healthcare education. In this instance the structure of the debrief not only assessed the Specialist Nurses (SN's) knowledge acquisition of the legislation, it also gave insight into family members understanding and provided educators the opportunity to set individualised learning plans.

Method: Utilising knowledge and expertise of debrief techniques, the Post Approach Analysis Tool (PAAT) was developed. It was acknowledged that SNs needed to be empowered to divulge not only the conversation exchange, but also details of circumstances surrounding the case.

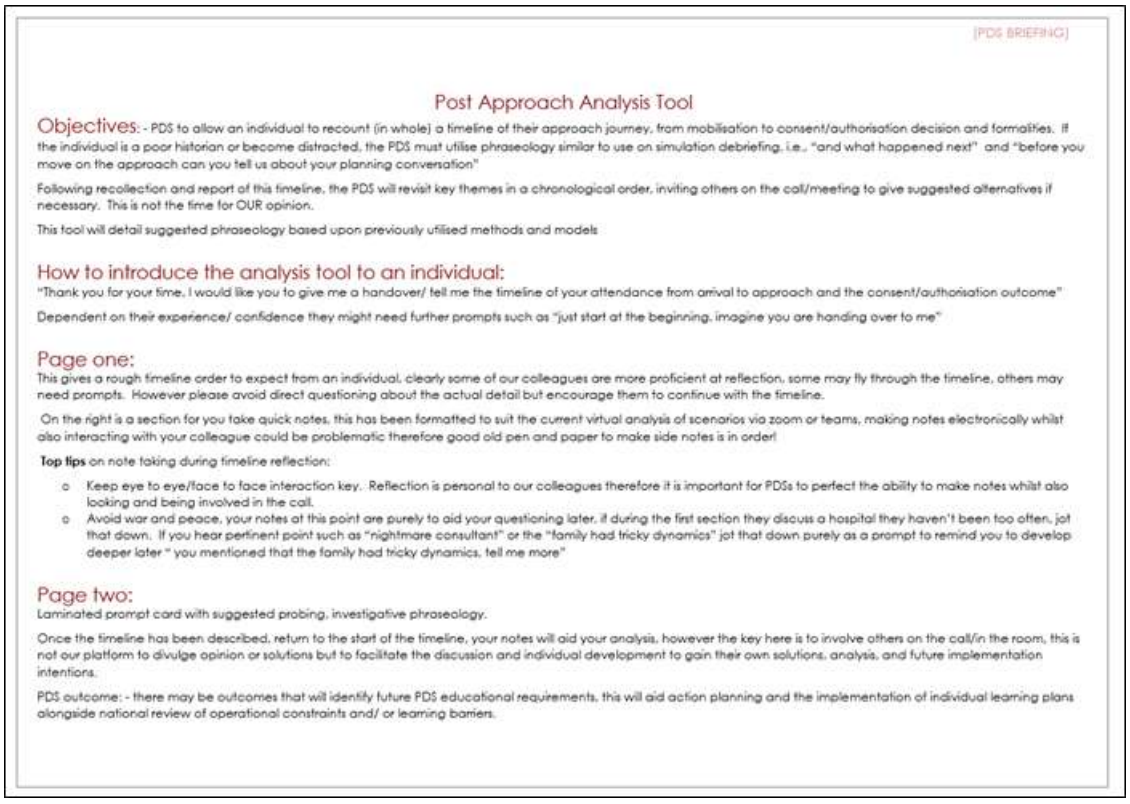
It was vital to capture any affecting influences that the families experienced, potentially impacting the outcome of their decision. Therefore, PAAT needed to ensure that the timeline of events leading up to the approach were captured, in addition to the methodology/phraseology used by the SN.

PAAT was cascaded to the Professional Development Team to enable efficient and competent data capture, to harness learning opportunities.

The tool included educator guidance and a proforma to complete during the debrief.*

Results: The PAAT framework analyses and records conversation outcomes, guiding the debriefer and empowering the SN, by following a structured timeline and extracting information, utilising Appreciative Enquiry methodology. Any deficit in knowledge or ability was identified and individualised learning action plans developed.

Discussion: Working in partnership the PDS and Scotland's Organ Donation Services Team have further developed this debrief methodology to encompass the entire organ donation pathway, from referral to post donation care.



[PDS BRIEFING]

Post Approach Analysis Tool

Objectives: - PDS to allow an individual to recount (in whole) a timeline of their approach journey, from mobilisation to consent/authorisation decision and formalities. If the individual is a poor historian or become distracted, the PDS must utilise phraseology similar to use on simulation debriefing, i.e., "and what happened next" and "before you move on the approach can you tell us about your planning conversation"

Following recollection and report of this timeline, the PDS will revisit key themes in a chronological order, inviting others on the call/meeting to give suggested alternatives if necessary. This is not the time for OUR opinion.

This tool will detail suggested phraseology based upon previously utilised methods and models

How to introduce the analysis tool to an individual:

"Thank you for your time, I would like you to give me a handover/ tell me the timeline of your attendance from arrival to approach and the consent/authorisation outcome"

Dependent on their experience/ confidence they might need further prompts such as "just start at the beginning, imagine you are handing over to me"

Page one:

This gives a rough timeline order to expect from an individual, clearly some of our colleagues are more proficient at reflection, some may fly through the timeline, others may need prompts. However please avoid direct questioning about the actual detail but encourage them to continue with the timeline.

On the right is a section for you take quick notes, this has been formatted to suit the current virtual analysis of scenarios via zoom or teams, making notes electronically whilst also interacting with your colleague could be problematic therefore good old pen and paper to make side notes is in order!

Top tips on note taking during timeline reflection:

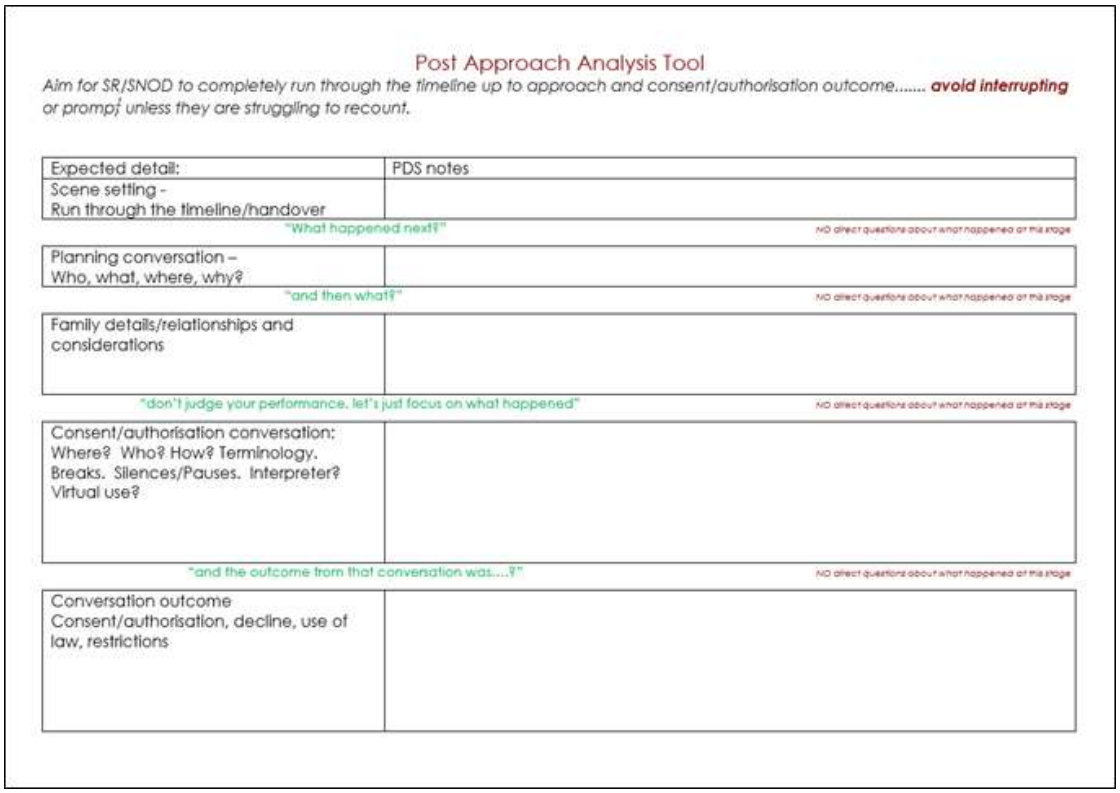
- Keep eye to eye/face to face interaction key. Reflection is personal to our colleagues therefore it is important for PDSs to perfect the ability to make notes whilst also looking and being involved in the call.
- Avoid war and peace, your notes at this point are purely to aid your questioning later, if during the first section they discuss a hospital they haven't been too often, jot that down. If you hear pertinent point such as "nightmare consultant" or the "family had tricky dynamics" jot that down purely as a prompt to remind you to develop deeper later " you mentioned that the family had tricky dynamics, tell me more"

Page two:

Laminated prompt card with suggested probing, investigative phraseology.

Once the timeline has been described, return to the start of the timeline, your notes will aid your analysis, however the key here is to involve others on the call/in the room, this is not our platform to divulge opinion or solutions but to facilitate the discussion and individual development to gain their own solutions, analysis, and future implementation intentions.

PDS outcome: - there may be outcomes that will identify future PDS educational requirements, this will aid action planning and the implementation of individual learning plans alongside national review of operational constraints and/ or learning barriers.



Post Approach Analysis Tool

*Aim for SR/SNOD to completely run through the timeline up to approach and consent/authorisation outcome..... **avoid interrupting** or prompt unless they are struggling to recount.*

Expected detail:	PDS notes
Scene setting - Run through the timeline/handover	

"What happened next?" — NO direct questions about what happened at this stage

Planning conversation – Who, what, where, why?

"and then what?" — NO direct questions about what happened at this stage

Family details/relationships and considerations

"don't judge your performance, let's just focus on what happened" — NO direct questions about what happened at this stage

Consent/authorisation conversation: Where? Who? How? Terminology. Breaks. Silences/Pauses. Interpreter? Virtual use?

"and the outcome from that conversation was....?" — NO direct questions about what happened at this stage

Conversation outcome Consent/authorisation, decline, use of law, restrictions

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

MP05: Intensivist-led virtual donor optimisation: a pilot study

Ms Bethan Thomas[1], Ms Kirsty Lazenby[2], Ms Becky Clarke[3], Dr Amit Adlakha[4]

[1]ODT South Central, n/a, United Kingdom. [2]ODT Midlands, n/a, United Kingdom. [3]ODT Midlands/South Central, n/a, United Kingdom. [4]University Hospitals Birmingham, Birmingham, United Kingdom

Abstract

Introduction: Utilisation of potential organs for transplant, particularly cardiothoracic organs, remains suboptimal in the UK. Donor optimisation is key to facilitating efficient organ utilisation, though in-person scouting can be resource-intensive. We trialled remote optimisation to assess it's feasibility and potential for improvement in donor lung physiology and organ utilisation.

Methods: A six-month pilot study of 24/7 intensivist-led telephone support for optimisation of DBD donors was undertaken in two large organ donation regions between September 2021 and February 2022. The on-site SNOD would contact the helpline ASAP after DNC was confirmed. Advice was tailored to maximise utilisation from all organ groups.

A SNOD 'user' survey was conducted post-completion and NHSBT EOS data retrieved to enable a retrospective observational comparative group (pre-COVID).

Results: Remote advice led to a management change in 92% of overall cases - in 95.7% a change in respiratory/ventilatory management; cardiovascular in 82.6%; fluid status in 65.2%; and metabolic in 17.4%. 92% of respondents felt the input led to an improvement in organ suitability for donation and 87% felt more confident in managing the donor.

Mean first and last P/F ratios after DNC confirmation were 341.43 and 336.17 mmHg (mean change -5.26 mmHg) respectively for the 104 donors in the 2019 control group and 323.13 and 334.36 mmHg (mean change +11.23 mmHg, p = 0.18) for the 67 patients in 2021 intervention group.

Rates of organ transplantation between the control and intervention cohorts were comparable for kidney (77.9% vs 80.6%; p=ns), liver(65.4% vs 73.1%; p=ns), lung (12.5% 10.5%; p=ns) and heart (14.4% vs 22.4%; p=ns).

Discussion: Virtual donor optimisation is well received by SNOD's and leads to changes in donor management. However no significant benefits were observed in lung physiological data nor organ utilisation rates in this small pilot study.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

MP06: Deceased donor C-reactive protein and kidney transplant outcomes: a UK cohort study

Dr George Greenhall[1], Ms Rachel Johnson[1], Mr Chris Callaghan[2], Prof Christopher Watson[3], Dr Gareth Jones[4]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]Guy's Hospital, London, United Kingdom. [3]University of Cambridge, Cambridge, United Kingdom. [4]Royal Free Hospital, London, United Kingdom

Abstract

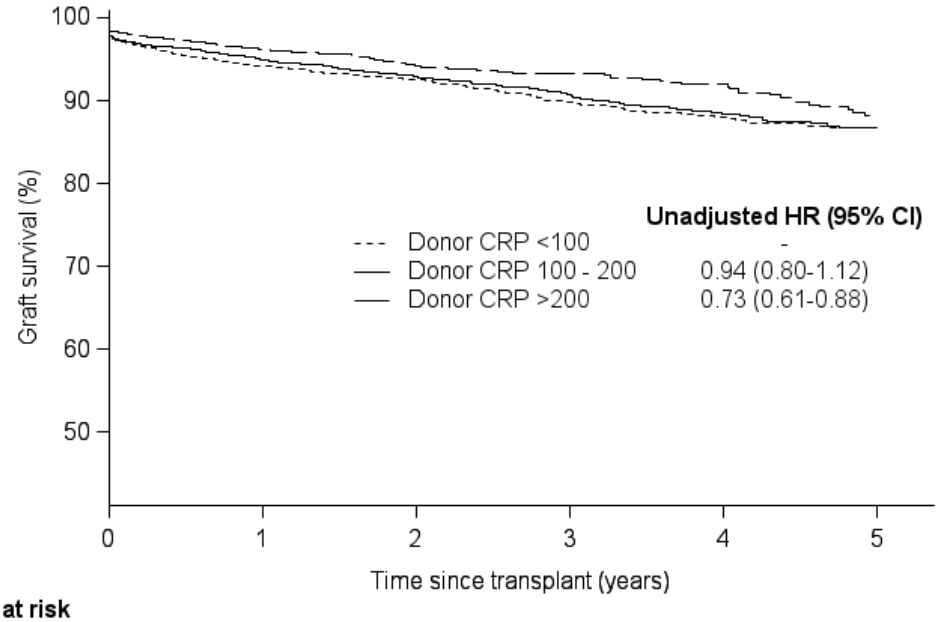
Introduction: Systemic inflammation in deceased donors may influence transplant outcomes or organ acceptance. There is little evidence on the clinical significance of donor C-reactive protein (CRP).

Methods: This national cohort study used data from the UK Transplant Registry on all primary single kidney transplants between 1st January 2016 and 31st December 2021. We divided transplants into three groups based on the last donor CRP value prior to donation (<100, 100 to 200 and >200 mg/L) and used Cox regression to estimate the hazard ratio (HR) of death-censored graft failure. We also compared the odds of delayed graft function (DGF), as well as exploring the influence of the CRP trend (rising vs stable/falling) at the time of donation.

Results: There were 3812 (41%), 2997 (32%) and 2570 (27%) transplants with donor CRP <100, 100 to 200 and >200 mg/L, respectively. The rates of graft failure in the three groups were 9% (332/3812), 8% (235/2997) and 6% (159/2570). Although there was a trend towards better survival in grafts from donors with higher CRP results, multivariable analysis showed no evidence of a difference in the rate of graft failure (CRP 100 to 200 vs <100, HR 1.02, 95% CI 0.86 to 1.23; CRP >200 vs <100, HR 0.84, 0.69 to 1.03), or the odds of DGF (CRP 100 to 200 vs <100, OR 1.04, 0.91 to 1.19; CRP >200 vs <100, OR 0.94, 95% CI 0.82 to 1.09), between the three groups. While a rising donor CRP at the time of donation was associated with a lower incidence of DGF (OR 0.84, 0.73 to 0.96), there was no difference in the rate of graft failure (HR 0.91, 0.74 to 1.12).

Discussion: In the UK, neither the absolute value nor the trend of deceased donor CRP results appear to be related to kidney transplant outcomes.

Death-censored graft failure



Number at risk

Donor CRP <100	3812	2723	1963	1318	786	266
Donor CRP 100 - 200	2997	2029	1436	922	481	164
Donor CRP >200	2570	1802	1245	801	440	153

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

MP07: Exploration of DBD cases proceeding as DCD

Dr. Mark Burgess[1], Dr. Dale Gardner[2]

[1]University Hospitals Sussex, Brighton, United Kingdom. [2]Nottingham University Hospita,, Nottingham, United Kingdom

Abstract

Introduction: NHSBT activity report data suggests that of those deceased organ donors who had been declared dead by neurological criteria (DNC), approximately 1.5% donated via the DCD pathway (data from 2018-2022, range 7-24 cases per annum) rather than the DBD pathway. We set out to explore this activity in more detail.

Methods: We searched the DonorPath database for all donor cases in those confirmed dead by neurological criteria but who donated via the DCD pathway from 2012-2022. Case notes were initially reviewed by a SNOD, with regards to the stated reason for a DBD donor to pursue a DCD pathway and any additional information from the discussions with family members. These were then collated into themes by the investigating NHSBT team.

Interim results: Between 2012-22 there have been a total of 115 DBD cases proceeding as DCD (range=5-23, median=12 per annum).

Stated reason:
- Family requested to be present at the time of asystole; n = 87 (76%)
Example family words, "Have been with him for his first breaths in the world and want to be with him when this ends."
- Family did not believe in/support DNC; n = 8 (7%)
- Crash DCD due to cardiac arrest before DBD; n = 14 (12%)
- Clinical uncertainty over validity of DNC; n = 2 (1.7%)
- No reason given; n = 4 (3.5%)

Discussion: We have shown small but consistent activity in DCD donation in DBD eligible donors in the UK. Little has been published on this subject previously. The two most common reasons stated for this change in pathway have been a family desire to be present at asystole and cardiovascular collapse before donation. DCD donation may represent a viable alternative to DBD where the latter is not possible or acceptable to families.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

MP08: VEGF-A: a potential prognostic biomarker for donor liver viability

Miss Gemisha Cheemungtoo[1], Mr Joseph Dobbins[1], Mr Balaji Mahendran[2,1], Mr Samuel Tingle[2,1], Miss Lucy Bates[2], Mr Rodrigo Figueiredo[2,3], Mr Aimen Amer[3], Mr Gourab Sen[3], Mr John Hammond[3], Professor David Talbot[3], Professor Steven White[3], Professor Derek Manas[3], Mr Colin Wilson[2,3]

[1]Translational and Clinical Research Institute, Newcastle University, Newcastle-Upon-Tyne, United Kingdom. [2]NIHR Blood and Transplant Research Unit in Organ Donation and Transplantation at Cambridge and Newcastle Universities, Newcastle-Upon-Tyne, United Kingdom. [3]Institute of Transplantation, Freeman Hospital, Newcastle-Upon-Tyne, United Kingdom

Abstract

Introduction: Marginal donors are underutilised for liver transplantation, which contributes to waitlist mortality. Current methods of donor graft viability assessment are subjective and reliable objective measures of donor quality are required. This pilot study aimed to evaluate the validity of a patented biomarker panel on flush effluent samples collected on the backbench after organ retrieval.

Methods: Flush effluent samples were collected from cold-stored donor liver grafts accepted for transplantation or used for research. Biomarker levels were quantified in all samples using Meso Scale Diagnostics multiplex assays and normalised with a BCA protein assay. The primary outcome measure of the biomarker validity was graft utilisation and secondary outcome was early allograft dysfunction (EAD) incidence.

Results: From the 13 donor livers sampled, 8 (61.5%) of the grafts were utilised for transplantation and 5 (38.5%) were declined. Utilisation outcomes analysis demonstrated that only flush VEGF-A levels were significantly different between the transplanted and declined grafts (Figure 1, $p<0.001$). The incidence of early allograft dysfunction in the 8 recipients was 37.5% (n=3). No statistical significance was found between each biomarker level and the development of EAD post-transplantation.

Discussion: Liver flush effluents at the backbench timepoint are a rich, novel source of protein biomarkers. VEGF-A may be a prognostic marker for donor liver viability, further study using point of care testing is warranted.

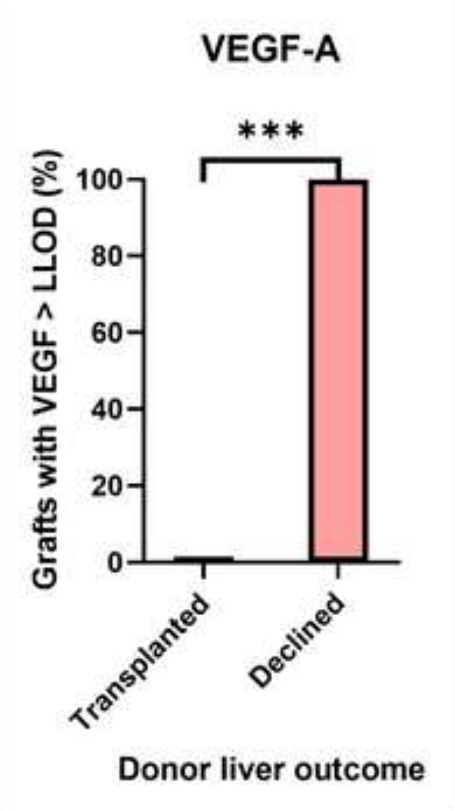


Figure 1. Proportion of donor grafts with VEGF levels above the lower limit of detection between transplanted and declined donor livers groups. *Values represent total percentage. LLOD: Lower limit of detection; ***: p<0.001.*

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

MP09: Revisiting Prolonged Time to Asystole (PTA) in Donation After Circulatory Death (DCD)

Miss Cara Murdoch, Mrs Susan Hannah

NHSBT, Falkirk, United Kingdom

Abstract

Introduction: Successful donation of organs after circulatory death (DCD) requires identification of patients who will die within 4 hours of withdrawal of life sustaining treatment (WLST). The ability to accurately predict the time of death after withdrawal of life support is of specific interest. There is currently no assessment tool available to help support the clinician and organ donation team in decision making around this. The body of research knowledge in this area is limited, with most available literature more than 10 years old.

Methods: Initially due to PDA errors, the Scotland Organ Donation Team collected DCD observational data prospectively over a 6-month period. This was a Scotland wide multi-centre review in which data from a total of 82 patients following the DCD pathway across 13 hospital sites was evaluated.

Results: There was better prediction of death accuracy within 4 hrs (83%) in comparison to predicting death accuracy over 4 hours (58%) - see figure 1. The independent variables identified helped to form the basis of a new visual DCD assessment tool - see figure 2. Imminent death data on PTA suggests in 2021/22 there were 211 DCD attendances by NORS stood down, 196 due to PTA (92.9%).

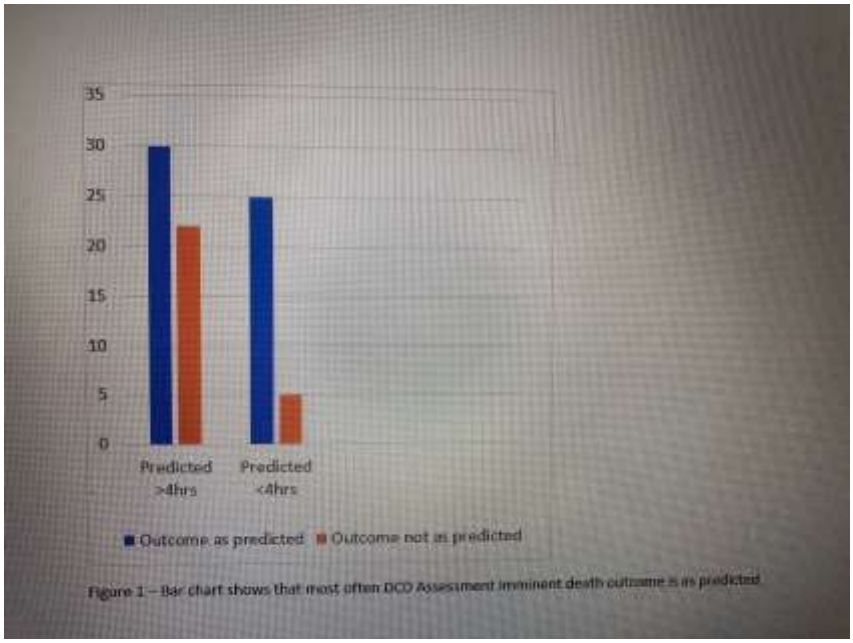
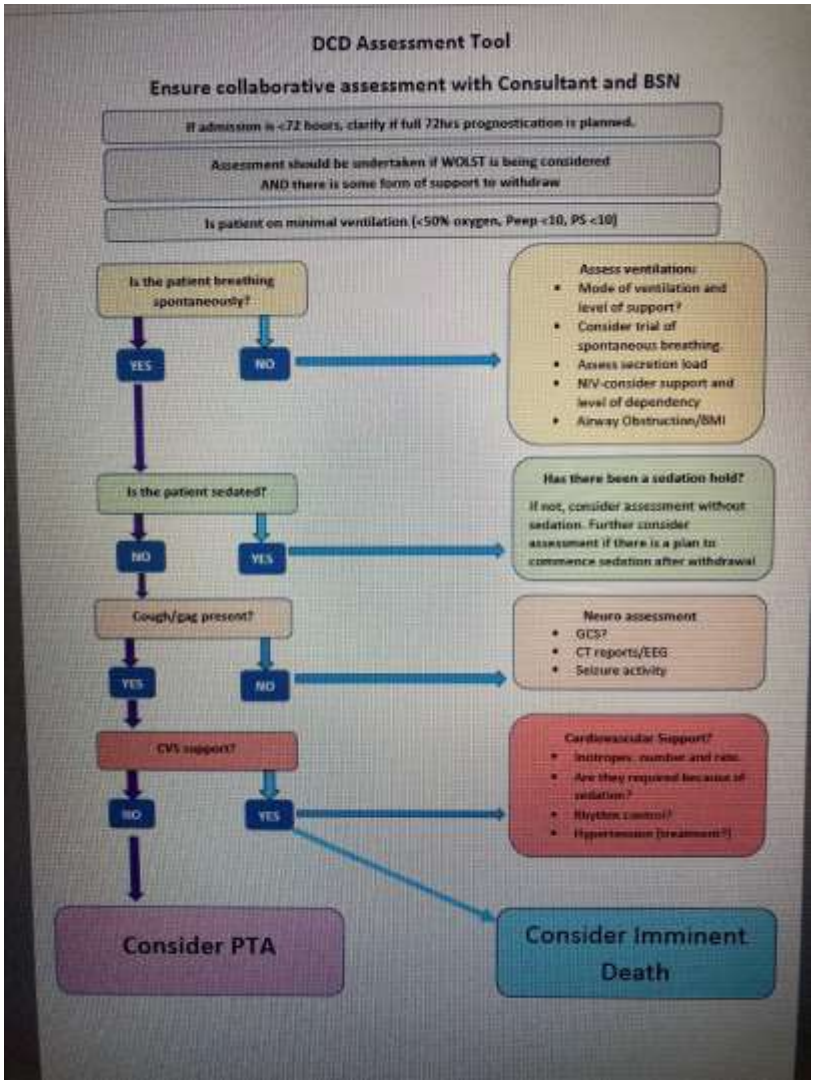


Figure 1 – Bar chart shows that most often DCD Assessment imminent death outcome is as predicted



Discussion: A fundamental challenge in this topic is that the emotional and financial cost is spent early in the DCD pathway. With current UK trends in organ donors, namely decreasing DBDs and increasing DCDs, there is a renewed urgency to act thereby helping to plan and resource DCD organ recovery. We have identified an education gap, with a lack of guidance on this subject, resulting inconsistencies in clinical and audit practice, and implications for our new recruits from increasingly diverse (non-ICU) backgrounds. Future recommendations include the development of a predictor tool exploiting advances in artificial technology.

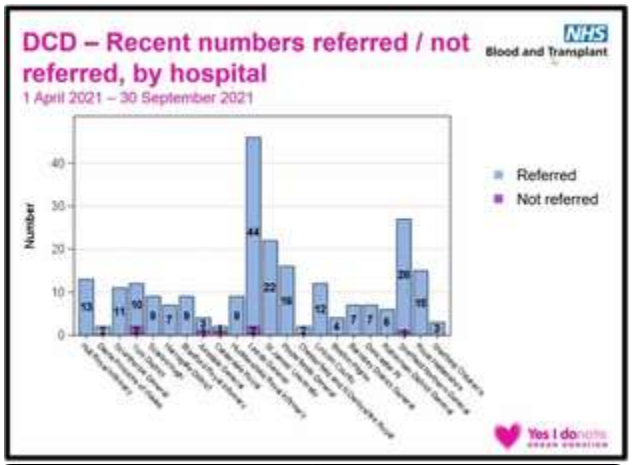
Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

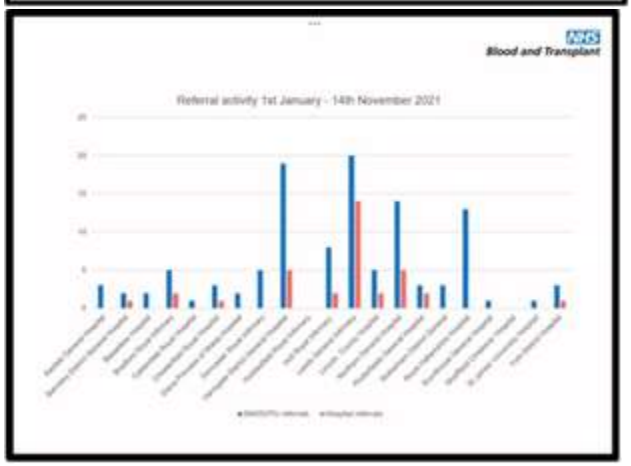
MP10: Implementing a tissue referral programme

Dr Sarah Marsh

Harrogate District NHS Foundation Trust, Harrogate, United Kingdom

Abstract





Introduction: As a level 4 centre we acknowledged that our contribution to solid organ donation, whilst valuable is relatively small. Recognising our size limitations prompted us to consider novel ways to contribute to the donation programme, leading to the implementation of our tissue referral programme.

Methods: In 2017 the "Deceased Alliance Site" agreement was created between Harrogate and District NHS Foundation Trust (HDFT) and NHS BT, with the aim of referring all deceased patients to the National Referral Centre. Two pilot sites within the trust were identified to trial the intervention – the Intensive Care and Emergency Departments. An education programme was implemented, and “Care after Death” documentation adapted to prompt referral. Information leaflets were added and highlighted in our bereavement pack shared with family after death.

Results: Automatic referral of deceased patients commenced in April 2018. This has led to 171 referrals and 40 donations of corneas and tissues. Referral numbers have increased year on year (other than 2020), with 2022 on course to be the most successful to date (30 referrals from April to October). Our referral rate is now one of

the highest in the region despite having one of the lowest bed bases (Leeds Teaching Hospital Trusts 2500, HDFT 400) (DCD referral numbers shown for comparison).

Discussion: Commencing this programme in a small hospital in 2 discreet areas meant that the process of delivering education and training, modifying documentation, and embedding the process as part of end-of-life care was straightforward and has led to a valuable contribution to the tissue pool. Our next step is to expand this intervention to the wider hospital and to work with NHS BT to address conversion of referral to donation rates (current "cold call" system fails to reach up to 50% of our families).

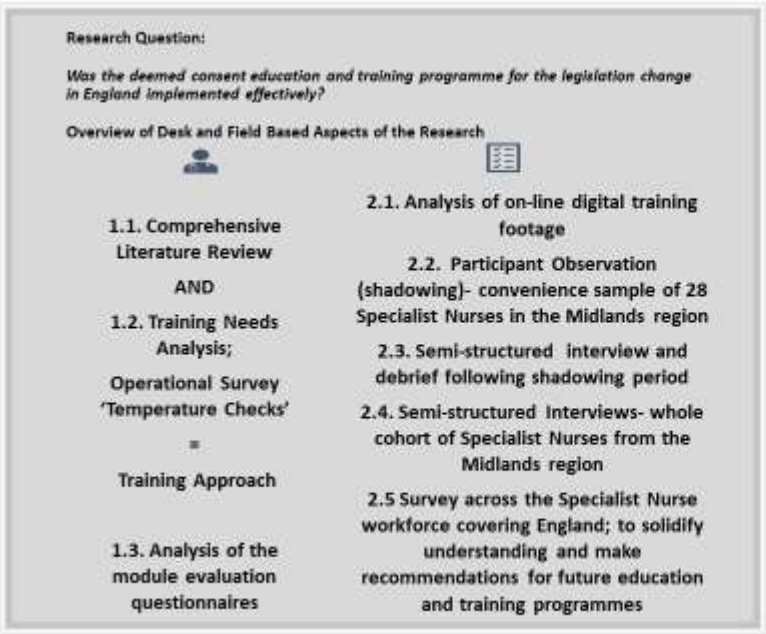
Categories: Tissue donation & transplantation (tissue donors, recipients & retrieval, e.g: corneas, skin, heart valves)

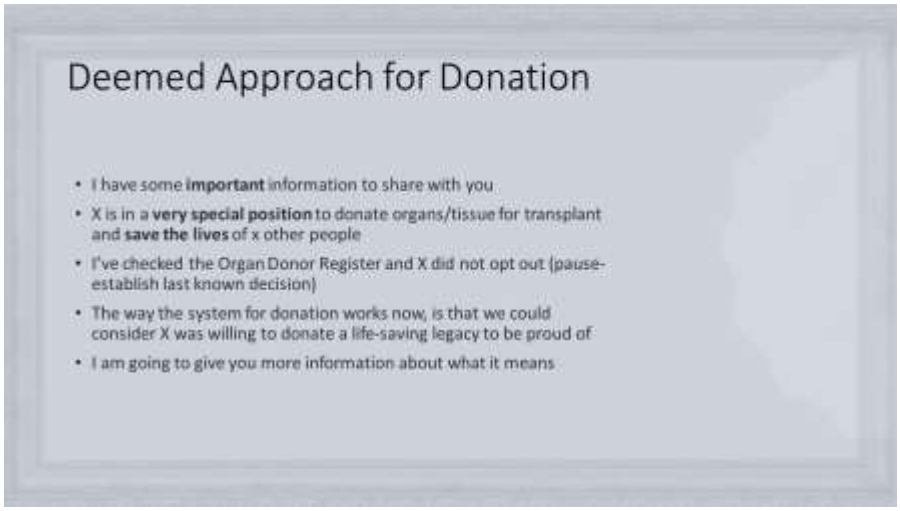
MP11: Process Evaluation (using a mixed method design) to assess the implementation of the Specialist Nurse -Organ and Donation education and training programme for the deemed consent legislation change in England

Mrs Cathy Miller[1,2], Dr Ben Kotzee[2]

[1]NHS Blood and Transplant, Birmingham, United Kingdom. [2]University of Birmingham, Birmingham, United Kingdom

Abstract





Introduction: There is worldwide shortage of donor organs for transplantation. To help overcome this shortage several countries have introduced an opt-out consent system for organ donation. England's deemed consent legislation was enacted on May 20th, 2020. This legislation creates an expectation that organ and tissue donation will be explored whenever clinically appropriate and that all adults are considered an organ donor when they die, unless they have expressed a decision not to donate or are in a safeguarded group.

The purpose of this research study was to evaluate the implementation of the education/training programme developed, tested, and delivered to approximately 250 Specialist Nurses- Organ Donation (SN-OD) covering England.

Methods: Desk based: data was gathered from a comprehensive literature review, participant evaluations from the SNOD's attending tri-modular training programme and operational temperature check surveys to gauge workforce understanding of the law and its practical application. C

Field based: data was gathered by the researcher shadowing SNOD's conducting deemed approach conversations, with potential donor families on the Intensive Care Unit. Follow up debriefs, interviews and a workforce survey also provided valuable data.

Results: The results have identified areas of practice to be emulated and the development of a suggested framework for approaching potential donor families where deemed consent applies.

Discussion: The legislation was designed to make it easier for those wanting to donate to do so. Whilst the donation conversation has changed, some family members still decline donation based upon personal views, opposed to what the individual would have wanted. Emphasising the need to introduce deemed consent to increase organ donation rates, might be overestimating the influence of the legislative default and underestimating the power afforded to families. A balance is needed, between the legal and humanistic complexities in applying deemed legislation and delivering seamless care after death.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

MP12: Discovering alternative ways to deliver organ and tissue donation education through a unique online education package accessible to all

PDS Lisa Adair, SNOD Tracey Carrott, SNOD Teresa ODonnell, SNOD Rachel Pritchard, SNOD Lisa Tombling

NHSBT, Newcastle Upon Tyne, United Kingdom

Abstract

Introduction: The COVID-19 outbreak heavily hit hospital clinical learning environments, impacting the educational landscape of all healthcare employees. With face-to-face teaching and education suspended within our hospital Trusts, the challenge for embedded SNOD's in the Northern Region was how best we could meet the needs of our healthcare colleagues in the teaching and learning processes relating to organ and tissue donation.

Case Presentation Virtual remote training for healthcare employees is not new, many organisations have moved to e-learning to meet the needs of a pressurised health care system with increasing workloads. Mandatory training is often provided through e-learning additionally, it has become an innovative way forward in the continuing professional development of healthcare professionals.

The challenge we were faced with created an opportunity for us to develop a new way of providing up to date knowledge, clinical competency and the acquisition of new skills that was specific to organ and tissue donation in an on-line format. E-learning can be defined as educational content that is delivered asynchronously, using information and communication technologies, without the need for centralised face-to-face learning (Koch 2014), E-learning provides wide easy access, tailored learning, and an adapted training pace.

Outcome To provide educational resources via ESR (Electronic Staff Record) within each Trust is problematic as each Trust uses different platforms to launch their e-learning packages. We approached Health Education England (HEE) for guidance and subsequently applied for and secured funding to create an e-learning package which will be accessible to all hospitals and critical care nurses in the UK and devolved Nations.

Discussion The progress to date is that we are working collaboratively with NHSBT Digital Development Team to provide the content in creating bespoke and interactive digital packages of learning. Currently, there are 3 modules in production focusing on Adult Critical Care Nurses with the plan to launch in Spring 2023.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

MP13: If not you, then who?

Miss Georgia Barrett

NHSBT, London, United Kingdom

Abstract

Introduction: As a SN-OD and a member of the black community, I have seen the detrimental effect the lack of deceased donors from ethnic backgrounds has on those on the waiting list. For BHM I produced a video to share on social media highlighting personal experiences.

Method: I enlisted a videographer to film and together we edited the video. I chose Lauren, a friend, who's journey prompted this project and BBC Radio Presenter DJ Ace, who waited 3 years for a kidney transplant; both are relatable and influential within the black community. Questions used enabled the subjects to tell their personal journeys and its impact on their families. They provide insight into the practicalities of living with kidney failure, but also the emotional implications of being young, healthy, and suddenly developing a serious illness.

Results: The 9-minute video highlights to members of the black community how important organ donation is. It was shared on social media and via NHSBT's YouTube channel. Feedback has been very positive. It has received more than 15,000 plays across media platforms and has been shared hundreds of times. Comments include "What a powerful and moving video" and "It has opened my eyes to what dialysis is like". Showing it at team meetings has sparked debate about what we can do as HCPs to influence the amount of donors from non-white populations.

Discussion: Holding a light up to the reality of living with organ failure and making it relatable plays a big part in creating conversations. I demonstrated that a video using interviews to highlight the reality of organ donation is feasible and can achieve a high level of engagement. NHSBT could conduct studies into the influence of similar projects of consent rates.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

MP14: Barriers and facilitators toward deceased organ donation among the Indian population from two diverse regions in India

Mr. Britzer Paul Vincent Paul Raj, Prof. Gurch Randhawa, Dr. Erica Cook

University of Bedfordshire, Luton, United Kingdom

Abstract

Introduction: A recently published systematic review from my Ph.D. objectively informed that several factors of the society such as age, gender, religion, region, and trust with healthcare systems influenced organ donation decisions in India and the performance differed between the north and south of India. Therefore, this study was undertaken to identify the barriers and facilitators toward deceased organ donation from a subjectivist point of view and identify how several layers of society influence organ donation behaviour in India.

Methods: Qualitative approach guided by the social constructivist worldview was adopted for this study. Twenty-five telephonic focus groups were undertaken among the general public in India stratified based on the regions differed by performance, religion, gender, and age.

Results: It was identified that decision toward deceased organ donation in India is based on a collectivist approach and not an individualist approach. While individually all the participants informed organ donation was a noble act, several other factors from various levels of society negatively influenced their decision. Even though the public from their own self had a positive view toward organ donation, lack of talk and guidance from their religious leaders; misinformation from movies and media; trust in the healthcare system, and their commercial practices with privatised healthcare negatively influenced their decision. Also, the general public from the north and south India did not demonstrate much difference in their barriers which could not explain the difference in organ donation performance in India.

Discussion: With collectivist decision-making toward deceased organ donation among the Indian population, there is a greater need to have collaborative systems approach from various levels such as with religious leaders, community leaders, healthcare providers, media, and donor and recipient families. Also, further research was undertaken in my Ph.D. to identify what could explain the difference in deceased organ donation performance in India.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

MP15: The work of the Medway Organ and Tissue Donation Committee to improve awareness and support for organ donation within the Trust and our local community

Dr Paul Hayden, Dr Gill Fargher, Mrs Alison Hill

Medway NHS Foundation Trust, Gillingham, United Kingdom

Abstract

Introduction: Over the past 7 years, the Organ and Tissue Donation Committee at Medway NHS Foundation Trust has coordinated multiple educational events and installed commemorative artwork to engage with the local population and improve awareness of organ donation and the importance of discussing their wishes. By collaborating with external stakeholders, we have had the opportunity to speak to a wide range of societal groups and we hope this has had a positive effect on public support for organ donation in our region.

Case presentation: Our committee has overseen a portfolio of activities within and outside the Trust. Internally, we have run multiple educational sessions, including grand rounds, multi-disciplinary simulation days, incorporated organ donation into our regional critical care courses, and have installed a 3 stories high organ donation memorial and "hero wall" to celebrate the selflessness of our organ and tissue donors and their families.

Externally, we have delivered educational sessions to our local GPs, Rotary club, Salvation Army, Medway Council Health and Well-being Board, and Medway Education Partnership Group. We have run a stand at the Kent County show and worked with several faith groups to understand and discuss challenges with organ donation in BAME communities. This led to us coordinating a BAME organ donation conference with nationally recognised experts as speakers.

We have also had the opportunity to discuss organ and tissue donation on local TV, radio, newspaper and online outlets. We have even knitted organs and found them an excellent way to engage with people and discuss organ donation with them!

Outcome: We hope that this portfolio of activity contributes to increasing awareness and understanding of organ donation, and the importance for people to discuss their end of life wishes with their loved ones.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

MP16: Introduction of school education intervention to promote organ donation and impact of opt-out policy

Dr Eleanor Duck[1,2], Mr Kaiyang Song[1,2], Dr James Convill[1,3], Mr Matthew Byrne[1,4]

[1]We Are Donors, UK Registered Charity, United Kingdom. [2]Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom. [3]Newcastle University, Newcastle, United Kingdom. [4]Nuffield Department of Surgical Sciences, University of Oxford, Oxford, United Kingdom

Abstract

Introduction: By 2023 opt-out organ donation legislation will be in place throughout the UK, and yet this policy has not shown a significant improvement in donation rates compared to opt-in. This is in part due to negative public perceptions of organ donation, leading to poor familial authorisation rates in the soft opt-out model (66% in 2021-2022). Engaging young people, and in turn promoting family discussion, is an important part of improving the public perception of organ donation. In this study we aimed to explore the impact of an educational intervention on organ donation, family discussions and knowledge of the opt-out law.

Methods: We delivered a 15-minute educational presentation, along with an optional questionnaire, to secondary schools in five counties across the UK between Jan 2022-May 2022.

Results: 616 students aged 11-18 years (mean 14.6) completed the survey. 61% were female. 9% had joined the organ donor register (ODR) prior to the session, and 91% had not. Following the intervention the ODR registrants increased from 9% to 31% including those planning to join.

Before the intervention 58% of adolescents agreed or strongly agreed they had knowledge of organ donation, which increased to 85% post intervention. 28% agreed or strongly agreed they had discussed organ donation with family, which increased to 70% intending to do so post intervention. 28% agreed or strongly agreed they had knowledge of the change in the law to opt-out, which increased to 77% post intervention.

Discussion: Educational intervention resulted in improved adolescent knowledge of organ donation issues including the opt-out policy, increased intention to discuss donation with family and intention to join the ODR. It is hoped that by promoting wider public discussions such adolescent educational interventions will positively impact public perceptions of organ donation.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

MP17: WITHDRAWN

MP18: Decisional needs of people from minority ethnic groups around living donor kidney transplantation: A UK healthcare professionals' perspective

Dr Ahmed Ahmed[1,2], Dr Sunil Daga[1,2], Dr John Stoves[3], Dr Shenaz Ahmed[4], Dr Anna Winterbottom[1,5]

[1]Adult Renal Services, Lincoln Wing, St James University Hospital, Leeds, Leeds, United Kingdom. [2]University of Leeds, Leeds, United Kingdom. [3]Bradford Renal Unit, Horton Wing, St Luke's Hospital, Bradford, Bradford, United Kingdom. [4]Division of Psychological and Social Medicine, Leeds Institute of Health Sciences, University of Leeds, Leeds, United Kingdom. [5]Leeds Institute of Health Sciences, University of Leeds, Leeds, United Kingdom

Abstract

Introduction: Living donor kidney transplantation is associated with better clinical and patient outcomes compared to deceased donor transplantation, but most patients with advanced kidney disease receive a deceased donor transplant. There is variation in who receives a living donor transplant based on ethnicity, sex, social deprivation, and religion. This may be attributable to the way information is presented, understood, and acted upon at multiple stages in the decision-making process. With a focus on ethnicity, we surveyed the views of kidney health professionals on decisional needs and context within which people make transplant decisions.

Methods: Semi-structured interviews with 18 kidney healthcare professionals from two renal centres in West Yorkshire. Data were analysed using thematic analysis and managed using NVivo software.

Results: Three transplant surgeons, 9 nephrologists, 5 transplant co-ordinators, and 1 specialist nurse participated were interviewed. Themes include factors relating to:
Health professionals: Language and lack of cultural awareness were identified as barriers to discussing transplantation. Use of interpreters and improving ethnic diversity of frontline staff were suggested to facilitate better patient engagement.

Resources: Improvements to enhance health literacy, accessibility, and readability were identified, with inclusion of culturally specific information within the resources.

Patients: The need for supporting knowledge (about transplantation, the donor assessment process and transplantation procedure, risk perception, health, and financial status), the perception of cultural norms (such as a reluctance to approach potential donors) and uncertainty around specific religion's stance on transplantation.

Discussion: To our knowledge, this is the first study in the UK to investigate health professionals' views on living donor kidney transplantation decision-making. Providing relevant information to people with low health literacy and non-English speakers may improve treatment access. We are interviewing people with kidney disease to understand their decisional needs. These two studies will help inform the development of interventions to support living donor kidney transplantation decision making.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

MP19: Prediction of kidney graft survival in the UK: An artificial intelligence approach

Dr Hatem Ali

UHCW, COVENTRY, United Kingdom. Faculty of Health Sciences, Coventry, United Kingdom

Abstract

Introduction: Predicting kidney allograft outcome can direct clinical care and resource allocation. The aim of our study was to develop a prediction tool for death censored graft survival using artificial intelligence.

Methodology: All deceased kidney transplant patients registered in the UK Transplant Registry database from 2007 till 2020 were retrospectively reviewed. Exclusion criteria: age<18 years old, multiple organ transplant, kidney graft failure within 3 months post-transplant, or missing data about death censored graft survival. Graft failure was defined as the need for maintenance dialysis post-transplant. The data was divided into training and test dataset with ratio 70:30 in order to train the model and then evaluate its performance on the unseen data. Decision based models for survival analysis were used (decision tree, Random Forest and XGBOOST). Evaluation criteria were Harrell C statistic for discrimination, and Integrated Brier score for calibration. Data collected were transplant, factors donor and recipient demographics, serum creatinine at 3 months post-transplant.

Results: 22,717 patients were included in our study. For the decision tree model, Harrell C-statistics=0.70 (indicating adequate discrimination), Integrated Brier score=0.02 (indicating excellent calibration), AUC for a 10-year post-transplant period was 0.7 (indicating adequate performance). Random Forest and XGBOOST models slightly improved the Harrell C-statistic to 0.72. The key players in making the predictions were serum creatinine at 3 months post-transplant (importance factor=0.67), followed by donor-recipient age difference (importance factor=0.04). Using only pre-transplant factors, our model had a Harrell C-statistic of 0.67 in the training data and 0.635 in the test dataset.

Conclusion: Decision based models can aid in predicting kidney graft survival post-transplant. Our model can make has high discrimination and calibration power. A user-friendly web app can be developed using our model. Key players in prediction were serum creatinine at 3 months post-transplant and donor-recipient age difference. A user-friendly web app can be developed using our model.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

MP20: HLA-DQ Mismatching and Renal Transplant Outcomes in the UK

Dr Hatem Ali[1,2], Prof David Briggs[3], Prof Nithya Krishnan[1,2]

[1]University Hospitals of Coventry and Warwickshire, Coventry, United Kingdom. [2]Faculty of Health Sciences, Coventry University, Coventry, United Kingdom. [3]NHSBT, BIRMINGHAM, United Kingdom

Abstract

Introduction: The aim of our study was to assess the effect of HLA-DQ mismatches on renal transplant outcomes, in terms of acute rejection episodes and death censored graft survival among the UK population.

Methodology: All renal transplant patients registered in the NHSBT database from 2007 till 2020 were retrospectively reviewed. Patients were followed up till June 2022. Patients with missing data about their HLA-DQ mismatched were excluded. Data included recipient demographics, transplant factors (HLA mismatches, cold ischemia time, number of previous transplants, type of induction and maintenance immunotherapy), and donor factors (demographics, donor type for living and deceased transplant). Acute rejection at 3 months follow-up was defined as clinically suspected or biopsy-proven rejection. Death censored graft survival was defined as the need of maintenance dialysis post-transplant. Logistic and cox regression analysis were used.

Results: 18,898 deceased donor transplant and 12,340 living donor transplant patients were included in the analysis. Among the deceased transplants, HLA-DQ mismatch was significantly associated with higher risk of acute rejection episodes (2-HLA-DQ :OR=1.39; 95%CI=1.10 to 1.75; P value<0.01). This relationship remained significant even among patients with 0-HLA-DR mismatch (2-HLA-DQ :OR=1.66, 95%CI=1.05 to 2.58, P =0.02 ;and 1-HLA-DQ :OR=1.21, 95%CI=1.03 to 1.48,P=0.04). However, HLA-DQ mismatch was not associated with death censored graft survival (P<0.05). Among the living transplants, HLA-DQ mismatch was significantly associated with higher risk of acute rejection episodes (one or two HLA-DQ :OR=1.32; 95%CI=1.07 to 1.62; P value<0.01). This relationship remained significant even among patients with 0-HLA-DR mismatch (one or two HLA-DQ :OR=1.97; 95%CI=1.39 to 2.08; P value<0.01). However, HLA-DQ mismatch was not associated with death censored graft survival (P<0.05).

Conclusion: HLA-DQ mismatching is associated with higher risk of early acute rejection among deceased and living transplant patients, independent of HLA-DR mismatch. However, it not associated with worse graft survival.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

MP21: Clinical impact of red cell transfusions post kidney transplant: a systematic review and meta-analysis

UK-HLA Matched Red Cell working Group

Imperial College Healthcare NHS Trust, London, United Kingdom. Imperial College., London, United Kingdom. NHS Blood and Transplant, Bristol, United Kingdom

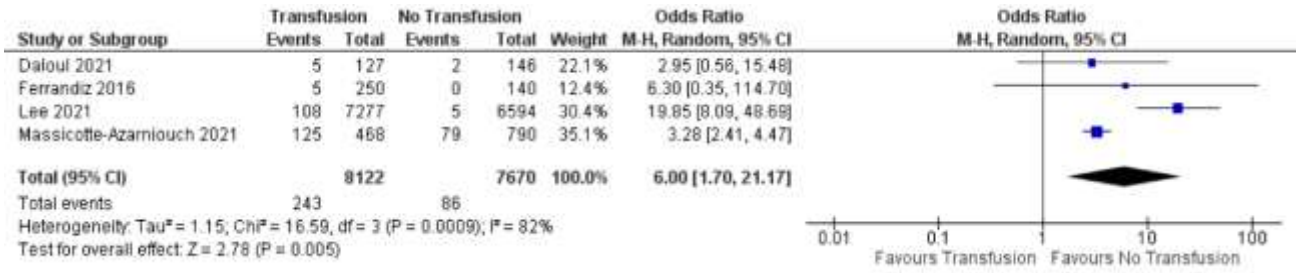
Abstract

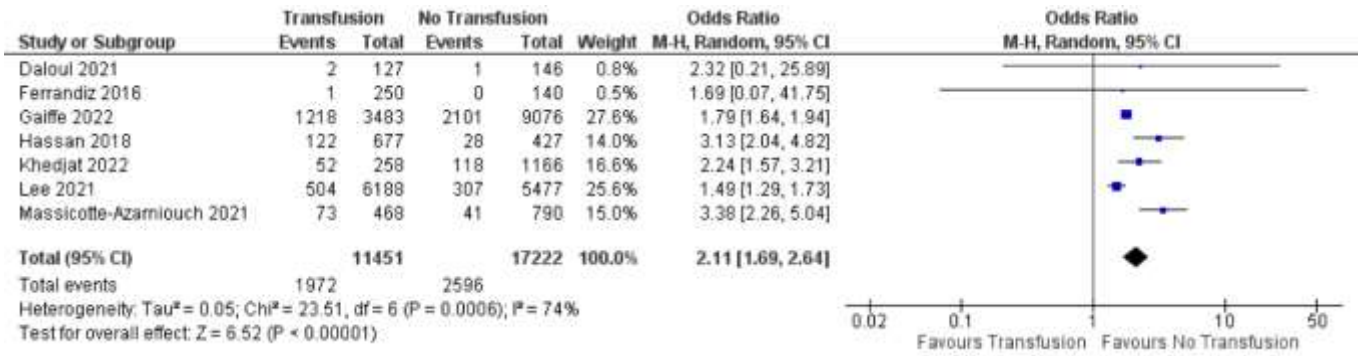
Introduction: Despite recognition that red blood cell transfusions (RBCT) are allogenic and should be avoided in potential transplant recipients, less focus has been given to their potential impact on alloimmunity and outcomes post-transplant. We performed a systematic review and meta-analysis of studies examining the clinical impact of RBCT given in the early post-transplant period, to assess the prevalence of post-transplant RBCTs and to synthesise all available evidence of the effect of RBCT on transplant outcome.

Methods: Eligible studies included those comparing RBCT with no RBCT in kidney transplant recipients, where transfusion occurred either perioperatively or post-operatively out to one year. The outcomes of interest were allograft and patient survival, rejection and donor specific antibody formation (DSA). The study was conducted as per PRISMA guidelines. The electronic databases Medline , Embase and the Transplant Library were searched from 2000 to 20th July 2022.

Results: From 1018 records identified, 436 were screened for eligibility. Full-text assessment was undertaken in 24 studies, 10 remained eligible for inclusion. The total number of patients included across the studies was 32,817. The median transfusion prevalence was 40%., Data on allograft survival was available in seven studies, representing 28,673 participants. These showed that patients who receive RBCT post-transplant have a higher odds of allograft failure OR 2.11 (95% CI 1.69 to 2.64). Nine studies contained data on rejection (20258 participants). RBCT was associated with increased odds of rejection OR 1.42 (95% CI 1.04 to 1.94). Eight studies provided data on the detection of DSA, (19000 participants). RBCT was associated with a greater odds of DSA detection, OR 1.73 (95% CI 1.24 to 2.41).

Discussion: This systematic review and meta-analysis has shown that early post-transplant RBCTs are associated with death, transplant failure, rejection and the detection of DSA. Although limited by heterogenous observational studies and the risk of confounding, this warrants further consideration.





Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

MP22: Maribavir (MBV) Versus Investigator-assigned Therapy (IAT) For Refractory Cytomegalovirus (CMV) Infection (with or without resistance) in Solid Organ Transplant (SOT) recipients: Subgroup safety analysis of a phase 3 study

Ricardo La Hoz[1], Diana Florescu[2], Deepali Kumar[3], Faouzi Saliba[4], Joan Gu[5], Aimee Sundberg[5]

[1]University of Texas Southwestern Medical Center,, Dallas, USA. [2]University of Nebraska Medical Center,, Omaha, USA. [3]University Health Network, Toronto, Canada. [4]University Paris Saclay, Villejuif, France. [5]Takeda Development Center Americas, Inc., Lexington, USA

Abstract

Introduction: In a Phase 3 study of MBV vs IAT (val/ganciclovir, foscarnet, or cidofovir) for refractory CMV infection (with/without resistance; R/R) in hematopoietic cell transplant (HCT) or SOT recipients (NCT02931539), MBV was superior to IAT for CMV viremia clearance at Wk8 (55.7% vs 23.9%), with a consistent benefit seen for SOT recipients (55.6% vs 26.1%, respectively). This subgroup analysis reports safety data from the SOT subgroup.

Methods: Transplant recipients with confirmed CMV infection, R/R to recent treatment (tx) were randomized 2:1 to MBV (400mg/BID) or IAT for 8wks, with 12wks' follow-up. Pre-specified safety analyses for SOT recipients included: graft outcomes (randomized set [pts randomized to tx groups]), tx-emergent adverse events (TEAEs) and tx-related TEAEs (safety set [pts received study-assigned tx]).

Results: 352 patients (pts) were randomized, 211 (59.9%) were SOT recipients (MBV:142, IAT:69 [val/ganciclovir:36, foscarnet:29, cidofovir:1, 3 >1 IAT]). The baseline characteristics of the SOT recipients were balanced between tx groups (Table1). No SOT recipients lost grafts, 9 (6.3%) MBV and 4 (5.8%) IAT-assigned pts experienced acute rejection. TEAEs (% pts) were: 96.5% MBV, 88.4% IAT. Dysgeusia was the most frequently reported TEAE for MBV; neutropenia and acute kidney injury (AKI) were lower for MBV than val/ganciclovir and foscarnet, resp. (Table2). Overall, 61 (43.0%) pts treated with MBV experienced tx-related dysgeusia (IAT: 0). No MBV-assigned pts experienced tx-related neutropenia (val/ganciclovir: 8 [22.2%]) and the rate of tx-related AKI was lower for MBV (4 [2.8%]) than foscarnet (9 [31.0%]).

Discussion: In SOT recipients, rates of TEAEs were similar between tx groups; dysgeusia was the most reported TEAE for MBV; neutropenia and AKI (AEs common with IAT) rates were lower for MBV than val/ganciclovir and foscarnet, resp. This subgroup SOT safety analysis is consistent with the previously reported safety results observed in the overall population of the Phase 3 study.

Table 1. Baseline[a] characteristics of SOT recipients (randomized set)[1]

Characteristic	Maribavir (n=142)	IAT (n=69)
Age, years		
Median	56.0	55.0
Range	20–79	19–77
Sex, n (%)		
Female	42 (29.6)	24 (34.8)
Male	100 (70.4)	45 (65.2)
By organ type,[b] n (%)		
Heart	14 (9.9)	9 (13.0)
Lung	40 (28.2)	22 (31.9)
Liver	6 (4.2)	1 (1.4)
Pancreas	2 (1.4)	0
Intestine	1 (0.7)	0
Kidney	74 (52.1)	32 (46.4)
Multiple	5 (3.5)	5 (7.2)
History of previous transplant(s), n (%)		
Yes	16 (11.3)	11 (15.9)
No	126 (88.7)	58 (84.1)
Presence of CMV mutations known to confer resistance to ganciclovir, foscarnet, and/or cidofovir per central laboratory results, n (%)		
Yes	103 (72.5)	56 (81.2)
No	33 (23.2)	9 (13.0)
Missing	6 (4.2)	4 (5.8)
Current graft status at baseline, n (%)		
Functioning with complications	12 (8.5)	8 (11.6)
Functioning	127 (89.4)	61 (88.4)
Other	3 (2.1)	0

[a]The last assessment on or before the first dose date of study treatment, or date of randomization for patients who did not receive study treatment.
[b]Organ refers to the most recent organ transplanted, as applicable for patients with prior organ transplants.
IAT, investigator-assigned therapy.

Table 2. TEAEs occurring in >10% of SOT recipients in either the maribavir or IAT arm (safety set)[1]

n (%) of patients	Maribavir (n=142)	IAT (n=69)	By IAT type[a]	
			Val/ganciclovir (n=36)	Foscarnet (n=29)
Any TEAE	137 (96.5)	61 (88.4)	32 (88.9)	26 (89.7)
Dysgeusia	62 (43.7)	1 (1.4)	1 (2.8)	0
Nausea	24 (16.9)	10 (14.5)	3 (8.3)	6 (20.7)
Diarrhea	23 (16.2)	14 (20.3)	8 (22.2)	6 (20.7)
Cytomegalovirus viremia	23 (16.2)	4 (5.8)	4 (11.1)	0
Immunosuppressant drug level increased	18 (12.7)	1 (1.4)	1 (2.8)	0
Taste disorder	18 (12.7)	0	0	0
Fatigue	16 (11.3)	8 (11.6)	5 (13.9)	3 (10.3)
Anemia	14 (9.9)	7 (10.1)	0	6 (20.7)
Acute kidney injury	12 (8.5)	10 (14.5)	1 (2.8)	9 (31.0)
Neutropenia	6 (4.2)	13 (18.8)	10 (27.8)	3 (10.3)
Pyrexia	6 (4.2)	8 (11.6)	4 (11.1)	4 (13.8)
Hypomagnesaemia	5 (3.5)	7 (10.1)	2 (5.6)	5 (17.2)

[a]Data on cidofovir and >1 IAT excluded due to low patient numbers (n=1 and n=3, respectively).
Data are for patients who took any dose of study-assigned treatment and experienced TEAEs during the on-treatment period, which included the treatment period plus 7 days after last dose of treatment, or 21 days for cidofovir, or until maribavir rescue treatment initiation, or until the non-study CMV treatment initiation, whichever was earlier.
TEAEs were defined as any adverse event that occurred during the on-treatment observation period.
IAT, investigator-assigned therapy; TEAE, treatment-emergent adverse event.

1.La Hoz *et al*., ATC 2022. Published in: *Am J Transplant*. 2022; 22 (suppl 3).

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

MP23: Donor Polygenic risk scores in predicting kidney graft function at 1 and 5 years post-transplant

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Abstract

Background: Donor age and type (living vs deceased) are well-established predictors of kidney transplant outcomes. Genome wide association studies (GWAS) demonstrated additive effect of the polygenic component for traits including estimated glomerular filtration rate (eGFR). Utilizing GWAS data, Polygenic Risk Scores (PRSs) provide numeric estimates at the individual level on multiple traits. We investigate the role of PRS for multiple traits in kidney donors on transplant outcomes.

Methods: We developed and calculated PRSs for albuminuria, eGFR, hypertension, kidney volume (KV), intracranial aneurysm (IA), and stroke using large published GWASs of European ancestry. Among 6,659 genotyped kidney transplant donors from 5 European ancestry cohorts, we examined the role of these PRSs on both transplant survival and graft function. We controlled for donor and recipient sex, age, year of transplant, number of transplants, donor type.

Results: Donor hypertension, eGFR and IA PRSs were significantly associated with graft survival and graft function. Risk of graft failure increased by 7.8% using donor hypertension PRS [P=0.01] and by 8.1% for the IA PRS [P= 0.008]. As per 1 standard deviation (SD) increase in the donor hypertension and IA PRSs, recipient eGFR at 1-year post-transplant declined by a 0.69 [P=0.005] and 0.70 mL/min/1.73m2, respectively
With regard to short-term outcomes, a one SD increase in eGFR PRS resulted in a 1.6 mL/min/1.73m2 increase in eGFR at 1-year post-transplant (P=2.0e-10). Furthermore, comparing donor kidneys with the top decile versus the bottom decile of the eGFR PRS, those with high eGFR polygenic burden had a mean eGFR of 56.2 vs 51 ml/min/1.73m2 at 1-year post-transplant.

For medium-term follow up, only eGFR PRS has an effect at 5 years post-transplant (1.55 mL/min/1.73m2, P= 8.8e-06).

Conclusions: Our observations support the hypothesis that donor PRS has a significant impact on graft survival and function. These findings could have utility for future transplant allocation decisions.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

MP24: Kidney transplantation from donors with acute kidney injury: Are the concerns justified? A systematic review & meta-analysis

Mr George-Emilian Nita[1], Mr Jeevan Gopal[1], Mr Hussein Khambalia[1,2], Mr Zia Moinuddin[1,2], Mr David van Dellen[1,2]

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Abstract

Introduction: The paucity of suitable donor organs has led to inclusion of acute kidney injury (AKI) donor kidneys to expand the donor pool. We aimed to establish whether transplanting such kidneys had a detrimental effect on graft outcome.

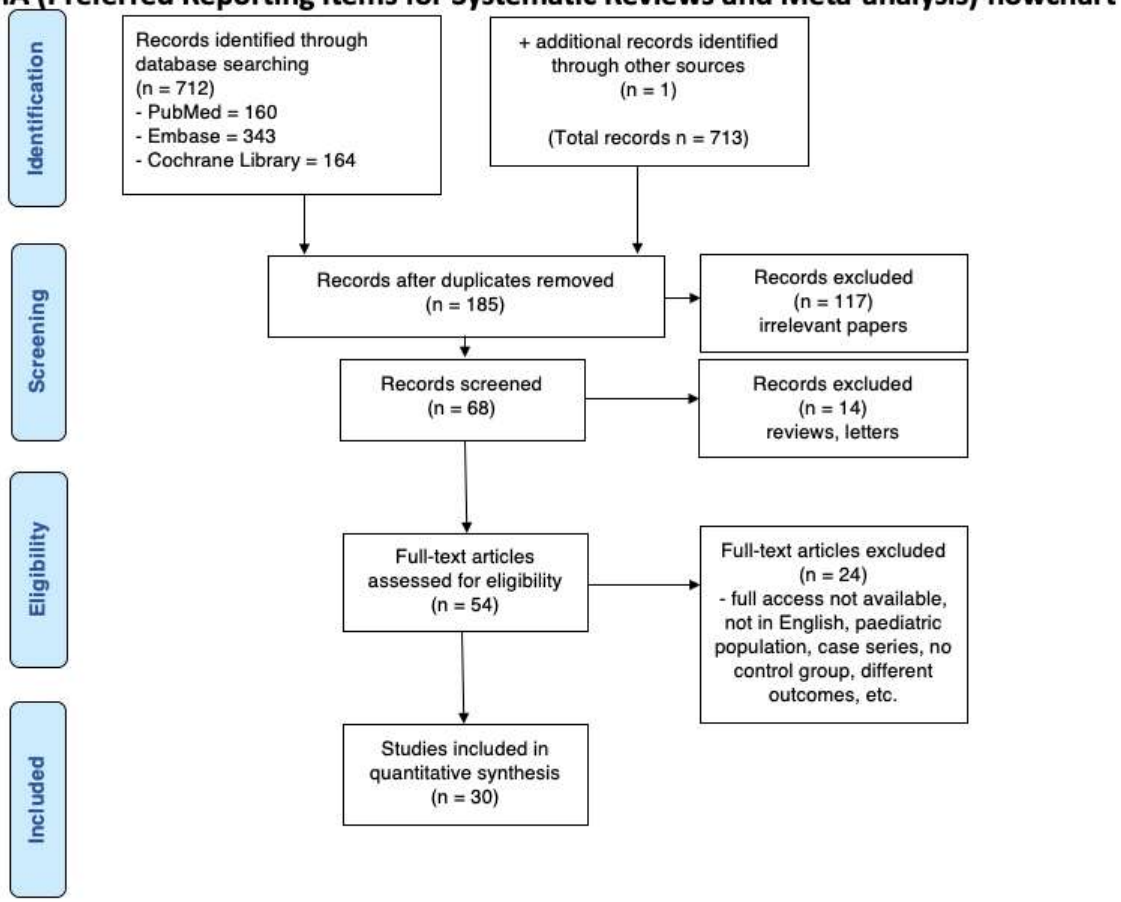
Methods: A systematic literature review and meta-analysis was conducted on the studies reporting the above outcomes from PubMed, Embase, and Cochrane Library databases. The primary aim was to define: delayed graft function (DGF) and primary non-function (PNF). The secondary aims were to define the relationship to acute rejection, allograft survival, eGFR and length of hospital stay (LOS). Odds ratios (ORs) was calculated for dichotomous data and weighted mean difference (WMD) for continuous data. P values were calculated for heterogeneity tests.

Results: This meta-analysis included 30 cohort studies ranging between 1995 to 2017 (follow-up period between 12-132 months).

There is a higher risk of DGF in the AKI group (OR = 2.20, CI=1.89-2.57, $p < 0.00001$). There is no difference in the risk for PNF (OR 0.99, CI=0.70-1.41, $p = 0.98$), acute rejection (OR 1.29, CI=0.97-1.71, $p = 0.08$), eGFR decline (WMD=-2.09, CI=-3.56 to 0.62, $p = 0.05$) and prolonged LOS (WMD=1.52, CI=-0.35 to 3.38, $p = 0.11$). The odds of allograft survival are similar (OR 0.95, CI=0.81-1.12, $p = 0.54$).

Discussion: Transplanting kidneys from donors with AKI can lead to satisfactory outcomes. The rates of DGF are higher in this population but does not seem to impact long-term allograft function and survival. With higher AKI stage kidneys, a degree of caution is advised, however, could be utilised on an individual basis. Donor kidneys with AKI remain an underutilised resource which could bridge the supply and demand gap, thereby improving outcomes and survival of transplant-waitlisted patients.

The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analysis) flowchart



Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

MP25: The BKV viral serotype mismatch of the UK donor and renal transplant recipient population predicts post-transplant BKV viraemia

Dr Stephanie Chong[1], Dr Claire Atkinson[1], Dr Fernando Yuen Chang[1], Dr Mark Harber[2], Dr Ciara magee[2], Professor Alan Salama[3], Dr Matthew Reeves[1]

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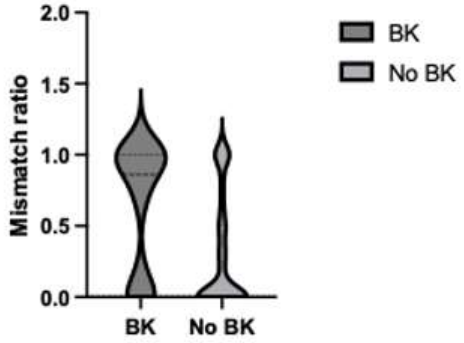
Abstract

Introduction: BK polyomavirus (BKV) has a seroprovalence of >80%. Viraemia occurs in 10% of kidney transplantation recipients and may result in premature allograft failure. Based on phylogenetic analyses, there are 7 known distinct viral serotypes. Given emerging evidence that disease is donor derived, we aim to determine the correlation between donor/recipient BKV serotype mismatch and infection risk, using neutralisation profiles to infer viral serotypes individuals have encountered.

Methods: Paired pre-transplant donor/ recipient serum samples were obtained from the QUOD organ donor biobank and the Anthony Nolan laboratories. Pseudoviruses of 7 serotypes were produced by transfection using capsid protein plasmids and a luciferase reporter plasmid. Using neutralisation assays and luciferase expression, serum titres obtained were expressed as the 50% inhibitory concentration (LogIC50). BKV viraemia was defined as >1000 viral copies/ml. A mismatch score for each pair was calculated using the ratio of mismatches between neutralised serotypes and the number of serotypes exposed to from the donor.

Results: 24 recipients from 174 transplant pairs developed BKV viraemia. 23.8% of recipients and 35.9% of donors showed no neutralising activity. 33% of recipients that developed viraemia showed no neutralising activity against all serotypes, compared to 22% of those without viraemia (NS). However, 87% those with viraemia had a donor that had neutralising activity against one or more serotypes, compared to 60.5% (p = 0.01) of donors to recipients without viraemia. Using ROC curve analysis, a cut off value of 0.71 was associated with a likelihood ratio of 3.1 of developing BKV viraemia, with a sensitivity of 61.9% (CI 40.88% to 79.25%) and a specificity of 80% (CI 72.89% to 85.62%).

Figure 1: Violin plot showing higher mismatch ratios seen in transplant pairs with BKV viraemia



Conclusion: These findings support the hypothesis that BK viraemia post-transplantation is donor derived and suggests that determining pre-transplant donor/recipient serotype mismatch may be a useful tool for risk stratifying patients and allow for tailored immunosuppression.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

MP26: Improving transplant opportunities for patients who are sensitised: Results from an open label, randomised, Phase III feasibility study

Professor Siân Griffin[1], Dr Samaher Sweity[2], Ms Amy De'Ath[3], Dr Tracey Rees[3], Ms Cara Hudson[2], Mr Joseph Parsons[2], Mrs Laura Smith[2], Dr Matthew Robb[2], Ms Victoria Wood[4], Dr Brendan Clarke[4], Ms Kelly Hopkins[5], Dr Sarinder Day[5], Dr Sunil Daga[4], Dr Rommel Ravanan[5]

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Abstract

Introduction: Highly sensitised patients are difficult to match to a compatible donor and wait longer for a kidney transplant. Interventions to prospectively lower levels of HLA antibodies to improve the chances of matching to an organ donor have been reported in the literature but these have not been definitively assessed in randomised controlled trials.

Methods: This was an open label, randomised, phase III feasibility trial (EudraCT number 2017-002602-12). Potential adult recipients with a stable calculated Reaction Frequency (cRF) of >85% who had been wait-listed for a deceased donor kidney transplant for at least three years were eligible for inclusion. The intervention group received rituximab, followed by four plasma exchanges, dexamethasone and bortezomib. A second cycle of treatment was offered if cRF reduction after 12 weeks was <10%. Patients randomised to control group continued to receive routine standard of care. The primary end point was the proportion of patients achieving an absolute reduction in cRF of at least 10% at 12 weeks after the last intervention. Recruitment was terminated in February 2020 due to the COVID-19 pandemic.

Results: Twenty-five participants were recruited (table 1).
Only one participant in the intervention group achieved a reduction in cRF >10% and this was sustained to 48 weeks. The change in cRF over time for each participant is shown in figure 1.

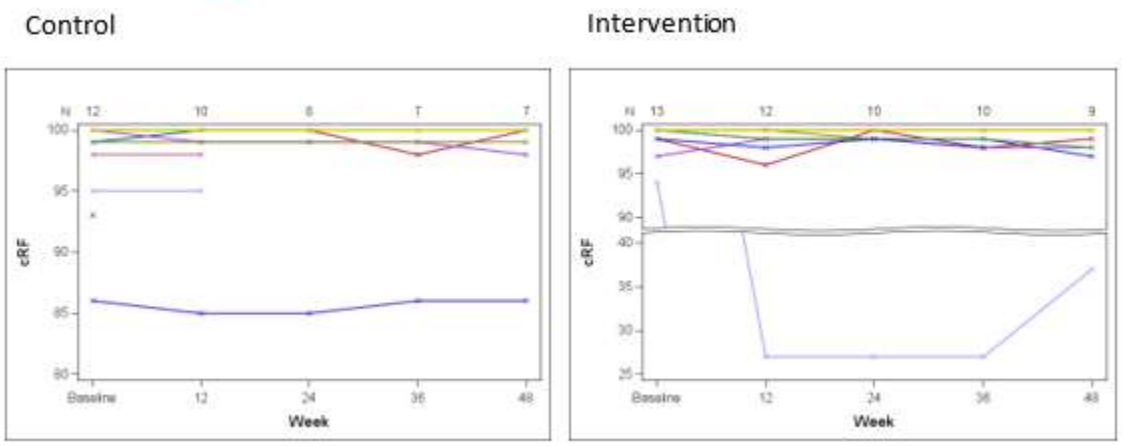
6/12 (50%) participants in the control group and 4/13 (31%) in the intervention group received a transplant during the trial. Three of the transplants in the intervention group were as a result of de-listing previously unacceptable antigen specificities following the intervention.

Discussion: Whilst the interventions were well tolerated and not associated with significant adverse events, the trial did not meet the pre-determined criteria to proceed to a larger study. Further research is needed exploring alternative interventions to improve the chance of transplantation in highly sensitised patients.

Table 1. Baseline characteristics of study participants – number (%) for categorical variables and median (IQR) for continuous variables

	Intervention (n=13)	Control (n = 12)
Female	6/13 (46.2)	6/12 (50.0)
Age (years) at registration	43 (33 – 53)	49.5 (37 – 56)
Previous transplant	11/13 (84.6)	9/12 (75)
Dialysis status Haemodialysis Peritoneal dialysis Not on dialysis	 11/13 (84.6) 2/13 (15.4) -	 11/12 (91.7) - 1/12 (8.2)
Duration of dialysis (years)	5 (3.8 – 11.0)	5 (3.0 – 20.0)
Baseline cRF (MFI cut off 2000)	100 (99 – 100)	99 (96.5 – 100)

Figure 1. Change in cRF over time per participant



Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

MP28: No difference in short-term islet transplant outcomes when switching from alemtuzumab to basiliximab induction in response to the Covid-19 pandemic

Miss Victoria Banwell[1], Mr Adam Stanley[2], Mrs Kirsty Duncan[1], Professor Shareen Forbes[2], Mr Andrew Sutherland[1], Mr John Casey[1]

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Abstract

Introduction: Alemtuzumab is a first line induction agent in UK islet cell transplantation however recipients are more vulnerable to infection because of its potent lymphodepleting properties. During the Covid-19 pandemic a decision was made to switch induction agent from alemtuzumab to basiliximab, but the effect on graft function is not known. The aim of this project was to compare short term outcomes in islet transplant recipients.

Methods: A retrospective review of all patients undergoing islet transplant at the Edinburgh Transplant Unit between February 2012 and October 2022. Outcomes in patients receiving alemtuzumab on induction were compared to those receiving basiliximab +/- etanercept from March 2020. All recipients received the same standard maintenance immunosuppression regimen (tacrolimus and mycophenolate). The primary outcome was graft function (c-peptide >50pmol/l) at 1-, 3- and 12-months post-transplant; secondary outcomes were insulin requirement and percentage change in HbA1c concentration.

Results: There was a total of 75 transplants eligible for inclusion; 3 patients were excluded because of lack of data or death within 3 months of transplant. Of the 72 remaining patients, 58 (80.5%) received alemtuzumab and 13 (19.5%) basiliximab. There was no difference in graft survival between alemtuzumab and basiliximab at 12 months (92% versus 85.7% respectively, p=0.605, logrank test). There was no difference in insulin requirements at 1- (0.24 vs 0.29 units/kg p=0.41), 3- (0.24 vs 0.26 units/kg p=0.7) or 12-months (0.24 vs 0.22 units/kg p=0.76 all Student's t-test) when comparing alemtuzumab and basiliximab respectively. There was also no difference in change in HbA1c at 1- (13.5 vs 16.2% reduction, p=0.6), 3- (17.7% vs 13.6% reduction, p=0.58) or 12-months (9.4% vs 8.3% reduction p=0.92; alemtuzumab versus basiliximab respectively, all Student's t-test).

Discussion :There was no difference in short term outcomes but further evaluation is required to assess whether there is any effect on longer term outcomes.

Categories: Clinical - pancreas and islet (pancreatic transplant (all types) - surgery - recipient clinical care and management)

MP29: Recurrent autoimmune diabetes following SPK: Is pancreas re-transplant an option?

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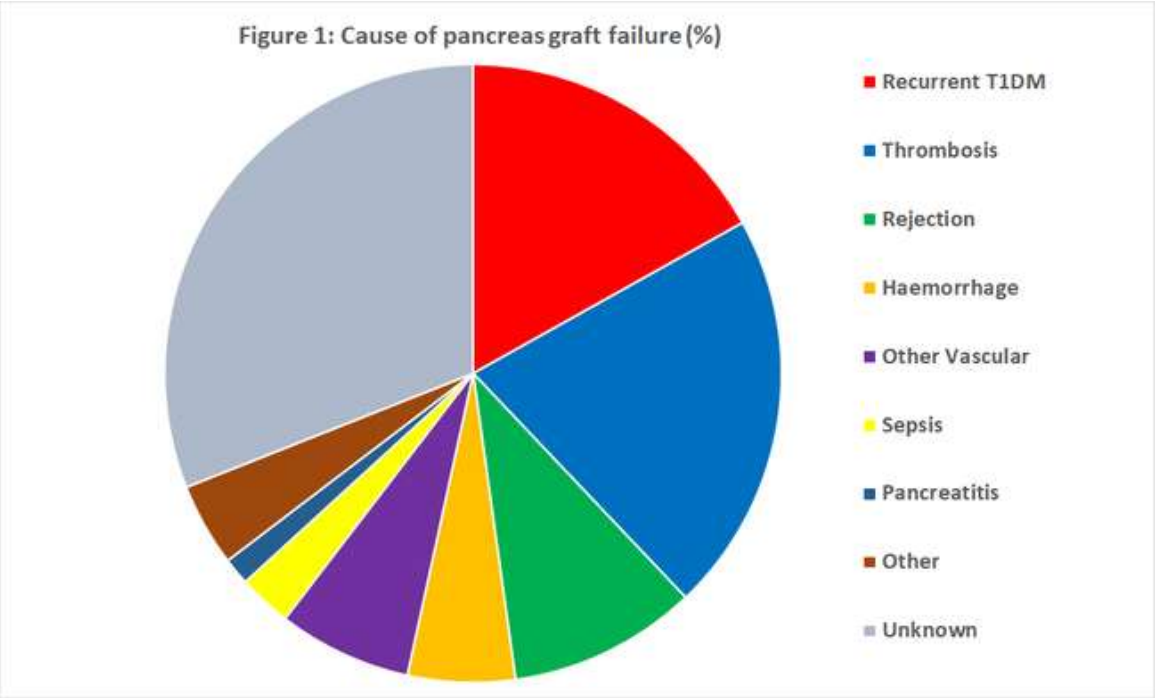
Abstract

Introduction: Autoimmune recurrence of Type 1 diabetes affects up to 10% of pancreas grafts. The outcome of repeat pancreas transplantation in such cases is not clear.

Methods: A retrospective review of all simultaneous pancreas and kidney (SPK) transplants performed at our centre since 2001 lost due to autoimmune recurrence (e.g. rise in anti-islet cell and/or GAD antibodies and biopsy results).

Results: 362 patients received an SPK transplant of which 71 (20%) experienced pancreas graft failure (defined as requirement for insulin). Mean time to pancreas graft loss was 3.2 years (range 1 day – 14.9 years).

Figure 1 shows the cause of pancreas graft failure.



12 patients (3.3%) lost their pancreas from recurrent autoimmune type 1 diabetes (**Table 1**). Two had weakly-positive anti-islet antibodies at the time of transplant (which retested negative at 1 and 4 months post-transplant). All 12 had developed islet autoantibodies at the time of pancreas loss, with three having detectable autoantibodies from up to 3 years before pancreas failure. Only one patient had positive donor-specific HLA antibodies at the time of pancreas graft failure and underwent a pancreas biopsy which confirmed recurrent type 1 diabetes and excluded concurrent rejection.

Demographic	Recurrent Type 1 diabetes leading to graft loss (n=12 pts)
Gender	Male: female 11:1
Age (years)	36 (11)*
Duration of diabetes pre-transplant (years)	28 (11)*
Dialysis modality pre-transplant	PD: 8, Pre-dialysis: 3, HD: 1
Mean HbA1c pre-transplant (mmol/mol)	65.6 (19.4)*
Pancreas function length (years)	4.34 (3.16)*
Anti-islet antibody status pre-transplant	Negative: 10, Weak positive: 2
Anti-islet OR anti-GAD antibody status at time of pancreas graft failure	Positive: 12 (100%)
Dual positivity (anti-islet AND anti-GAD antibody)	n=8 (67%)
Pancreas biopsy	n=4 (33%)
Kidney biopsy	n=3 (25%)

*Median (IQR)

Table 1: Demographic data for patients with pancreas graft failure due to recurrent Type 1 diabetes

Two patients underwent a second pancreas transplant, at 13 and 16 months post-pancreas graft loss. One has normal HbA1c with no detectable autoantibody nearly 10 years post-second pancreas transplant, with excellent renal graft function at 17 years (eGFR > 90 ml/min). The other developed positive anti-GAD antibody 4 years post-pancreas transplant but had normal HbA1c, was insulin-independent and had good renal graft function (eGFR 76 ml/min) just prior to his death 8 years post-second pancreas transplant.

Discussion: Pancreas graft loss due to recurrent type 1 diabetes following SPK transplant was rare, occurred a few years post-transplant and was associated with the presence of pancreas auto-antibodies. Re-transplant following autoimmune graft loss was successful.

Categories: Clinical - pancreas and islet (pancreatic transplant (all types) - surgery - recipient clinical care and management)

MP30: Using Laser Speckle Contrast Imaging to quantify perfusion quality in kidney and pancreas grafts on vascular reperfusion: a proof-of-principle study

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[1]Department of Renal and Pancreas Transplantation, Manchester Royal Infirmary, Manchester, United Kingdom. [2]Lancashire Teaching Hospitals NHS Foundation Trust, Preston, United Kingdom. [3]Department of Transplantation, Addenbrooke's Hospital, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom. [4]Department of Surgery, University of Cambridge, Cambridge, United Kingdom. [5]Moor Instruments Ltd, Axminster, United Kingdom. [6]University of Manchester-Faculty of Biology, Medicine and Health, Division of Diabetes, Endocrinology and Gastroenterology, Manchester, United Kingdom

Abstract

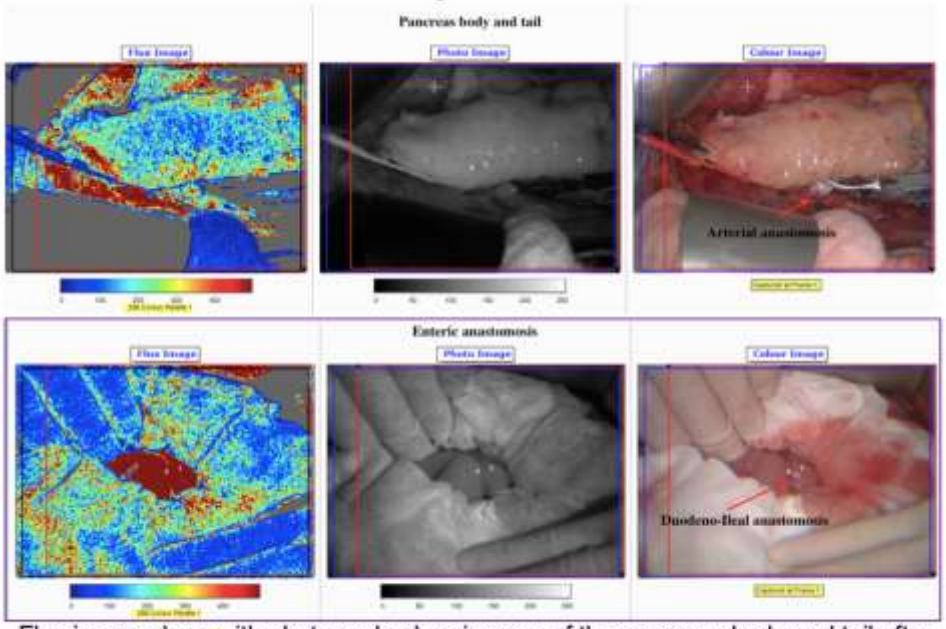
Introduction: Despite the significant advances in transplantation, the accuracy of intra-operative graft perfusion assessment remains subjective, with doppler examination being the only objective adjunct. Laser speckle contrast imaging (LSCI) has been used to assess intra-operative blood flow in neurosurgery and in various surgical specialties. Despite its ability to accurately quantify perfusion at the microvascular level, it has not been clinically evaluated in kidney/ kidney-pancreas transplantation for perfusion characterisation. We aimed to evaluate the utility of LSCI and identify objective parameters that can be quantified at reperfusion.

Methods: After research ethics clearance (Ref:19/NW/0212), the study was registered in ClinicalTrials.gov (NCT04202237). The Moor FLPI-2 ® blood flow imager was used in four patients (1 SPK, 2 deceased and 1 living donor kidney transplants) during reperfusion (commenced just prior to clamp release for approximately 60-seconds) to capture reperfusion data. The overhead theatre lights were dimmed to prevent interference with the laser light. A polarizing filter was used to eliminate glare from reflective tissue. The following parameters were measured: flux (average speed*concentration of moving RBCs in the sample volume), DC (Doppler centroid=intensity of backscattered Laser light), total & valid pixels, valid rate, total & valid area. Flux data was analysed with moor FLPI analysis software.

Results: The perfusion characteristics & flux images are shown in table-1 and figure-1 respectively.

Discussion: This study demonstrates that LSCI is a safe, non-contact imaging modality that provides real time, accurate, high-resolution, full field blood flow images and a wide range of flux data to objectively quantify organ reperfusion intra-operatively in kidney/kidney-pancreas transplantation. Flow characteristics data captured from this method could be used to develop a robust numerical quantification system for the evaluation and reporting of intra-operative organ perfusion. This method can aid intra-operative decision making and perfusion data could be combined with biomarkers and immunological parameters to more accurately predict graft outcomes.

Figure-1



Flux image along with photo and colour images of the pancreas body and tail after release of venous clamp (upper panel) and the duodenal cuff after reperfusion and enteric anastomosis (lower panel).

Table 1:

Case	Region	Flux Mean	Flux Median	DC Mean	DC Median	Total Pixels	Valid pixels	Valid rate (%)	Total area sq.mm	Valid area Sq.mm
1	Kidney upper pole	90.2	79	64.0	65	375624	367444	97.8	8347.3	8165.5
1	Kidney hilum	90.8	79	63.5	65	402080	389950	97.0	8935.2	8665.6
2	Kidney upper pole	151.6	75	60.4	58	375060	230314	61.4	24495.9	15042.3
2	Kidney hilum	158.2	84	61.0	60	402080	246122	61.2	26260.6	16074.7
2	Kidney lower pole	52.8	18	58.5	57	402080	289276	71.9	27475.0	19766.9
2	Ureter	78.6	30	110.6	118	402080	369293	91.8	15614.4	14341.1
3	Kidney upper pole	463.7	320	80.1	73	5372	5372	100	158.6	158.6
3	Kidney mid pole	1953	1948	148.6	148	34475	33913	98.4	1017.8	1001.2
4	Pancreas body	249.2	195	75.7	70	375060	246771	65.8	21590.6	14205.6
4	Pancreas tail	240.5	188	75.8	70	402080	253140	63.0	23146.0	14572.2
4	Duodenal cuff	272.5	165	105.3	103	375060	354463	94.5	21590.6	20404.9

Categories: Clinical - pancreas and islet (pancreatic transplant (all types) - surgery - recipient clinical care and management)

MP31: Outcomes following arterio-venous fistula ligation following kidney transplantation

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Abstract

Introduction: Cardiovascular disease remains one of the leading cause of death post-kidney transplantation. Recent evidence suggests an improvement in functional cardiovascular tests following ligation of arterio-venous fistulae (AVF). Ligation of AVF post-successful transplant could improve outcomes; however, this needs to be balanced against removal of vascular access, which may be needed should the transplant fail.

This investigation aims to:

1. Describe the outcomes following AVF ligation in kidney transplant recipients (KTR), n=190.
2. Compare allograft outcomes against a control group of KTR without AVF ligated, n=380 (1:2 cases:controls)
3. Identify risk factors associated with return to dialysis following AVF tie-off

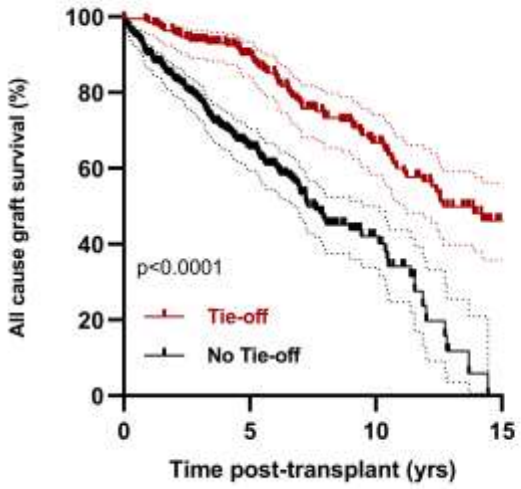
Methods: Patients and outcomes were identified from a prospectively maintained transplant database. Ligation episodes were captured from health records. All patients, irrespective of indication for ligation were included.

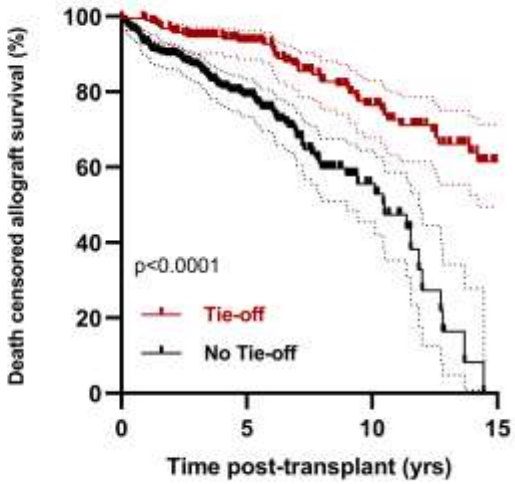
Results: 190 patients (70% males, median age 50(40-59) years, 33% white, 76% receiving a deceased donor transplant and 19% with diabetes) underwent AVF ligation at a median time of 2.5 (2.0-3.3) years post-transplant. Median follow up was 6.4 (5.2-7.1) years post tie-off. 5-yr all-cause and death censored allograft survival was 71.9% and 81.8% respectively.

Risk adjusted cox-proportional hazards regression for; a. all-cause allograft survival, showed fistula excision was independently associated with improved risk of all-cause allograft loss, HR 0.44 (0.2-0.61), p<0.0001 (Figure 1); b. death-censored allograft survival, showed fistula excision was independently associated with improved risk of death-censored allograft loss, HR 0.35 (0.23-0.53), p<0.0001 (Figure 1).

A diagnosis of diabetes (HR 2.13 (1.23-3.369), p=0.007) and time to tie-off post-transplant (HR 1.09 (1.02-1.16), p=0.008), associated with all-cause graft loss. Time to tie-off (HR: 1.19 (1.10-1.30), p=0.0001 and receipt of a living donor transplant (HR 0.33 (0.11-0.98), p=0.045) impacted on risk of death censored allograft loss.

Discussion: AVF ligation post-transplant may have potential graft and patient benefits with careful timing and patient selection.





Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

MP32: Bariatric surgery in renal failure patients improves access to transplantation without increased perioperative risk

Miss Karen D Bosch[1], Miss Liene Sulutaura[1], Emilane Lacea[1], Katarina Burton[1], Naiara Fernandez-Munoz[1], Mr Pratik Sufi[1], Mr Ammar Al Midani[2], Mr Chetan D Parmar[3]

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Abstract

Background: Renal transplantation is not recommended in patients with BMI >40 kg/m^2 as postoperative risks are increased. Bariatric surgery (BS) results in sustained long-term weight loss. However, renal failure patients are theoretically higher risk candidates. Here, we aim to investigate whether renal failure patients who have undergone BS 1) have better access to transplantation and 2) have acceptable outcomes.

Methods: We retrospectively reviewed data from 34 patients with renal failure who were referred for BS between 2013 and 2021. We compared the outcomes of renal failure patients who did (n=19) and did not (n=12) undergo BS. In addition, a group of matched controls (MC, n=19) without renal failure were used for further comparison.

Results: Of the 34 patients referred, 19 proceeded with BS (68% female, median age 52, BMI 46.2 ± 1.1 kg/m2), 3 are completing work-up, and 12 did not proceed with surgery (58% female, median age 58, mean BMI 41.5 ± 1.3). The MC group has similar baseline characteristics and type of surgical procedure (74% female, median age 54, BMI 45.9 ± 1.4 kg/m2, 95% sleeve gastrectomy). Excess body weight loss (EBWL) was 64.6% ± 5.3% at 1 year in renal failure patients versus 55% ± 7% in MC patients. In the operated group, 11/19 (58%) patients reached their treatment target (6 transplanted, 5 placed on waiting list) versus 2/12 (17%) in unoperated patients (2 transplanted). There was no difference in perioperative complications between renal failure and MC groups. There were 7 deaths in the renal failure groups (5 unoperated; 2 operated, unrelated to surgery) and no deaths in the MC group.

Conclusion: Increased access to renal transplantation is seen after BS in renal failure patients and good long-term weight loss is achieved. No evidence of increased perioperative morbidity or mortality is seen. We therefore recommend consideration of bariatric surgery in obese renal failure patients.

Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

MP33: Laparoscopic donor nephrectomy training in the UK: National Re-Audit of the trainee experience

Mr Hemant Sharma[1,2], Mr Adham El-Bakry[1], Mr Chang Wong[3], Mr Bhavesh Devkaran[1], Dr Thilina Gunawardhane[1], Mr Abdel Hammad[1], Mr Dan Ridgway[1], Mr Ajay Sharma[1], Mr Sanjay Mehra[1]

[1]Royal Liverpool University Hospital, Liverpool, United Kingdom. [2]Oschner Medical Center, New Orleans, USA. [3]Manchester Royal Infirmary, Manchester, United Kingdom

Abstract

Introduction: In 2014, National Trainee Survey documented poor Living donor nephrectomy (LDN) training opportunities in the UK and had recommended LDN Fellowships and LDN training as a part of the Transplant Curriculum. We re-audited the initial study to search if there have been any changes in LDN Training across the UK over the last 8 years of our initial study.

Methods: An independent electronic survey consisting of ten questions was disseminated to surgical trainees via a web-based link (Survey monkey) placed on the Herrick Society forum and email/paper invitations to different transplant units across the UK.

Results: A total of 57 responses were received from across the UK. 84%,14%, and 3% of transplant centers were reported to perform hand-assisted LDN, "totally laparoscopic " or "hand assisted" and robotic-assisted LDN respectively. 20% of trainees were PGY1-3, 14% PGY 4-6, 18% post-residency training, and 31 % IMG non-training> 2 yr. transplant experience, 10% IMG non-training < 2 yr. transplant experience respectively. The majority of trainee responses were from England 61% followed by Scotland 18%, Wales 12% and Northern Ireland 7%. 92% of trainees reported that they had performed <01 LDN as primary surgeon. 18% of trainees had been the first assistant in 11-25 donor-nephrectomies, 22% had assisted in 26-50 donor-nephrectomies and 28% of trainees had assisted in >50 donor-nephrectomies. Only 33 % of trainees had been on a course for donor-nephrectomy. There was no correlation in seniority in training grade compared to donor-nephrectomies as primary-surgeon (p=0.76). There was no correlation in donor-nephrectomies as primary-surgeon compared to trainees on rotation (p=0.62) and service post trainees (p=0.78). The likelihood of a trainee performing >10 LDN in transplant training was < 1 in 98.

Conclusions: This study re-confirms ongoing poor training opportunities in LDN in the UK. The Trainers have not utilized the previous report to augment training opportunities in the UK.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

MP34: Ex situ fibrinolytic therapy during normothermic perfusion before transplantation clears intravascular fibrin and is associated with minimal cholangiopathy

Prof Christopher Watson[1], Mr Christopher Bridgeman[2], Mr Stephen MacDonald[2], Ms Corrina Fear[2], Ms Lisa Swift[2], Mr Rohit Gaurav[2], Mr Andrew Butler[1]

[1]Universtiy of Cambridge, Cambridge, United Kingdom. [2]Cambridge University Hospitals, Cambridge, United Kingdom

Abstract

Introduction: Peribiliary intravascular microthrombi have been cited as a cause of cholangiopathy post transplant, and in other work we have showed that an occult fibrin burden, indicated by 2-hour D-dimer release during normothermic ex situ perfusion (NESLiP), was related to both the incidence of cholangiopathy and transplant survival. To combat this, we administered a fibrinolytic cocktail of alteplase with fresh frozen plasma (FFP, a source of plasminogen) to livers undergoing NESLiP prior to transplantation.

Methods: 20 livers underwent NESLiP in back to base mode and were treated with alteplase and FFP as part of a dose-finding study, and are compared to livers not receiving this treatment. D-dimers were measured after 2 hours of NESLiP and cholangiography performed when prompted by clinical or biochemical abnormalities.

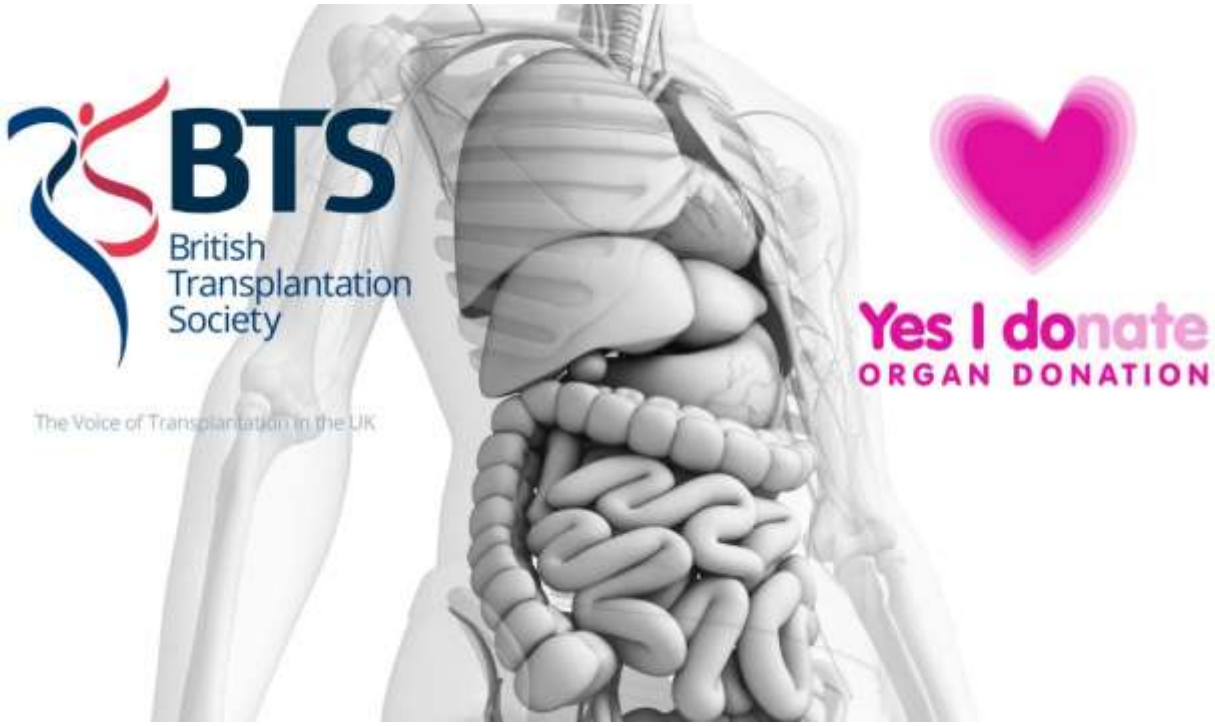
Results: Between 1/2/2018 and 1/11/2022, 74 DBD and 73 non-NRP DCD livers were transplanted following NESLiP. 15 DCD and 5 DBD livers received alteplase during perfusions.

2-hour D-dimer concentrations were significantly higher in livers treated with alteplase/FFP (median 2255ng/ml, IQR 1308-4608 without alteplase/FFP, 6484ng/ml, IQR2201-9511, with alteplase/FFP, p=0.004). 16/59 (27%) non-alteplase DCD livers and 6/74 (8%) non-alteplase DBD livers developed cholangiopathy. One of the 20 alteplase-treated livers developed a common hepatic duct stricture extending to the confluence relating to bile duct cannulation; no other cholangiopathy was seen.

5 DBD livers failed (2 from artery thrombosis including one treated with Alteplase/FFP, and 2 from cholangiopathy), and 5 DCD livers failed (2 from HAT including one alteplase/FFP liver, and 3 from cholangiopathy). 1 year non-censored graft survival was similar between groups. There was no excess bleeding in livers treated with alteplase/FFP.

Conclusions: Cholangiopathy is common in suboptimal livers perfused without fibrinolytic therapy. Fibrinolytic therapy is possible during NESLiP, and is associated with clearance of significantly more D-dimers than NESLiP alone, and minimal cholangiopathy.

Categories: Organ preservation and retrieval (novel technologies - NORS - donor surgery)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Yes I donate
ORGAN DONATION

E-POSTERS

P001: WITHDRAWN

P002: How collaboration increased heart transplants

Ms Debbie Macklam

NHSBT, Leeds, United Kingdom

Abstract

Introduction: Initial funding for DCD hearts was provided by NHSBT in 2015 for a service evaluation of 20 transplants. Despite a business case developed and submitted in 2016 to UK Health Depts it was rejected due to high costs of consumables. As a result heart transplant centres' self-funded via charity/other non-recurrent Trust support. This led to Centre's retrieving themselves giving rise to health inequalities. Charitable/Trust funds were exhausted and DCD heart transplantation became fragmented and ad hoc.

Method: A Joint Innovation Fund (JIF) of £5m was established via the collaboration of the two commissioning pathway providers: NHSBT and NHSE and the JIF Board established. This supported the following collaborations:
•All 7 heart transplant centers developed and supported one set of national retrieval processes and protocols
•Equitable allocation mechanism of DCD hearts around the UK was defined
•Collaboration regarding rota cover enables a 24/7/365 cover to be implemented which maximised potential for DCD hearts to be retrieved.

Results:
•Cross pathway engagement in end to end Debriefs enabled continuous learning
•Removed health inequalities around DCD heart transplant (no longer based on local centres ability to fund)
•Unprecedented collaboration between cardio centres when a hybrid team was piloted successfully
•Consistent older paediatric transplant of adult DCD hearts
•Sustained retrieval and transplantation of hearts during COVID 19
•Increased organ utilisation from DCD donors and increased transplants by more than 25% per year (>60 additional transplants since Sept 2020).

Discussion: How much further could collaboration across the donation and transplant pathways increase the number of transplants?

Categories: Case study submission (may include individual cases or shared learning experiences)

P003: Organ donation in patients on mechanical circulatory support devices at the Royal Papworth Hospital: a retrospective analysis

Dr Aileen Tan[1], George Thundiyl Joseph[2], Andrew Hadley-Brown[3], Tom Edmiston[4], Dr Alex Manara[5], Jo-Anne Fowles[3], Dr Kiran Salaunkey[3], Dr Antonio Rubino[3]

[1]National University Hospital, Singapore, Singapore. [2]NHS Blood and Transplant, Eastern Region, Cambridge, United Kingdom. [3]Royal Papworth Hospital, Cambridge, United Kingdom. [4]University of Cambridge, Cambridge, United Kingdom. [5]Southmead Hospital, Bristol, United Kingdom

Abstract

Introduction: Patients receiving mechanical circulatory support (MCS) often have few comorbidities. Some do not survive due to failure to wean from MCS or develop significant neurologic complications. These patients are potential candidates for organ donation when death is diagnosed using neurological criteria or there are plans to withdraw treatment.

Methods: The data for this analysis were obtained from the hospital's medical records and database maintained by the Organ Donation Services. All patients who died while receiving a form of MCS between 1st January 2012 to 30th November 2021 were included.

Results: A total of 419 patients were identified. 201 patients were referred for organ donation. 157 patients were medically unsuitable. 17 were unsuitable due to forensic reasons, 9 due to refusal of permission, and 2 due to prolonged time to asystole.

There were 16 organ donors (14 circulatory death, 2 brain death). The 30 organ recipients were followed up for a median of 1196 days (range 7- 3286 days). (Table 1)

Discussion: Organs donated from patients on MCS have good long term graft function. It is important to ensure that all potential donors are identified and referred.

MCS	Organs donated	Organs transplanted	Outcome
VV-ECMO	Kidneys	Kidney	Rejection
		Kidney	Functioning
BiVAD	Kidneys	Kidney	Functioning
		Kidney	Functioning
VA-ECMO, then BiVAD	Kidneys, lungs, liver	Kidney	Functioning
		Kidney	Functioning
		Lungs	Functioning
BiVAD	Kidneys	-	
LVAD	Kidneys, lungs, pancreas	Kidney	Functioning
		Lung	Demise
		Lung	Functioning
		Kidney, pancreas	Functioning
VV-ECMO	Kidneys	Kidney	Functioning
		Kidney	Functioning
BiVAD	Kidneys	Kidney	Functioning
		Kidney	Demise
VV-ECMO	Heart, pancreas	Heart	Functioning
BiVAD	Liver	-	
VA-ECMO	Kidneys, liver, pancreas	Kidney	Functioning
		Kidney	Functioning
VV-ECMO	Kidneys	Kidney	Functioning
BiVAD	Kidneys, liver, pancreas	Kidney, pancreas	Functioning
		Kidney	Functioning
BiVAD	Kidneys, lung	Kidney	Functioning
		Lung	Functioning
VA-ECMO	Kidneys	Kidney	Functioning
		Kidney	Functioning
VA-ECMO, then BiVAD	Kidneys, liver	Kidney	Functioning
		Kidney	Functioning
VA-ECMO	Kidneys, liver	Kidney	Functioning
		Kidney	Functioning
		Liver	Functioning

Categories: Case study submission (may include individual cases or shared learning experiences)

P004: Organ Donation following a confirmed Varicella Zoster Virus (VZV) Infection

Mr James Dack, Mrs Liz Brettell

NHS Blood and Transplant, Cambridge, United Kingdom

Abstract

Case Presentation: A young woman had developed chicken pox six days prior to admission. Presented to the emergency department on day five with severe headache and photophobia. The patient was discharged home with oral acyclovir, on day seven of infection the patient had an out of hospital cardiac arrest. Brought into hospital via ambulance and CT head showed an extensive cerebral venous sinus thrombosis and suspicious of brain death. Diagnosis of death completed and confirmed.

Following consent this case required complex and detailed assessment. In conjunction with microbiologists utilising published guidance from the advisory committee Safety of Blood, Tissues, and Organs (SaBTO) the case required additional testing which was only performed at certain laboratories and would take up to 72 hours to be processed. This required the support of the family and the critical care unit.

Outcome: Due to the complex nature of the virus there was concerns about if donation would proceed. On this occasion there was a positive donation outcome with the heart, liver and kidneys all being transplanted and all recipients are reported as doing well.

Discussion: Donation following confirmed varicella Zoster Virus is rare. Due to the potential risks that it can pose to the recipients. This case required careful consideration and complex assessment to ensure a safe donation outcome.

Categories: Case study submission (may include individual cases or shared learning experiences)

P005: Transforming the culture of a challenging Level 1 hospital: A case study

Miss Rebecca Hurley, Mrs Stephanie Marston

NHSBT, Birmingham, United Kingdom

Abstract

Introduction: Successful organ donation requires a collaborative hospital culture, timely donor referrals, with early SNOD involvement in family conversations. When these components are disregarded, the culture towards donation must be challenged, to strive towards best practice. Over a 2 year period, SNODS have made several implementations to challenge the practice of a level 1 hospital trust, to maximise service engagement and opportunity for successful organ donation.

Method: Clinicians are informed of recent data, including donors numbers, missed referrals, and occurrences of poor practice of the trust and comparable trusts via a 6 weekly email. This has generated clinician discussion regarding how to improve current performance.

Annual clinician virtual teaching, has been implemented and attended by the majority of the ITU clinicians. SNODS were able to challenge misconceptions and discuss early referral benefits. Clinicians raised concerns over need for collaborative approaches and data was provided highlighting improved consent rates. Role play was utilised, including pausing conversations, if donation is raised when SNODS are not present. Following these interventions, ITU staff are receptive to early SNOD presence and collaborative approaches.

Early referral posters have been placed in areas frequented by staff, in each bedside folder and clinician desk, are used as promotion throughout ITU. Wider promotion methods include banners and posters throughout the hospital, and organ donation and faith leaflets being visible within visitor rooms.

Embedded SNODs have gained a desk, utilised as organ donation area. By making this area 'bright pink', increases visibility on unit. It includes an embedded timetable, encouraging staff to use the referral line, a key priority, as the on-call commitments negates 24/7 unit visibility.

Discussion: Whilst still requiring significant changes, we have found that small but consistent changes can slowly but positively change hospital culture, increase early referrals and collaborative approaches.

Categories: Case study submission (may include individual cases or shared learning experiences)

P006: A case of opiate overdose and the toxicology implications for brain stem death testing

Dr Leon Cohen[1], Dr Ifan Lewis[1], Dr Joanne Rogers[2], Dr Elizabeth Palmer[2], Dr Hannah Hoskins[3]

[1]University Hospital Wales, Cardiff, United Kingdom. [2]Cardiff and Vale University Health Board, Cardiff, United Kingdom. [3]Grange University Hospital, Newport, United Kingdom

Abstract

Introduction: A patient suffered an out of hospital cardiac arrest following an overdose of morphine sulphate tablets (MST). To satisfy the clinical team that opiate toxicity was not a reversible cause of coma and apnoea toxicology advice was sought regarding ancillary testing. This highlighted differences in testing between laboratories and the need to seek specialist advice early.

Case Presentation: A 44-year-old took an overdose of MST and was found unresponsive by her spouse who contacted the emergency services. Following resuscitation and admission to Intensive Care imaging showed hypoxic brain injury. She had a poor neurological exam throughout.
Brain stem death tests (BSDT) were considered but an acute kidney injury may have confounded the results. A urine opiate screen was discussed with the toxicology team, which revealed complexities in detecting levels of active morphine metabolites and a difference in opiate testing techniques between laboratories. They arranged for a blood sample to be tested at a lab able to report plasma levels of free morphine and metabolites.

Outcome: As the plasma levels of morphine, morphine-3-glucorinide and morphine-6-glucorinide were below the lower limit of detection brain stem death tests were carried out. The patient donated her kidneys, liver, heart valve tissue and eye tissue.

Discussion: It is the duty of clinicians performing BSDTs to exclude potentially reversible causes. Ancillary tests may need to be performed. In this case opiate toxicity needed to be excluded and toxicology advice sought. Various drug tests are offered by laboratories. A urine opiate drug screen performed by an automated analyser will report positive or negative. The assay used locally is not specific and has different cross reactivities to various opiate compounds and metabolites. Other labs nationally can report plasma levels.
From this case we gained a greater understanding of toxicology testing and the implications for performing BSDT.

Categories: Case study submission (may include individual cases or shared learning experiences)

P007: Roxadustat use in the chronic renal transplant patient at King's College Hospital in London

Dr Aneesa Jaffer, Dr Sapna Shah

King's College Hospital, London, United Kingdom

Abstract

Introduction: The use of hypoxia inducing factor (HIF) prolyl hydroxylase inhibitors (PHI) had not been fully investigated in non-dialysis patients but shown non-inferiority to erythropoietin stimulating agents (ESAs) in dialysis patients. In this case study, we look at a chronic transplant patient who has benefited from Roxadustat (HIF-PHI) use.

Case Presentation: A 66year old man with insulin dependent diabetes since childhood got a simultaneous kidney pancreas transplant in 1999. He is now in CKD stage 4 and suffered from symptomatic anaemia (fatigue, dependency on others, unable to work, cold) with a haemoglobin of 84g/L, despite adequate iron stores. He did not consider ESAs due to his strong aversion for regular needle use, having been a lifelong insulin dependent diabetic.

Outcome: From December 2020 to March 2021 (Figure1, A), he commenced Daprudostat (HIF-PHI) as part of a trial to investigate HIF-PHI use in non-dialysis patients. This improved all his anaemia symptoms with a corresponding increment in his haemoglobin. At the end of the trial (Figure 1:B) his haemoglobin came back down, and his anaemia symptoms returned. However, he still wanted to remain off ESAs due to his needle aversion. In April 2022 (Figure 1: C) he commenced Roxadustat, again to good effect.

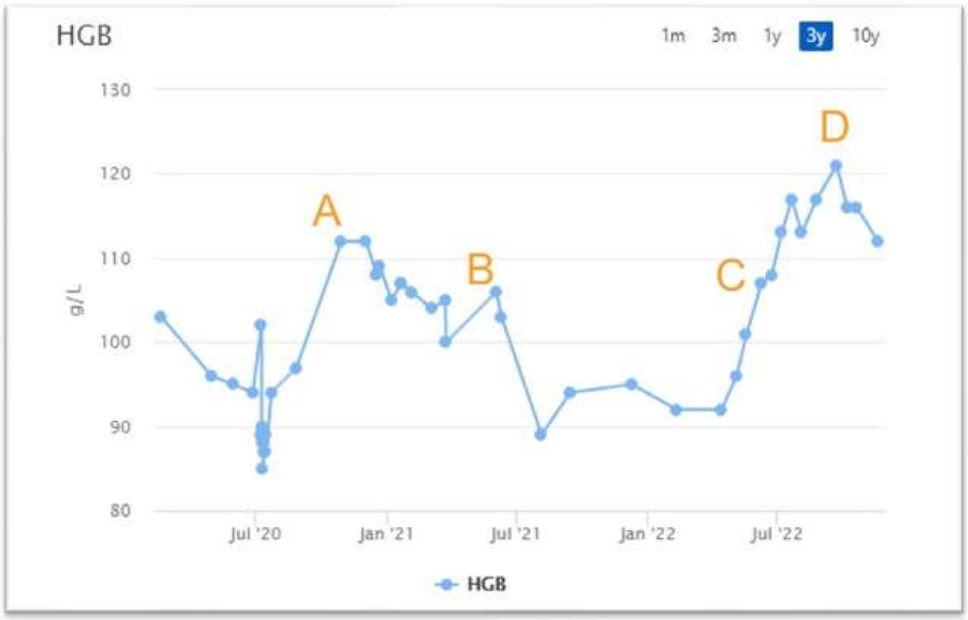

Figure 1: Mr PC's Haemoglobin (HGB) g/L trend. A: Commencement of HIF-PHI for ASCEND-ND trial B: End of trial C: Commencement of Roxadustat D: Dose change from 70mg three times a week to 50mg three times a week.

Discussion: The patient has had a positive experience on HIF-PHIs. Their use certainly has a role in transplant patients. Not only to reduce subcutaneous injections, like in this case, but also to be effective in patients who remain in a chronic inflammatory stat. This could potentially reduce the number of transfusions that patients may receive, making their current transplant and re-transplantation journeys even smoother.

Categories: Case study submission (may include individual cases or shared learning experiences)

P008: Successful Renal Transplantation from a Donor with Marfan's Syndrome: A Case Report

Mr James Thornton, Mr Shakeeb Khan

North Bristol NHS Trust, Bristol, United Kingdom

Abstract

Introduction: Marfan's syndrome is a rare inherited multisystem disorder affecting the fibrillin -1 gene on chromosome 15 resulting in abnormal consistency of the connective tissue with a broad range of clinical severity. There is little in the literature to discuss renal transplant from donors with known Marfan's disease. The US and European guidelines offer no guidance on the issue. Here we will discuss a case of successful Donation after Brainstem Death transplantation from a patient with Marfan's syndrome.

Case Presentation: The donor was a 36-year-old with cause of death intra cerebral haemorrhage. The fact the patient had known Marfan's syndrome was weighed up against the crossmatch and age of the kidney. On preparation of the kidney on the back bench there was a single soft and friable artery with a dissection flap. The recipient was a 48-year-old male with end stage renal failure secondary to polycystic kidney disease.

Outcome: The patient had an uncomplicated recovery with good early pick up in renal function. The post operative ultrasound scans showed no haematoma or collection and good perfusion. Patient was discharged from hospital on day 5. Patient now 12 months post transplant with an eGFR consistently around 80. The recipient had a single follow up CT angiogram which demonstrated normal morphology of transplanted renal artery with no aneurysm, dissection or stenosis.

Discussion: This case report demonstrates that kidney donation from patient's with Marfan's syndrome is possible with a good outcome. As Marfan's is already a rare condition, with an incidence of 1 in 3000 to 5000 individuals, the frequency of organ donation from affected individuals is likely extremely infrequent. This is reflected in the literature with a paucity of evidence on the issue published. As such there are no existing guidelines on follow up.

Categories: Case study submission (may include individual cases or shared learning experiences)

P009

Memory Boxes for Donor Families in Northern Ireland- Working Collaboratively with a Donor Family

Ms Mary Hayes

NHSBT, Belfast, United Kingdom

Abstract

Introduction: In April 2022 Northern Ireland Organ Donation Services Team (NIODST) introduced memory boxes for donor families. This was enabled by the generosity of a donor family who purchased and gifted the items to NIODST.

Case Presentation: I was contacted by donor family member- her brother was a donor a few months prior. Family had been given money in lieu of flowers at funeral and wanted to use the money for organ donation- to support donor families.

Family spoke of the comfort taken from brethren's handprints.

At that time the only keepsakes NIODST offered were handprints and hairlocks, I always felt this could be improved and had an idea of formulating memory boxes for families.

I proposed this idea to the family and were happy to support this initiative.

Together we spent 6 months researching and sourcing items. It was important that the boxes were good quality, right colour and size, that the keepsake items were relevant and appropriate. Each item was shared for approval with many members of the donor family.

With the family's approval I was confident that the memory boxes were appropriate and could provide comfort for grieving families.

Results: It was important that the boxes were aesthetically pleasing. The keepsake items include handprints, hairlocks, forget me not seeds, ECG rhythm strip in small glass bottle and a “heart in their hand” keyring. These items are presented in a cream box. It was important to ensure the presentation of the box was aesthetically pleasing.

Donor families have reacted very positively on receipt of boxes.

Discussion: Awareness initiative supported by my embedded Trust- the concept shared on local journals and social media with a 25K reach.

Memory Boxes are an important part of bereaved families’ journeys. I am delighted that NIODST are now able to offer boxes to donor families.

Categories: Case study submission (may include individual cases or shared learning experiences)

P010: Moving the hospital and keeping the transplant services active and patients safe: Lessons learnt from Royal Liverpool University Hospital - Operation Relocation

Mr Hemant Sharma, Dr Kunal Kapoor, Miss Petra Goldsmith, Mr Dan Ridgway, Mr Abdel Hammad, Mr Sanjay Mehra

Royal Liverpool University Hospital, Liverpool, United Kingdom

Abstract

Purpose: Liverpool Transplant Unit provides transplant services to 1.5 million population of Merseyside and North Wales. The New State of Art Hospital was ready to be moved in October 2022. The major challenges faced by the team were moving the Transplant Services along with the Renal unit, keeping the transplant/dialysis service active and patient safe prior, during and immediate post move.

Methods: Our Experience details the steps taken by the Trust, Transplant and Renal unit during the relocation process. The advance mapping of the process was the key to safe patient transfer and continual transplant services during and immediate post move.

Results: The regular Departmental and Senior Level Transition meetings detailed the move in early 2021. The Clinical Leads were provided details of new wards, new theatres and other clinical need areas. The Hospital Trust produced advance notifications of date of move six months in advance. The Transplant unit discussed and a plan to move in constant communication with nephrology colleagues was formulated. The number of dedicated transplant beds, dialysis unit configuration, staffing needs were addressed 3 months in advance. On the day of move, 2 teams comprising of 2 transplant consultants and 2 trainees were stationed at old and new hospital sites to address any clinical needs and safe transfer. The rest of the team continued with ward rounds, clinics and operative sessions. We performed 5 kidneys transplants peri move with optimum outcomes.

Conclusions: Communication and advance planning was the key to safe patient transfer during the hospital move. We were able to keep out transplant services running with able resource and risk management.

Categories: Case study submission (may include individual cases or shared learning experiences)

P011: Breaking the rules for better care - A continuous improvement and service delivery pilot event

Miss Raynie Thomson

NHSBT, North West, United Kingdom

Abstract

Introduction: Our ambition is to save and improve more lives, where every patient receives the donation they need. Our commitment to this relies on our ability to maximise the professional contribution of our workforce by providing a platform and opportunity to transform service delivery.

Method: "Breaking the Rules for Better Care" was developed by the IHI Leadership Alliance in 2016 as a way to identify healthcare "rules" that get in the way of the care experience.

Using this methodology, we invited everyone in our pilot to consider:
"If you could break or change any rule, to provide a better care experience for patients and staff, what would it be and why?"

Thus, fostering improvement ideas that require clarity or the need to break and redesign current rules, processes, habits or policy that may limit our senior workforce's ability to deliver expert, caring and quality care with joy.

Outcome: The pilot surpassed expectations with over 70 submissions.

Feedback showed that 100% of participates felt involved in service redesign whist feeling "empowered and proud to work for an organisation that wants to improve and takes its employees needs and ideas as the drivers for change".

This inclusive collaboration and senior leadership review has resulted in clear, targeted and achievable service redesign that matters to the teams delivering the service of our future.

Discussion: Engagement and participation alongside targeted and achievable change planning is the key to the success of this event.

This inclusive approach of inviting teams to highlight the rules they would like to break, gave the teams opportunity to really influence quality improvements.

The results will have a direct impact on our ability to deliver the highest standard of patient care and service delivery whilst increasing job satisfaction and joy.

Categories: Case study submission (may include individual cases or shared learning experiences)

P012: A multi-disciplinary involvement of an out of hospital maternal cardiac arrest which led to organ donation

Mrs Maria Prous Alcaraz, Mr Emiliano Mazzaretto, Miss Tamara Vega

NHSBT, London, United Kingdom

Abstract

Introduction: This case study involved pre-hospital emergency services along with the ED, obstetrics, midwifery, paediatrics, intensivists, organ donation team and an incredible family.

Case presentation: The arrest led to prolonged resuscitation at home, with the decision by the Dr on site to perform a resuscitative hysterotomy. He was stretched to the limits of knowledge having performed one 15 years ago. The neonate was declared dead at scene. The partner witnessed this all.

Early referral was made to the organ donation team. Active treatment continued and the following day, the Specialist Nurse was invited into conversations to support the family. This conversation also had the head Midwife and Obstetric consultant present.

The patient was stabilised for neurological death testing (NDT) the following day.

Outcome: An approach by a Specialist Requester (SR) was made for organ donation and the family initially declined. The SR continued to support the family with their wishes and also supported the partner and facilitated the deceased baby's body to attend the unit and placed in the mother's arms. Eventually the family changed their mind and agreed to donation.

Discussion: Early referrals and conversations were not centred around organ donation but about the support we could give to the family. Despite the initial decline, the SR gave the family what they needed and for whatever their reason, they changed their decision and said yes to donation. This led to life saving transplants to 4 people, one of whom was a young boy.

Categories: Case study submission (may include individual cases or shared learning experiences)

P013: Family intent to override an opt-in ODR decision from a BAME potential donor and the role of the Specialist Requester

Ms Maria Prous Alcaraz, Ms Joanne Cox

NHS Blood and Transplant, London, United Kingdom

Abstract

Introduction: Lack of consent is one of the main barriers for organ donation. An opt-in registration on the Organ Donor Register (ODR) is a first-person consent to donate. Nevertheless, those close to the patient are involved in discussions and can ultimately override an ODR registration. Black, Asian and Minority Ethnic (BAME) population contribute to less than 10% of the total ODR opt in registrations. In 2021-2022, three out of the 68 opt in ODR overrides in the UK were from BAME families. Consent rate in the UK is 68% and although organ donation is permissible within the Islamic faith, consent for organ donation amongst this faith group is 80% lower than other faiths (NHSBT, 2021).

Case Presentation: This case study examines the role of the Specialist Requester overcoming an intent from a Turkish Muslim family to override an opt-in ODR registration. This case was complicated by several factors including the inability to communicate face to face with the family, language barriers and limited knowledge of the Islamic beliefs and rituals surrounding death. This involved an open dialogue with the family by telephone and video calls with the aid of a translator for several hours and the invaluable support from an Iman, resulting in the family supporting their loved ones ODR decision.

Discussion: Online resources of communication have become the norm and this was helpful when setting up remote conversations with the family. Religion and culture influence the views of people towards organ donation. Specialist Requesters have potentially the benefit of an increased knowledge of the different views and attitudes of BAME communities towards organ donation as well as religious and cultural end-of-life rituals. The involvement of a faith leader was key and it is recommended as routine practice to support end-of-life care and clarify any religious queries.

Categories: Case study submission (may include individual cases or shared learning experiences)

P014: The negative implications of reduced mental health services on patients following Multivisceral Transplantation and the impact this has on length of hospital stay: A Case Study

Miss Ellie Pinkney, Miss Aimee Pollock

Cambridge University Hospitals, Cambridge, United Kingdom

Abstract

Introduction: Due to the complex nature of Multivisceral Transplantation patients often travel from all regions of the UK and Europe. An average length of stay is 6 weeks resulting in patients and their families being heavily reliant upon ward teams. At present this mainly falls to both ward and specialist nurses being left to support patients mental health needs.

Case study: A middle aged male was admitted for a Multivisceral Transplant last year. His referring hospital was 160 miles away. He had a total inpatient stay of 121 days, with 63 days in a higher level care setting and a further 49 days on the ward. He vocalised feelings of guilt, depression and hopelessness. The nurses would liaise with specialist members of the MDT in order to provide support, however due to systemic issues such as staffing shortages, the individual would go periods without being seen. Chaplaincy provided informal support so that he could rationalise his feelings and begin to process events. The specialist nurses would also visit regularly in order to provide continuity of care from pre transplantation.

Outcome: The patient's length of stay was 7 days longer than medically required due to psychological challenges. Prior to discharge he had been reviewed by specialist services however due to the inconsistent nature of support in the initial period following transplantation, he still had prevalent anxieties surrounding adaptation back to normal life. Feedback gathered depicted that although they are grateful for the care provided, there wasn't enough specialist psychological support available following transplantation.

Discussion: Reduction in specialist services run by designated mental health support nurses can impact a patient's psychological well-being and prolong hospital stay. Multi-organ transplantation has a significant impact on both patients and their families and multidisciplinary involvement should be imperative when caring for this patient group post-transplant.

Categories: Case study submission (may include individual cases or shared learning experiences)

P015: The Organ Donor Memorial - a complex and profound experience

Mr Tim Owen Jones[1], Dr Lynne Barrass[2], Dr Daniel Kennedy[2], Ms Jessica Shiel[3], Mrs Lisa Wilson[4]

[1]London Organ Donation Services Team, NHS Blood and Transplant, London, United Kingdom. [2]The Royal London Hospital, Barts Health NHS Trust, London, United Kingdom. [3]Vital Arts, Barts Health NHS Trust, London, United Kingdom. [4]Organ Donation Committee, Barts Health NHS Trust, London, United Kingdom

Abstract

Introduction: The Barts Health Organ Donor Memorial is being created to commemorate those who have donated organs at the end of their life in the ICU. This multifaceted project explores the extraordinary gift of organ donation and its significance to those involved, donor families, transplant recipients and clinicians. It occupies the intersection between two disciplines - 'arts' and 'health' - each bringing its own intention, language and discourse.

Case Presentation: A contemporary sculpture, inspired by donation stories, comes with many challenges and responsibilities; the development of this memorial spans nearly a decade. The project, proposed by the organ donation committee, who champion deceased donation practice, is funded by the trust's dedicated charity, supporting excellence in care across its sites. It was commissioned by the trust's in-house arts and health service, who deliver projects to enhance the hospital environment and is being created by the renowned artist, whose practice draws on the ineffability of lived experience and how memory processes this over time.

Outcome: The memorial, in recognition of past donors in its prominent hospital location, intends to provide a place for reflection and to inspire conversation about organ donation. Through an open call to interview, the piece aims to engage both those with personal experience and the trust's diverse communities, some disproportionately affected by the need for transplant. As the project evolves, the work has become ever richer and more profound.

Discussion: This case study explores the commissioning process, creation, and delivery of the memorial in a clinical environment with multiple stakeholders. It considers the sensitivities, challenges, and responsibilities the team faces when creating a contemporary artwork to support and celebrate the exceptional altruistic gift of organ donation. The journey of this organ donor memorial and its many aspects can be used as guidance for those developing similar projects.

Image by Saad Qureshi

Categories: Case study submission (may include individual cases or shared learning experiences)

P016: Lassa Fever and donation

Teresa Haro

NHSBT, Eastern Donation Team, United Kingdom

Abstract

Introduction: This case study involves two proceeding donors that were being cared for on the same ICU as a patient with Lassa Fever.

Case Presentation: Myself and a colleague were characterising two consented donors in the same hospital overnight. Hub Ops called to inform me that a Liver Transplant Surgeon at the donating hospital wanted to make us aware that a patient with confirmed Lassa fever recently was transferred out of this ICU. The surgeon was concerned about any proceeding donors having risk of exposure. While Hub ops informed the on call regional manager (RM), I investigated this with the ICU, microbiology, RM, and local Deputy Medical Director. The nurse in charge informed me, they had reported this to Public Health England (PHE). Any staff in contact with this patient was sent home to isolate for 21 days. Transmission of Lassa Fever occurs through bodily fluids so assuming that nurses are taking correct standard precautions the risk of transmission is low. The microbiologist contacted PHE for further information about their investigation. I was advised to investigate the proximity of the donors to the Lassa fever patient during their admissions. Neither donor was in close proximity on the unit; however, the process was paused overnight to ensure all investigations were undertaken.

Outcome: The Microbiologist was satisfied that the trust's internal risk assessment was carried out under UK Health Security Agency guidelines where no other patients were identified as a risk and donation continued to proceed. All accepting centres were made aware of the Lassa Fever patient and no organs were declined based on this.

Discussion: Lassa Fever is very rare in this country, therefore it was very important to understand the implications of the virus and fully investigate the risks to recipients as well as staff and transplant teams before proceeding.

Categories: Case study submission (may include individual cases or shared learning experiences)

P017: A retrospective observational study on the declining liver transplant assessment rates at Edinburgh Transplant Centre

Miss Jingjing Wang[1], Miss Diana Wu[2], Miss Meenashe Suresh[1], Dr Thomas Manship[3], Mr Ahmed Sherif[2], Mr Chris Johnston[2]

[1]University of Edinburgh, Edinburgh, United Kingdom. [2]Edinburgh Transplant Centre, Edinburgh, United Kingdom. [3]Freeman Hospital, Newcastle, United Kingdom

Abstract

Introduction: Despite the increasing prevalence of liver disease, there has been a significant reduction in the number of liver transplant assessments as well as a corresponding decrease in liver transplants at Edinburgh Transplant Centre (ETC) since 2018. Given that this predates the COVID-19 pandemic, we sought to explore the other potential reasons for this decline through a retrospective analysis of the ETC database.

Methods: Data was collected for all adult patients assessed for primary elective liver-only transplantation at ETC between 2017-2021. Patients assessed for multi-organ transplants, for Variant or Super-Urgent indications, <18 years old and repeated assessments were excluded. Variables including patient demographics, transplant indication, referring health board and Scottish Index of Multiple Deprivation (SIMD) were examined by year. Kruskal-Wallis and Chi-square tests were used to assess for significant differences in variables over time.

Results: A total of 733 patients fit the study criteria. There was no statistically significant change in sex, age, bilirubin, creatinine, INR, sodium, UKELD, height, BMI, indication, or SIMD over the study time period ($p>0.05$). Patient weight significantly increased over time (median 78kg in 2017, 85kg in 2021, $p=0.014$). Geographical variation was also noted, with NHS Health boards referring for assessments at varying rates not necessarily accounted for by differences in disease prevalence (CLD mortality rates were taken as a surrogate for disease prevalence).

Discussion: Geography may be contributing to changes in assessment rates at ETC with implications on resource allocation and transplantation. As such, more research into geographical variations must be taken forward to find solutions, which may include local leads to standardise decision making and regular external auditors, as well as the continuation of ongoing weekly invitations to external referring physicians to transplant assessment meetings and outreach clinics.

Categories: Ethics, law and public policy (legislation, changes to legislation)

P019: 'Donor Families Together' Building an online community of peer support for deceased organ donor families

Mrs Angela Ditchfield

University of Salford, Manchester, United Kingdom

Abstract

Introduction: The intention for this research is to provide families/friends of organ donors, additional bereavement support and aftercare by connecting them using a social media platform. With society relying on social media for all aspects of daily living it is an ideal channel to connect the bereaved. The aim of the study is to evaluate the influence of an online peer to peer support network on families of organ donors. The development of a Facebook group for donor family/friends, offers peer support during the difficult days and weeks that follow donation, bringing them together regardless of location and providing 24hr access to the network.

Methods: The conversational data from the Facebook group was downloaded and analysed combined with Individual donor families' interviews. A thematic analysis approach was employed to analyse the narrative taken from the group and key themes identified.

Results: 1452 comments scraped (downloaded) from the group, 3 polls, and six participants interview transcripts where analysed.
The key themes identified are:

- Peer support, building a community for the bereaved
- Sharing and supporting lived experiences, connection through death and donation
- Sharing and supporting the pain of grief
- Sharing and supporting with information, resources, and anything that might help
- Acknowledgment of the 'Gift of Life'

Discussion: This unique longitudinal contemporary study has provided organ donor families with instant access to peer support, connecting individuals who share similar lived experiences, building a community which acknowledges the complexity of organ donation. Validating the need to provide support to families following organ donation. The grief experienced by organ donor relatives produces additional layers of ambiguity and yearning which is shared amongst the community.

The group 'Donor Families together' is currently owned and managed by donor families and supported by University of Salford. It is a growing community of friendship and support, providing hope in grief.

Categories: Psycho-social aspects (recipient - donor - family care- MDT (exclude clinical management)

P020: Exploring patient, family and clinician perspectives about the psychosocial factors influencing access to kidney transplantation and transplant outcomes for children

Dr Ji Soo Kim[1,2,3], Professor Stephen D Marks[1,2], Professor Jo Wray[3]

[1]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]Centre for Outcomes and Experience Research in Children's Health Illness and Disability ORCHID, Great Ormond Street Hospital for Children NHS Foundation Trust, London, United Kingdom

Abstract

Introduction: Kidney transplantation is often seen as the optimal form of kidney replacement therapy for children and young people (CYP) with stage 5 Chronic Kidney Disease (CKD5). Psychosocial factors have been cited to delay their access to a kidney transplant, however it is unclear what these factors are.
We undertook a multi-centre qualitative study that explored the range of psychological and social factors that CYP, their carers and their paediatric nephrology multi-disciplinary team (MDT) perceived to influence how soon a CYP with CKD5 accesses a kidney transplant. This included factors that were perceived to influence kidney transplantation outcomes or deemed important to patients and their families in terms of their quality of life (QoL).

Methods: Semi-structured interviews were conducted with CYP, their carers and their paediatric nephrology MDT across 7 paediatric nephrology units in the United Kingdom. These interviews were reviewed for pertinent themes using thematic Analysis following the approach of Braun and Clarke.

Results: A total of 36 interviews were conducted with 13 families and 16 members of the paediatric nephrology MDT. The majority of participating families identified as White (57%), followed by Black (22%) or Asian (21%). The following themes were deemed important to accessing kidney transplantation and post-transplant outcomes: health beliefs; relationship with and trust in healthcare; support networks; family relationships; socioeconomic circumstances; culture and race; and mental health and coping strategies. Specific challenges from living with CKD5 and living through the COVID-19 pandemic were also discussed due to their impact on QoL and accessing a kidney transplant.

Discussion: There are a wide range of psychosocial factors that are perceived to influence a CYP's access to kidney transplantation. Longitudinal and prospective studies are needed to fully assess the relationship between these psychosocial factors and a CYP's access to, and outcomes of, kidney transplantation.

Categories: Psycho-social aspects (recipient - donor - family care- MDT (exclude clinical management)

P021: Barriers and facilitators to staff asking patients about their psychological well-being in the post-renal transplant out-patient clinics

Ms Adele Hewitt[1], Dr Sunil Daga[2], Dr Janette Moran[3], Dr Chloe Miller[3]

[1]University of Leeds, Leeds, United Kingdom. [2]Transplant Unit, St James's University Hospital, Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom. [3]Renal Psychology, St James's University Hospital, Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom

Abstract

https://imgur.com/a/WMRvN9F

Introduction: Research has shown patients undergoing a renal transplant are more likely to experience psychological distress, which can lead to higher rates of transplant rejection. The UK kidney Patient Reported Experience Measure (PREM, 2020) found that a large proportion of renal patients were not being asked about their psychological well-being during the transplant process. Therefore, it is important to explore this further to support patients' psychological needs and understand any difficulties staff are experiencing.

Method: An online survey was administered to thirty-five renal staff of which twenty-seven responded. A mixed methods design was implemented, and staff rated how 'Important', 'Confident' and 'How often' they ask patients about their psychological well-being post-renal transplant. They also rated how useful certain facilitators might be. Free text boxes were included which were analysed using Rapid Qualitative Analysis.

Results: Staff reported that it is 'Very important' or 'Extremely important' to ask about patients' psychological well-being, that they were 'Fairly confident' or 'Very confident', and that they 'Sometimes' or 'Often' ask about patients' psychological well-being post-renal transplant. Staff reported having opportunities to discuss clinical work, staff training in psychological difficulties and more time in clinic as being the most helpful. Qualitative barriers included time pressures, low confidence, and lack of privacy. Facilitators included an increase in psychological staffing and staff training.

Discussion: Staff feel it is important to ask about patients' psychological well-being post-renal transplant, however they do not feel as confident doing so, which may be impacting how often they initiate these conversations. Extra training, more time in clinic and more psychology staff could increase staff confidence. These findings may also help explain why patients reported in the PREM that they were not being asked about their psychological well-being during the transplant process. This can also help implement change in the renal department and provide better psychological care.

Categories: Psycho-social aspects (recipient - donor - family care- MDT (exclude clinical management)

P022: A process evaluation of the Bereavement Follow Up Programme in critical care at the Queen Elizabeth University Hospital, Glasgow, Scotland

Mrs Aileen Labram[1], Professor Bridget Johnston[2], Dr Margaret McGuire[1]

[1]University of Glasgow, Glasgow, United Kingdom. [2]University of Glasgow, GLASGOW, United Kingdom

Abstract

Introduction: Mortality figures in critical care are high with the trajectory of dying often unpredictable (Efstathiou, et al., 2019). The effect on the grieving process for relatives is well documented. However, in the UK, there is no current research of bereavement follow up interventions. This research evaluates a current bereavement follow-up programme in Critical Care in Scotland.

Methods: This is a mixed methods process evaluation following the UK MRC guidelines. (Moore, et al., 2014). Existing mortality and bereavement follow up data along with a relative's questionnaire examine the process variables through quantitative data. Qualitative interviews with key stakeholders and relatives provide in-depth data about the experience of the intervention.

Results: Overall fidelity is mixed, with Implementation affected by the reliance on a single contact and the collection of contact details. From the questionnaire, 94% of relatives want contact from critical care. Qualitative interview data indicates poor recall of events leading to unanswered questions, with the needs of relatives not always apparent to staff. There are significant benefits for those relatives who do engage with follow-up. Stakeholders want to support bereaved families but there are organisational and resources limitations.

Discussion: Bereavement follow up is acceptable to both relatives and stakeholders. Recognition of significant loss and the need for ongoing support are important mechanisms of change. However, there is a gap in relatives engaging with the programme highlighting implementation issues, and the need to better understand potential adaptations and mechanisms of change. For the donation community the results are important as they highlight the ongoing bereavement support needs of our donor families.

Categories: Psycho-social aspects (recipient - donor - family care- MDT (exclude clinical management)

P023: WITHDRAWN

P024: Uncovering the memory response in sensitised renal patients

Adrienne Seitz[1,2], Clive Carter[2], Alan Salama[3], Brendan Clark[2], Eric Hewitt[4], Richard Baker[1]

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Abstract

Introduction: The level of pre-transplant immune risk is assessed through the measurement of serum IgG HLA antibodies which can be produced by two sources – long lived plasma cells in bone marrow niches and circulating memory cells. Memory cells can circulate without producing antibodies, therefore their contribution to the antibody pool may not be fully appreciated. We describe an in vitro method for improving the assessment of pretransplant risk through the non-specific stimulation of peripheral memory B cells.

Methods: Peripheral blood mononuclear cells from 3 unsensitised volunteers (UV) and 6 sensitised patients (SP) were cultured for 9 days with the toll-like receptor agonist R848 and interleukin-2. Cell culture supernatant was concentrated and tested for IgG HLA antibodies using ONELAMBDA single antigen beads. This was compared with a concurrent serum sample. Resting Day-0 and stimulated Day-9 B cell phenotypes were assessed using flow cytometry to confirm the switch to antibody secreting cells ($CD24^{-}CD38^{hi}$), class-switched memory cells ($CD27^{+}IgD^{-}$) and plasma cells ($CD38^{+}CD138^{+}$), Figure 1.

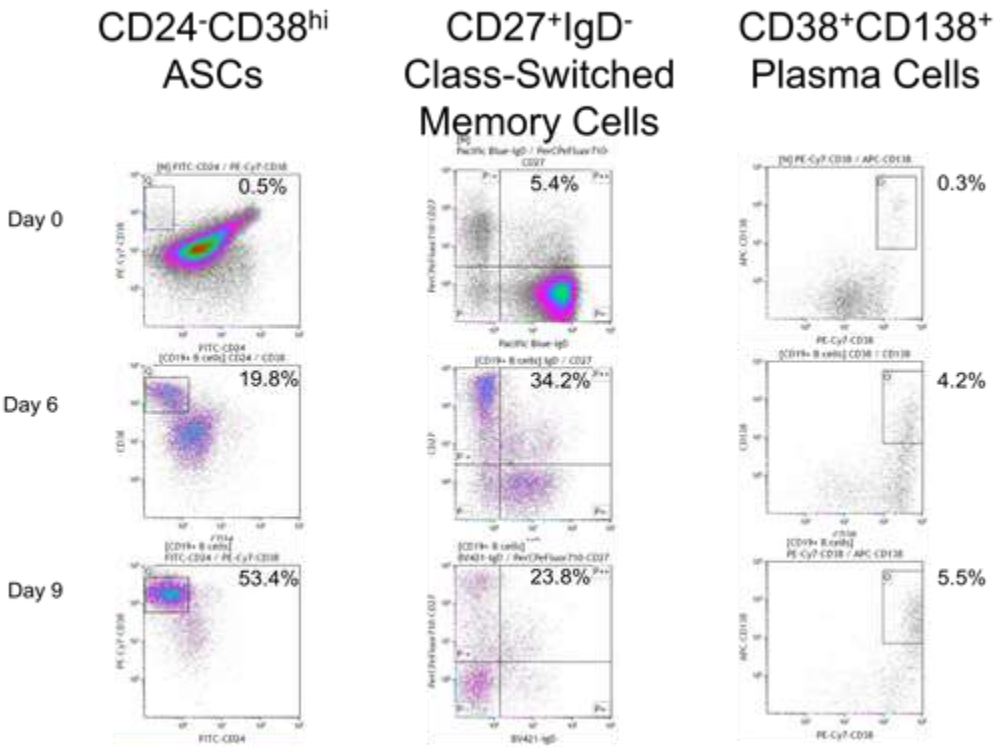


Figure 1. Non-specific Stimulation of PBMCs with R848/IL-2
$1x10^6$ PBMCs were cultured with R848 and IL-2 for up to 9 days. Following culture, the cells were surface-stained. Representative scatter plots depicting the change in cell phenotype from Day 0 to Day 9.

Results: Class I and Class II HLA antibodies were found in the cell supernatant. 65% of HLA specificities found in cell supernatant were also present in the concurrent serum sample. In cases where the supernatant demonstrated additional HLA antibodies, these either could be attributed to a previous transplant, or had been present in the patient's historic serum profile. Results are presented in Table 1.

	Number of HLA abs in current serum	Number of HLA abs in supernatant (HLAsp)	Are all HLAsp also present in current serum?	Number of HLAsp not in serum	De novo HLAsp (not in cumulative serum)	Probable route of de novo HLAsp	Re-occurring HLAsp (in cumulative serum profile but not current)
UV1	0	0	NA	NA	NA	NA	NA
UV2	0	0	NA	NA	NA	NA	NA
UV3	0	0	NA	NA	NA	NA	NA
SP1	35	12	No	2	DPA1*02:01, DPA1*02:02	transplant	NA
SP2	23	3	No	3	B57, B58	transplant	B63
SP3	32	9	No	4	DQA1*05:03, 05:05, 06:01	transplant	DQA1*04:01
SP4	14	0	NA	NA	NA	NA	NA
SP5	5	0	NA	NA	NA	NA	NA
SP6	5	2	Yes	NA	NA	NA	NA

Table 1. Results obtained from 3 unsensitised volunteers (UV) and 6 sensitised patients (SP)

Discussion: We demonstrate a method that can uncover the peripheral memory response. This uses technology that is accessible to most H&I laboratories and can provide additional information of pre-transplant risk. This assay will be useful when assessing live donor pairs where the donor may repeat mismatches associated with pregnancy, and in regrafts, prior to removal of 'other unacceptable antigens'. Finally, this method may be applicable when considering delisting strategies in the context of novel peri-transplant agents.

Categories: Basic and translational science (as per category - all science)

P025: A modified perfusate solution for *ex vivo* lung perfusion improves organ function and reduces tissue inflammation

Miss Jenny Gilmour[1], Miss Anne-Li Sigvardsson[2], Professor Andrew J Fisher[1], Professor Simi Ali[1]

[1]Newcastle University Translational and Clinical Research Institute, Newcastle upon Tyne, United Kingdom.
[2]Xvivo Perfusion AB, Göteborg, Sweden

Abstract

Background: *Ex vivo* lung perfusion (EVLP) allows assessment of donor-lungs prior to transplantation and provides a therapeutic platform for reconditioning of extended criteria organs. Steen solution was developed for optimal physiological support of donor-lungs during EVLP and has been the gold standard perfusate for many years. However, the drive for more prolonged perfusions to support therapeutic interventions means further optimisation is required. We investigated the impact of adding acetyl salicylic acid and retinoic acid to boost anti-inflammatory and antioxidative properties in a modified Steen solution.

Methods: Lungs were harvested from donor pigs (n=10) and randomised into two groups to undergo 24 hours cold storage followed by 4 hours EVLP on the XVIVO system with either original Steen or modified Steen. Physiological parameters were assessed during EVLP, as well as the inflammatory profile in tissue and perfusate. Donor-lungs (n=4) prior to cold storage and EVLP were used as control tissue.

Results: Lungs perfused with modified Steen showed reduced pulmonary vascular resistance (Figure 1, p=0.0083) and stable pulmonary artery pressure despite achieving higher flows (n=0.0125) at 3 hours compared to original Steen. Lung tissue transcriptomics using RNAseq showed negative enrichment of inflammatory pathways, such as the TNF-α signalling via NFkB pathway (Figure 2, p=0.004) in modified Steen compared to original Steen. Protein levels of TNF-α and IL-6 in perfusate remained stable during perfusion with modified Steen, whilst levels increased significantly at 4 hours vs. 1 hour in lungs perfused with original Steen (p=0.0102 and p=0.0272 respectively).

Conclusions: Modified Steen solution improved physiological function and reduced key inflammatory pathways during EVLP compared with original Steen. Addition of anti-inflammatory and anti-oxidants to perfusate may help support more prolonged perfusions but studies in human lungs are required to confirm this.

Figure 1. PVR following perfusion with Steen versus modified Steen

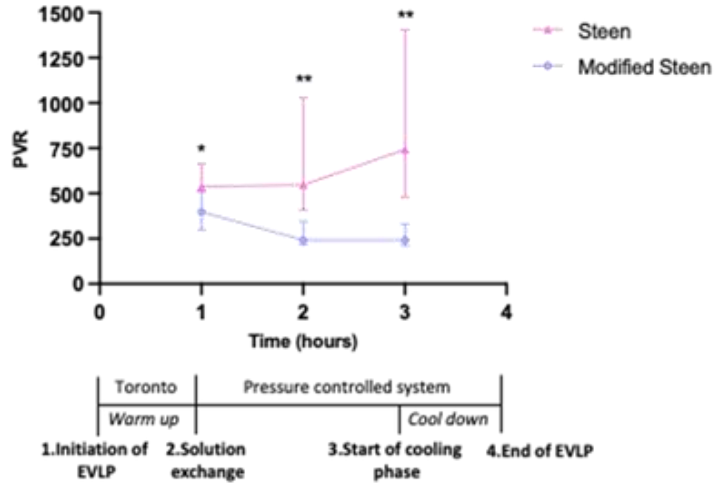
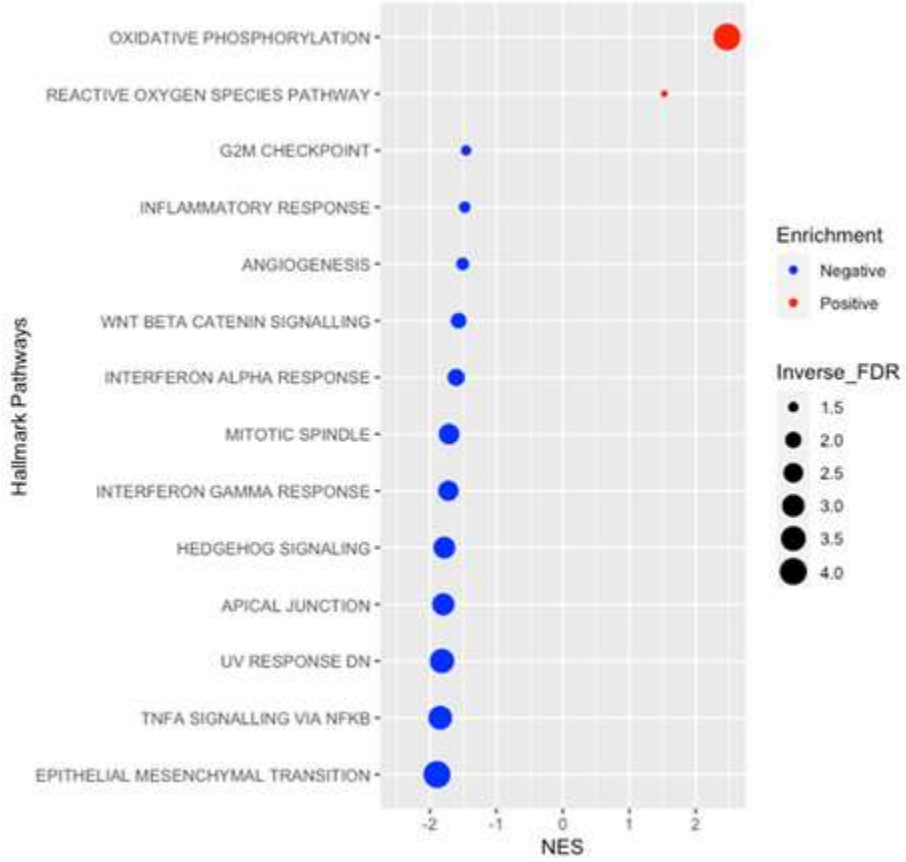


Figure 2. Pathways enriched in modified Steen versus Steen



Categories: Basic and translational science (as per category - all science)

P026: Evaluation of minimal factor H therapy administered to kidneys during ex vivo normothermic perfusion as a treatment to improve ischaemia reperfusion injury

Miss Chloe Connelly, Miss Beth Gibson, Mr Balaji Mahendran, Mr Samuel Tingle, Miss Lucy Bates, Miss Madison Cooper, Miss Emily Thompson, Mr Colin Wilson, Professor Neil Sheerin, Professor Kevin Marchbank

Newcastle University, Newcastle upon Tyne, United Kingdom

Abstract

Introduction: Complement activation is a key mechanism in the process of ischaemia reperfusion injury (IRI). The alternative pathway (AP) of complement is an important driver of IRI through direct activation, and through the amplification of the classical and lectin pathways. The main regulator of the AP is factor H. Normothermic perfusion (NMP) is a unique platform to deliver drugs to organs prior to transplant. We hypothesised that homodimeric mini-factor H (HDM-FH; PMID:29588430) may protect the transplanted kidney from complement mediated damage when administered during EVNP.

Methods: In the first arm of the study, a model of porcine whole blood perfusion was optimised by extending retrieval and static cold storage (SCS) times of porcine kidneys to assess the full efficacy of HDM-FH. In the second arm, kidneys were retrieved from female white landrace pigs following the optimised retrieval and storage protocol. One kidney from each pair was randomised to receive 5mg of HDM-FH (~8mg/mL). Kidneys were perfused at 37°C with autologous blood using extracorporeal membrane oxygenation for 6 hours (n=5, work ongoing). HDM-FH binding was measured using ELISA and immunofluorescence. Complement activation was measured by quantifying Bb deposition in tissue.

Results: 25 minutes retrieval time followed by 16hrs SCS lead to an increase in complement activation and markers of ischaemic injury including apoptosis, inflammatory cytokines and fibrosis. Around 3.75mgs of HDM-FH bound during perfusion, with only a small amount lost in the urine suggesting saturation was achieved. HDM-FH binding within the kidneys was confirmed using immunofluorescence (figure 1.). HDM-FH localised to the glomeruli with deposition increasing over the time of the perfusion. AP activation was reduced in kidneys receiving HDM-FH as demonstrated by reduced Bb deposition.

Discussion: Coating kidney's with HDM-FH prior to transplant would likely reduce AP complement activation and help prolong graft survival after transplant.

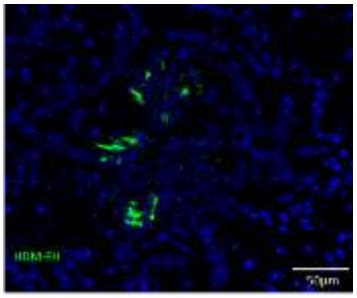


Figure 1. HDM-FH deposited in glomerus.

Categories: Basic and translational science (as per category - all science)

P027: CD9 – A new marker for regulatory B cells?

Dr Adrienne Seitz[1,2], Dr Clive Carter[2], Dr Brendan Clark[2], Dr Eric Hewitt[3], Dr Richard Baker[1]

[1]Renal Transplant Unit, St James's University Hospital, Leeds, United Kingdom. [2]Transplant Immunology, St James's University Hospital, Leeds, United Kingdom. [3]School of Molecular and Cellular Biology, University of Leeds, Leeds, United Kingdom

Abstract

Introduction: Regulatory B cells (Bregs) have been described in different B subsets. Although there is no specific marker for Bregs, it is accepted that they produce IL10. Bregs have previously been characterised through the expression of proinflammatory (TNFα) and regulatory (IL10) cytokines and have been demonstrated in high numbers in the transitional B subset (TrBs, CD24hiCD38hi) of kidney transplant recipients (KTRs) with stable function. TrBs can be further divided into T1 ($CD24^{+++}CD38^{+++}$) and T2 ($CD24^{++}CD38^{++}$). CD9 is expressed on most leucocyte subsets, can influence cellular processes, and has been associated with IL10 secretion. Following lung transplantation, patients with increased numbers of $CD9^{+}CD24^{+}CD38^{+}$ cells were less likely to develop bronchiolitis obliterans.

Methods: CD9 surface expression was tested in 65 KTR samples. Whole blood was stained with monoclonal antibodies against CD19, CD9, CD24, CD38, CD27, IgD, IgM and CD10. CD9 was then compared with cytokine expression (IL10 and TNFα) following stimulation with CPG/CD40L/PMA/Ionomycin in 256 KTR samples to determine regulatory capacity. Intracellular staining of cytokines was determined using flow cytometry.

Results: Surface CD9 expression varied across B cell subsets (median proportion of $CD9^{+}$: memory-8%, naïve-10.9%, T2-34%, T1-76%, p<0.0001), with the highest expression found in T1 cells (median MFI: 1.09 memory, 1.47 naive, 2.48 T2, 8.55 T1, p<0.0001). Gating on $CD9^{+}$ cells increased the T1:T2 ratio. Following stimulation with CPG/CD40L/PMA/ionomycin, $CD9^{+}$ cells within each B subset demonstrated a higher IL10/TNFα ratio (Median of differences in IL10/TNFa ratio: Memory-0.04759, p<0.0001, Naïve-0.52, p<0.0001, T2-0.1118, p<0.0001, T1-0.3003, p<0.0001, Figure 1).

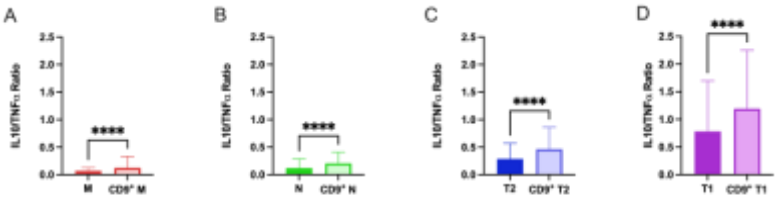


Figure 1. Comparison of CD9 expression and IL10/TNFα ratios obtained from A) memory, B) naive, C) T2, and D) T1 subsets

Discussion: We observed increased CD9 expression in the $CD24^{hi}CD38^{hi}$ TrB subset, especially T1 cells which have been shown to have higher regulatory capacity in renal allotransplantation. Furthermore, $CD9^{+}$ cells demonstrated an increased regulatory potential measured by a higher IL10/TNFα ratio. We suggest CD9 as a convenient potential marker of Bregs in renal transplantation that will need investigation in prospective studies.

Categories: Basic and translational science (as per category - all science)

P028: Renal allograft microvascular EVs shows distinct molecular signature

Mr Chong Yun Pang[1], Mr Joseph Dobbins[1,2], Ms Gemisha Cheemungtoo[1,2], Mr Samuel J Tingle[1,2], Mr Balaji Mahendran[1,2], Ms Lucy Bates[3], Professor John Kirby[1], Mr Colin Wilson[1,2,3], Professor Neil Sheerin[1,2,3], Professor Simi Ali[1]

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Abstract

Introduction: Extracellular vesicles (EVs) are lipid-bound vesicles naturally released by all cell types, functioning as mediators for paracrine signaling and reflection of the parent cell state. This study aimed to isolate donor kidney allograft EVs and understand the role of these EVs and their implications in transplant outcome.

Methods: Kidney preservation solution was instilled into the renal artery of kidney allografts (DBD= 9, DCD= 8, Live=8) and collected from the renal vein prior to transplantation. The fluid (herein termed kidney effluent) was subjected to differential centrifugation to isolate EVs. These EVs were subsequently characterised before assessing 37 exosomal surface epitopes.

Results: Isolated EVs showed enrichment for tetraspanin CD9, endosomal sorting complex marker TSG101 and absence of endoplasmic reticulum marker calnexin via western blot. These EVs also showed classical morphology under electron microscopy. Nanosight determined the EV modal size distribution to be less than 200nm and were not significant between donor groups. However, total EV concentration was identified to be higher ($p<0.05$) in DCD compared to living donor (Figure 1) and a positive correlation ($R= 0.3721$, $p<0.05$) was also identified between allograft cold ischemic time vs EV concentration. Subsequent analysis of exosomal surface epitopes indicated distinct markers expressed on EVs depending on donor type (Figure 2).

Discussion: This project is the first to demonstrate the isolation of EVs in the microvasculature within renal allograft before transplantation. Distinct surface epitopes were identified between DCD, DBD and living donor group, which can modulate recipient immune response after transplantation. Characterisation of kidney effluent EV profiles prior to transplantation could not only help to underpin the molecular mechanisms of EV function, but also help to predict transplant outcome.

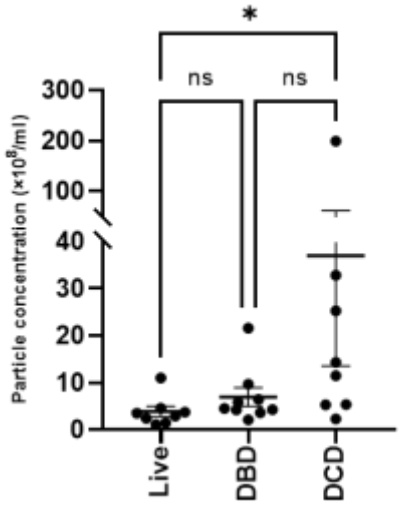

Figure 1. Isolated EV concentration adjusted for starting kidney effluent volume.

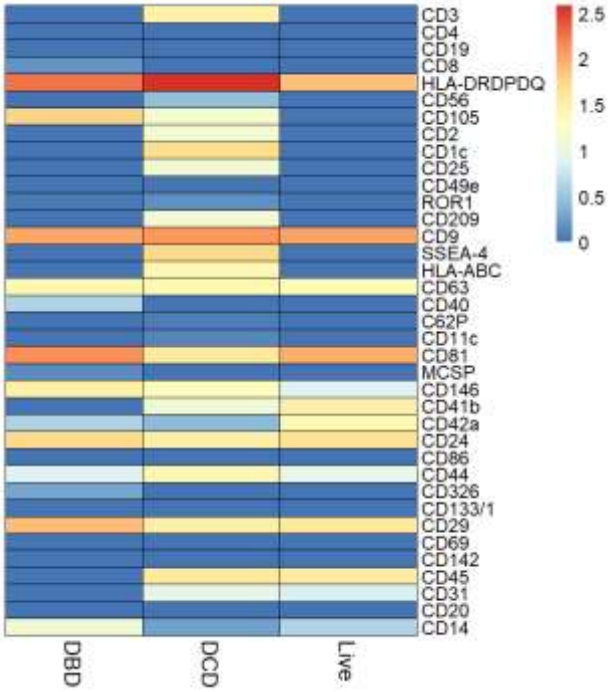

Figure 2. Exosomal surface epitope expression presented as log (MFI+1) on a heatmap.

Categories: Basic and translational science (as per category - all science)

P029: Can BMP-7 prevent Ischaemia reperfusion injury induced renal damage an in vivo IRI model?

Miss Aeliya Zaidi[1,2], Dr Irina Grigorieva[1], Mr Tahawar Rana[2], Miss Charlotte Brown[2], Dr Gilda Pino-Chavez[1,2], Dr Robert Steadman[1], Mr Rafael Chavez[2,1], Dr Soma Meran[1], Mr Usman Khalid[1,2]

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Abstract

Introduction: Ischaemia reperfusion injury (IRI) is a major cause of acute kidney injury (AKI) and subsequent renal fibrosis in native kidneys; and delayed graft function (DGF) and subsequent poor graft survival in transplanted kidneys. Bone Morphogenic Protein 7 (BMP-7), an osteogenic protein with anti-fibrotic properties, has been shown to reverse TGF-B1 induced myofibroblast differentiation and prevent renal fibrosis. The aim of this study was to test the utility of BMP-7 in attenuating injury in a rat kidney IRI model.

Methods: Adult male Lewis rats were injected with BMP-7 (250mg/kg) or PBS control (n=6 each) pre-op, 1d, 7d, and 14d postop. A midline laparotomy was performed and pedicles of both kidneys were clamped for 45mins. Kidney tissue was retrieved at 28d. Paraffin blocks were made and sectioned for H&E and immunohistochemistry. RNA was extracted from kidney tissue for RTqPCR analyses of kidney injury/fibrosis markers. Blood was taken pre-op and at 28d for measurement of serum creatinine.

Results: IRI led to marked damage with key markers of inflammation and fibrosis being significantly raised at 28d, and evidence of renal fibrosis within both renal cortex and medulla.

BMP-7 did not prevent renal fibrosis in this model, as exemplified by histological damage scores, Hyaluronan matrix staining within the interstitium, and similar mRNA expression of fibrosis (Acta2, Col1a1) markers. BMP-7 treated kidneys did however display less perivascular inflammation, and increased expression of HAS-1. Similarly, no difference in change of serum creatinine (as a marker of renal function) was observed in either of the groups.

Conclusion: BMP-7, as utilised in this rat IRI model, did not confer any protection against renal injury and fibrosis, however it did show less perivascular inflammation. The significance of this along with increased expression of HAS-1 warrants further study.

Categories: Basic and translational science (as per category - all science)

P030: A functional assessment of hepatic ischaemic injury on tumour behaviour

Miss Gemisha Cheemungtoo[1], Mr Joseph Dobbins[1], Mr Samuel Tingle[2,1], Mr Balaji Mahendran[2,1], Miss Lucy Bates[2], Miss Michalina Zatorska[1], Mr James Clark[1], Mr Rodrigo Figueiredo[2,3], Dr Olivier Govaere[1], Mr Colin Wilson[2,3]

[1]Translational and Clinical Research Institute, Newcastle University, Newcastle-Upon-Tyne, United Kingdom. [2]NIHR Blood and Transplant Research Unit in Organ Donation and Transplantation at Cambridge and Newcastle Universities, Newcastle-Upon-Tyne, United Kingdom. [3]Institute of Transplantation, Freeman Hospital, Newcastle-Upon-Tyne, United Kingdom

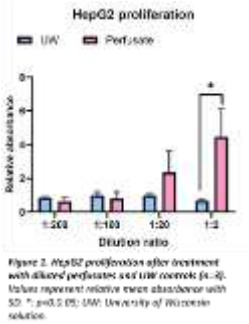
Abstract

Introduction: Hypothermic oxygenated perfusion (HOPE) preservation improves outcomes after donation after cardiac death (DCD) liver transplantation. Database analysis has also suggested significantly lower recurrence of hepatocellular carcinoma (HCC) in recipients with HOPE-DCD livers compared to non-perfused livers. Whilst HOPE may protect donor livers against severe ischaemia-reperfusion injury, the exact mechanisms for lower recurrence rates are not fully understood. As HOPE preservation solution, or perfusate, dynamically flushes out various inflammatory and ischaemic markers, the effect of these contents on in-vitro HCC behaviour was investigated.

Methods: An HCC cell line, HepG2, was functionally assessed after treatment with samples of HOPE perfusates from 3 human livers declined for transplant. In-vitro HepG2 proliferation, stemness and invasive potential, and clonogenicity were assessed by an MTS assay, cytokeratin-19 (K-19) immunocytochemistry, and a colony-forming assay respectively.

Results: All 3 HOPE perfusate samples resulted in significant HepG2 proliferation and increased aggressive behaviour potential. HepG2 proliferation was significantly greater at 24 hours after treatment with 1:2 perfusate dilution of perfusates compared to blank perfusate (Figure 1, $p<0.05$). An increased invasive potential (development of membrane invadopodia) was also observed at 24 hours with each perfusate treatment from 1:2 down to 1:20, with no observed difference in K-19 expression compared to our untreated control.

Discussion: End-timepoint HOPE perfusate from declined livers facilitate increased HepG2 proliferation and aggressive behaviour. HOPE may reduce early tumour recurrence in HCC patients by dynamically flushing out these ischaemia-induced, liver-secreted trophic factors.



Categories: Basic and translational science (as per category - all science)

P031: Expression CD46, CD59 and CD55 in response to hypoxia in tubular epithelial cells and endothelial cells

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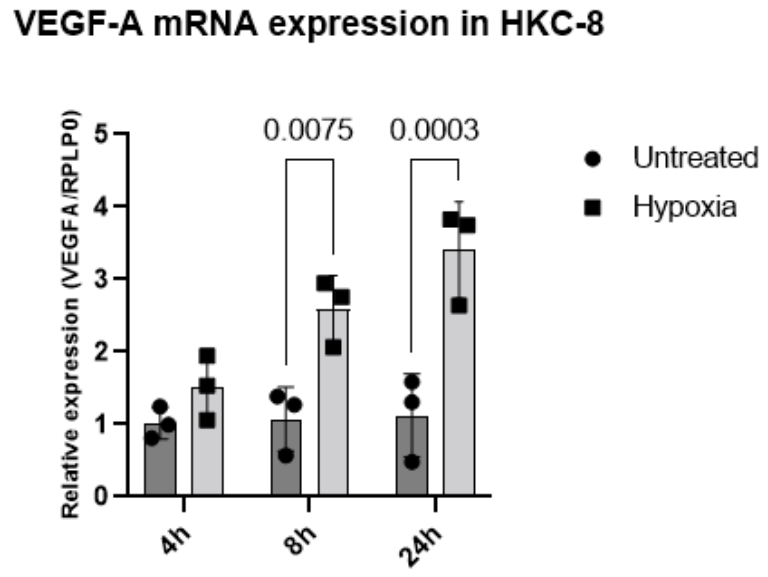
Abstract

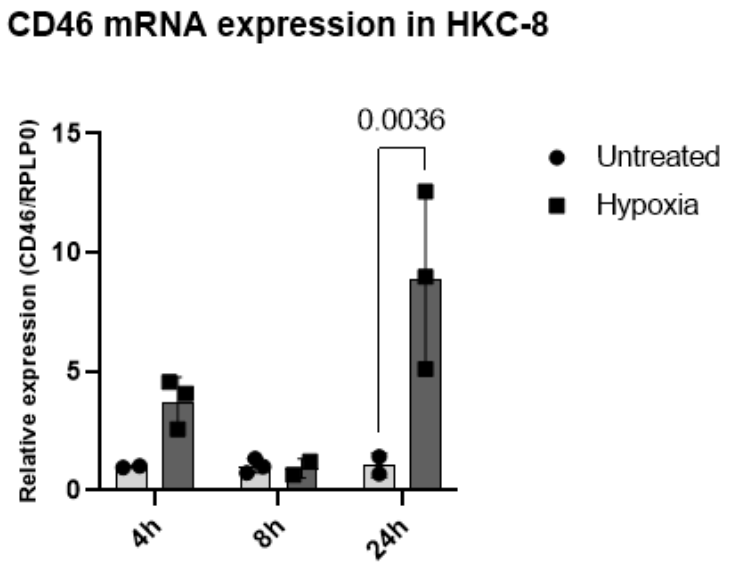
Background: The complement system is strongly associated with the inflammatory response to ischemia-reperfusion injury which is an inevitable event during kidney transplantation. Hypoxia is associated with a series of intracellular events, including changes in gene transcription mediated by hypoxia-inducible factor 1-alpha (HIF-1α). Vascular endothelial growth factor (VEGF) is one of the HIF-1 alpha target genes which is expressed in response to hypoxia. HIF-1α protects host cells from injury and could induce an environment in which complement regulatory proteins expression is changed. The study aims to identify the CD46, CD59 and CD55 expression in HKC-8 (human renal proximal tubular cells) and HMEC-1 (human microvascular endothelial cells) during hypoxia.

Methods: Cells were incubated in a hypoxic incubator (1% O2) for 4, 8, and 24 h. qRT-PCR was used to estimate the level of VEGF-A (as a positive control), CD46, CD59 and CD55 expression. A similar analysis was performed in untreated, control cells. Experiments were repeated three times independently.

Results: qRT-PCR analysis of HKC-8 cells in hypoxia revealed significant increases in the expression of VEGF-A after 8h (p=0.0075) and 24h (p=0.0003) (Figure A), whereas HMEC-1 cells responded to hypoxia after 8 h (p=0.0327). Increased expression of CD46 after 24h was observed in epithelial cells (p=0.0036) (Figure B). However, there were no statistically significant changes in CD55 and CD59 expression. No change was seen in endothelial cell regulatory protein expression in response to hypoxia.



A)



B)

Conclusions: Our preliminary data suggests that CD46, as one of the key regulators of complement activation, is upregulated in hypoxia. However, CD55 and CD59 do not change their expression in hypoxic conditions. Together these results provide important insights into the effect of HIF-1α and the activation of the complement system in hypoxic condition. Further study is needed to identify the impact of hypoxia on complement regulation in kidney tissues.

Categories: Basic and translational science (as per category - all science)

P032: Clinical decision support systems in transplantation: are they helpful or a hindrance in patient care? A systematic review

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Abstract

Introduction: Although clinical decision support systems (CDSS) have been used since the 1970's for a wide variety of clinical tasks including optimisation of medication orders, documentation and improved patient adherence, to date, no systematic reviews have assessed their utilisation and efficacy in transplantation. The aim of this study is to systematically review studies that utilised a CDSS and assess impact on patient outcomes.

Methods: Original research articles on CDSSs utilised in clinical practice within transplant medicine were identified using the following databases: MEDLINE, AMED, CINAHL, EMBASE, PubMed, NCBI-PMC, Cochrane Central Register of Controlled Trials (CENTRAL), and the Transplant Library from inception to 1 March 2022.

Results: 48 papers were identified as meeting the author-derived inclusion criteria, including tools for post-transplant monitoring, pre-transplant risk assessment, waiting list management, immunosuppressant management, and histopathology interpretation. Studies included 15,984 transplant recipients. Tools aimed at helping transplant patient immunosuppressant management were the most common (19 studies). 34 studies (85%) found an overall clinical benefit following the implementation of a CDSS. However, just over half of the studies validated their tool against standard clinical care (n=29, 60.4%). Twenty-two of the tools achieved statistical significance through their validation testing (45.8%).

Discussion: Implementing CDSS in transplant clinical settings can improve multiple outcomes for patients. Some reviews examining CDSSs have called for a complete re-examination of the role that CDSSs play in clinical care, while other researchers note that the future of CDSS effectiveness may lie in integrating the technology more seamlessly into electronic health records or creating innovative approaches to the design of the tools using technologies such as Artificial Intelligence. As with other frequent interventions in medicine such as checklists or treatment bundles, it is important that the way the CDSS would actually work and to what degree that it target the clinical problem be fully evaluated prior to the design.

Categories: Basic and translational science (as per category - all science)

P033: Developing an electrochemical dipstick biosensor to detect urinary microRNA biomarkers of Delayed Graft Function at the point-of-care

Dr Daniel Smith[1,2], Dr Kate Simpson[1], Dr Lucy Newbury[1], Mr Elliot Jones[3], Mr John-Mark Seymour[3], Prof Donald Fraser[1], Dr James Redman[2], Mr Usman Khalid[1,4], Dr Timothy Bowen[1]

[1]Wales kidney Research Unit, Cardiff University, Cardiff, United Kingdom. [2]School of Chemistry, Cardiff University, Cardiff, United Kingdom. [3]Haydale Ltd., Ammanford, United Kingdom. [4]Cardiff Transplant Unit, University Hospital of Wales, Cardiff, United Kingdom

Abstract

MicroRNAs (miRNAs) have recently emerged as potentially highly useful biomarkers of numerous disease processes, including kidney disease. We have developed and optimised RT-qPCR-based methods for robust, precise urinary miRNA quantification and used them to identify a urinary microRNA panel that predicts delayed graft function (DGF) following kidney transplantation. However, RT-qPCR is time-consuming and costly, requiring experienced laboratory staff and expensive equipment. The aim of this study was to use electrochemical technology to develop cheap, reliable biosensors for rapid detection of urinary miRNA DGF biomarkers.

We established proof of concept by creating glassy carbon electrode-based biosensors that detected urinary miRNAs faster and more sensitively than RT-qPCR. However, glassy carbon electrodes were neither cost-effective nor suitable for production at scale. We thus assembled disposable screen-printed carbon electrode (SPCE)-based miRNA biosensors, which performed comparably to RT-qPCR in analysis of patient urine samples.

Nevertheless, due to complexities in their modification, these SPCE-based sensors were not adaptable for use at point-of-care. We have therefore designed aqueous-based chemistries for use with screen-printed graphene electorodes (SPGEs) based on amine-modified, functionalised graphene. These SPGEs facilitate solution-based immobilisation of DNA oligonucleotides of complementary sequence to target miRNAs at the biosensor surface. By these means we are developing methods to produce novel, cost-effective, disposable electrochemical dipstick biosensors for rapid and routine detection of urinary miRNA DGF biomarkers at the point-of-care.

Categories: Basic and translational science (as per category - all science)

P034: Exploring the endocytic uptake mechanism of naked antimiR in human proximal tubule epithelial cells

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Abstract

Introduction: MicroRNAs are potential targets through which to modulate ischaemia reperfusion injury in kidney transplantation. In human ex-vivo kidneys, it has been shown that their inhibitors (antimiRs) can be delivered to the proximal tubule epithelium without the use of transfection reagents and that this is an endocytic process. We have investigated whether this naked uptake by proximal tubule epithelial cells (PTEC) occurs *in vitro* and which endocytic mechanism is responsible for entry into these cells.

Methods: PTEC were isolated from human kidneys declined for transplantation and maintained in culture on transwell inserts without passage for up to 8 days. 40nM of naked fluorescently-labelled oligomer was added to maintenance media and uptake assessed by fluorescence microscopy and flow cytometry. siRNA knockdown of the endocytic receptor LRP2 was used to target receptor-mediated endocytosis. LRP2 knockdown was confirmed with qPCR and flow cytometry. Macropinocytosis was demonstrated with fluorescently-labelled dextran. Colocalisation analysis was performed on standardised confocal microscopy z-stacks to determine co-occurrence of the oligomer with dextran.

Results: Naked oligomer uptake was demonstrated in PTECs by increased signal on flow cytometry which increased with length of oligomer exposure. A vesicular pattern was shown on immunofluorescent microscopy images in keeping with endocytic uptake. There was a high level of co-occurrence of the oligomer with dextran. LRP2 knockdown had no effect on oligomer uptake.

Discussion: Understanding the endocytic uptake mechanisms of antimiRs will help to elucidate which cell types can be most easily targeted with these potential therapeutics without the need for additional delivery technologies. Greater clarity on the entry mechanisms will be useful to guide how antimiR delivery to cells might be enhanced. The ability to deliver antimiRs to human primary PTEC *in vitro* without the use of transfection reagents makes this a more relevant *in vitro* model for studying the downstream effects of antimiRs in the kidney.

Categories: Basic and translational science (as per category - all science)

P035: Validation of the preclinical models for renal ischemia reperfusion injury. A systematic review

MSc Lente Lerink[1,2], MD PhD Michèle de Kok[2], PhD John Mulvey[1], PhD Sylvia le Dévédec[3], BSc Alexander Markovski[2], PhD Rob Wüst[4], Professor Ian Alwayn[2], Professor Rutger Ploeg[1,2], MD PhD Alexander Schaapherder[2], PhD Jaap Bakker[4], MD PhD Jan Lindeman[2]

[1]University of Oxford, Oxford, United Kingdom. [2]Leiden University Medical Centre, Leiden, Netherlands. [3]Leiden University, Leiden, Netherlands. [4]Amsterdam University Medical Centre, Amsterdam, Netherlands

Abstract

Introduction: Ischemia and subsequent reperfusion is inevitable during organ transplantation. Ischemia reperfusion injury, the paradoxical increase of tissue damage following reperfusion, is a major contributor to early graft dysfunction and compromises long-term outcomes. Despite decades of intense research and numerous preclinical successes, no intervention has been successfully translated to the clinic yet, an observation that implies a profound translational gap.

We recently identified metabolic failure as the mechanism underlying clinical renal ischemia reperfusion injury (delayed graft function). Similar conclusions were also reached for acute kidney injury following major surgery. These clinical leads now provide an opportunity to evaluate preclinical models. We therefore performed a systematic review of the preclinical studies that reported on metabolic aspects in the context of renal ischemia reperfusion injury, in order to identify parallels and incongruences between preclinical models and clinical context.

Methods: Systematic literature searches were performed in PubMed, EMBASE and Web of Science according to PRISMA guidelines.

Results: The systematic searches identified 35 preclinical studies that reported (aspects of) the post-reperfusion metabolome. Most studies were performed in rats or mice, four in pigs, and two in dogs. A systematic inventory of these preclinical studies pointed to a series of translational hurdles.

Discussion: This systematic review identified profound methodological inadequacies in preclinical studies of renal ischemia reperfusion injury. Altogether, inconsistencies amongst preclinical studies as well as profound translational gaps between preclinical and clinical studies provide a rationale for the failure to translate preclinical successes. Optimisation of the experimental models and consensus on optimal methodological practices is urgently needed.

Categories: Basic and translational science (as per category - all science)

P036: Covid-19 Infection and its Impact on HLA Antibody Profile in Renal Transplant Patients

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Welsh Transplantation and Immunogenetics Laboratory, Talbot Green, United Kingdom

Abstract

Introduction: Within our laboratory, regular HLA antibody testing is undertaken for patients awaiting renal transplantation, using LABScreen™ HLA antibody assays. Each patient result is assessed and scruitinised together with previous test results and sensitisation information, i.e., pregnancy, transfusions, and previous transplants, to determine clinically relevant HLA antibodies.

During the Covid-19 pandemic, we observed changes to HLA antibody profiles in patients with no indicated sensitisation event. This included increased levels of reactivity for existing HLA antibodies and expanded antibody profiles.

Investigation revealed that several of these patients had Covid-19 infection prior to these changes, and a review of all patients with known Covid-19 infection was undertaken.

Method: All patients known to have had Covid-19 were identified. Their HLA antibody results prior to and following infection were collated, including the associated median fluorescent intensity (MFI) values, sensitisation and immunosuppressant status. Comparison between the two sample dates, focussing on LABScreen™ Single Antigen test MFI values and patient calculated reaction frequency (CRF); a measure of sensitisation, was undertaken to determine whether Covid-19 was a causative factor affecting HLA antibody status.

Results: 66 patients on the transplant list were reported to have had Covid-19. 52 patients demonstrated no detectable change in CRF or MFI. Of the 14 patients in which HLA antibody changes were observed, five demonstrated a change in MFI only, and nine demonstrated a change in both CRF and MFI (Table 1). All HLA antibody changes observed were maintained in subsequent test samples for these patients.

	Number of patients with:				
Patients with HLA antibody changes by group (n=number of patients)	Previous transplant	Blood transfusion	Pregnancy	No sensitisation	Immunosuppression change at time of Covid-19 infection
No change in CRF (n=5)	4	3	1	0	Unknown
≤10% CRF change (n=2)	1	0	0	1	1
>10% CRF change (n=7)	3	4	4	1	1

Table 1: Overview of patients with changes in HLA antibody profile, following Covid-19 infection, and their associated sensitisation history

Discussion: Of those patients known to have had Covid-19 infection, 14% demonstrated an increase in CRF and therefore increased sensitisation. Two of these patients were identified to have undergone immunosuppression reduction, as a consequence of their Covid-19 infection, not previously indicated. This highlights the importance of timely HLA antibody testing following a sensitising event to ensure effective patient management.

Categories: H&I (HLA typing - crossmatching - immunologically complex recipients)

P037: Exploring the effects of KIR-HLA polymorphisms on renal transplant outcomes

Dr Patrick Trotter, Ms. Jyothi Jayaraman, Ms Keziah Crick, Dr Jessica Padley, Dr Daniel Hart, Professor John Trowsdale, Dr James Traherne, Professor Menna Clatworthy, Dr Miriam Manook

University of Cambridge, Cambridge, United Kingdom

Abstract

Introduction: Killer cell immunoglobulin-like receptors (KIRs), expressed on natural killer cells, play a significant role in immunity. KIRs interact with HLA class I expressed by target cells and regulate cytolytic activity to self HLA (the 'missing-self hypothesis'), and may be activating or inhibitory. However, dissecting the role that KIRs play in renal transplantation is challenging, since, like HLA, the KIR locus is one of the most polymorphic regions of the human genome and is not routinely captured in genome wide association studies. We sought to explore the impact of different HLA–KIR combinations on relevant transplant outcomes, including BK infection and rejection.

Methods: Genomic DNA was extracted from stored blood taken from recipients undergoing renal transplantation between 2008-2017 at a UK centre. Whole KIR genotyping was performed using qKAT (a bespoke, multiplex real-time PCR method to determine gene copy number for each KIR locus). Donor HLA genotype data was obtained from the tissue typing laboratory. Transplant outcome data was obtained from local hospital records.

Results: In the 2008-2017 period, 1747 renal transplants were performed, and DNA successfully extracted and sequenced on 1345 (77.0%). Of these recipients 249 (18.5%) developed BK viraemia, 255 (18.9%) developed acute rejection (either cellular or antibody-mediated), and 243 (18.0%) had detectable donor specific antibodies, but these outcomes were not associated with expression of any specific KIR gene in isolation. When considering KIR-HLA combinations, 187 recipients had a donor with HLA-cw4, the ligand for KIR2DS4. KIR2DS4 Wild type/full length mutation and donor HLA-cw4 was associated with an increased frequency of acute rejection (OR 3.07 (1.32-7.15), p-value=0.033).

Discussion: Recipients expressing KIR2DS4 wild type, who receive an HLA-cw4 expressing donor experience more acute rejection. Work is on-going to explore the effect of differing ratios of activating to inhibitory KIR, and of other KIR-HLA associations on transplant outcomes.

Categories: H&I (HLA typing - crossmatching - immunologically complex recipients)

P038: WITHDRAWN

P039: Poor HLA mismatch between blood donor and waitlisted transplant patients leads to enhanced Transfusion Specific HLA Antibody Formation

Dr Katrina Spensley[1,2], Dr Sevda Hassan[2], Dr Colin Brown[3], Professor David Roberts[4], Dr Fiona Regan[3], Dr Michelle Willicombe[1,2]

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Abstract

Introduction: Red cell transfusion is a potentially modifiable source of HLA sensitisation pre-transplantation. This can impact transplant waiting times due to the presence of HLA-antibodies. It has previously been shown that transfusion leads to a broad sensitisation, but the specificity of the antibodies towards the blood donor has not been demonstrated.

Method: We identified waitlisted kidney transplant candidates at our centre who had received a blood transfusion prior to transplantation. Corresponding blood donors were identified, contacted and retrospectively HLA typed (REC 18/WM/0161). We compared HLA antibodies, as determined by single antigen bead assays, pre- and post- transfusion and identified the transfusion specific antibodies (TSA) against donor antigens.

Results: Fifty-five patients received 111 typed blood transfusions. Of these 17 (30.9%) were known to have HLA antibodies before transfusion. Thirty-six patients (65.5%) had at least one new HLA-antibody specificity post transfusion; all 17 of the pre-sensitised patients and 19/38 (50.0%) with no known sensitisation.
Twenty-one patients (38.1%) developed at least one TSA. The mean number of transfusion specific antibodies was 1.95 (± 1.43). Of the 41 TSAs which developed 11 (26.8%) targeted class II antigens. The most common locus targeted was HLA-B – 41.5%.

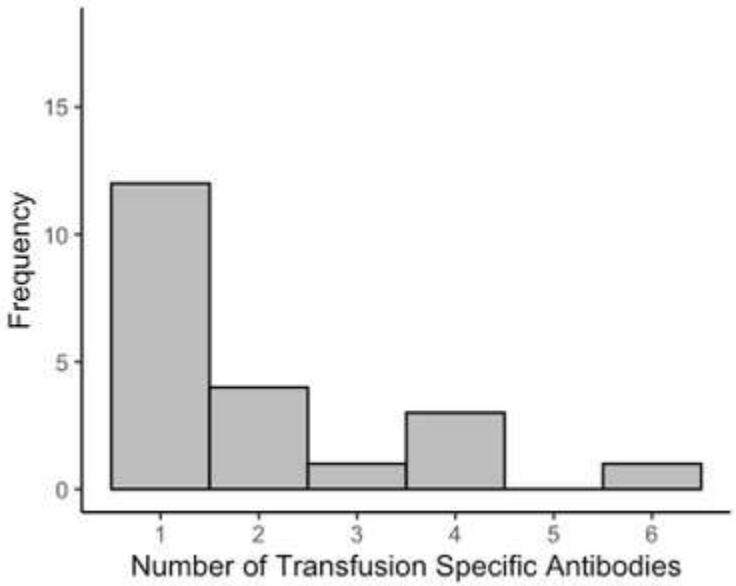

Figure 1: Barplot showing the number of TSAs an individual developed

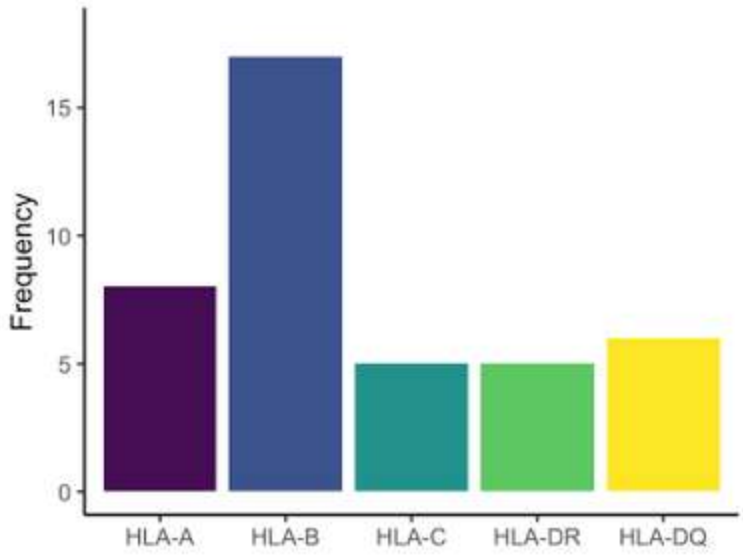

Figure 2: Barplot showing the HLA locus of the TSA

Discussion: Red cell transfusion leads to a significant increase in HLA-sensitisation in waitlisted patients. Transfusions were all poorly matched and resulted in a large proportion developing at least 1 TSA. Although most TSAs targeted Class I antigens, almost 30% targeted Class II. Class II antibodies are typically more persistent so this will impact listing. The use of HLA matched red cells may help mitigate this effect.

Categories: H&I (HLA typing - crossmatching - immunologically complex recipients)

P040: Modifying unacceptable mismatch profiles - finding a path to transplantation for highly sensitised kidney recipients

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Abstract

Introduction: Despite changes to the UK 2019 Kidney Allocation Scheme, (2019 KAS), scheme to favour allocation of kidneys to highly sensitised patients, those with the highest cRF remain challenging to transplant. In our unit, we have developed a multidisciplinary approach to assess and improve a highly sensitised individual's chance of achieving a transplant through the UK deceased donor allocation system by curating an individual listing of their 'unacceptable HLA mismatch' (UMM) for transplant and modifying it according to accepted criteria to create an opportunity for compatible transplantation.

Methods: A retrospective systematic review of hospital records in a single centre of kidney transplant wait list to identify patients with modified criteria applied to their listing of UMM with NHSBT-OTDT.

Results: 21 patients had a modified UMM profile, of whom 9 (43%) achieved a kidney transplant through the deceased donor allocation scheme across HLA specificities removed. Before modification, mean cRF was 99.5% (97-100), applying (UMM) modified criteria reduced the mean cRF to 95.4% (67 – 100). Of these, six had one donor specific antibody (DSA) present, while three had multiple DSA present. Mean peak MFI crossed was 9,157 (2,686-21,004) and the mean current MFI crossed was 3,800 (614 – 11,690). One patient, transplanted across multiple DSAs, lost their graft after 1 year due to antibody mediated rejection (AMR). Another patient experienced graft dysfunction 8 months post-transplant with a biopsy demonstrating Banff 1B acute rejection without features of AMR. Both patients had high level (MFI > 5,000) DSA present at last follow up, however for the remainder at last follow up DSA levels were either low (MFI<2,000) or undetectable.

Discussion: Achieving a compatible transplant for sensitised patient on the deceased donor kidney waiting list requires careful curation of UMM profiles. Lessons learned for application of agreed criteria to achieve a successful transplant have wider utility across UK centres.

Categories: H&I (HLA typing - crossmatching - immunologically complex recipients)

P041: United Kingdom experience of cardiothoracic transplantation in relation to immunological risk as defined in the cardiothoracic advisory group (CTAG) guidelines over a 7 year time period

Mrs Sarah Peacock[1], Dr Arash Akbarzad-Yousefi[2], Dr Paul Brookes[3], Dr Ann-Margaret Little[4], Miss Ruvimbo Mangandaire[1], Dr Stephen Sheldon[5], Dr Delordson Kallon[6]

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Abstract

Introduction: The cardiothoracic advisory group (CTAG) guidelines on the definition of immunological risk were introduced in 2013. These guidelines attempt to categorise cardiothoracic transplants into levels of immunological risk based on the presence and median florescent intensity (MFI) of donor specific antibodies (DSA) directed against HLA. This study compares practices between centres over a seven-year time period (2015 - 2022).

Methods: A data request was submitted to all the H&I laboratories supporting both adult and paediatric cardiothoracic transplantation in the UK. Data requested was the number of transplants undertaken stratified by immunological risk criteria (standard, low intermediate or high) as defined in the CTAG guidelines.

Results: Of the seven transplanting centres, four of the laboratories returned submissions which included four adult and one paediatric cardiothoracic transplant centres. A total of 1,936 cardiothoracic transplants were used for data analysis. For the entire cohort 1,785 (92.2%) transplants were categorised as standard risk; 108 (5.6%) as low risk; 34 (1.8%) as intermediate and 9 (0.5%) as high immunological risk. Within centres practice remained the same over the time period with similar levels of immunological risk transplant being performed. There may be a reduction in appetite for risk in the paediatric centre with only standard risk transplants having been performed in the last two years, compared to previously when transplants above standard immunological risk were performed, however it is too soon to know if this represents a sustained change.

Conclusion: The vast majority of transplants continue to be performed as standard immunological risk, this may not necessarily mean the recipients are not sensitised to HLA however further work is needed to determine if a larger proportion of highly sensitised patients remain waiting for an organ due to the current approach to immunological risk.

Categories: H&I (HLA typing - crossmatching - immunologically complex recipients)

P042: Vote counting and sign testing methodology to assess the effect of tissue typing in liver transplantation

Miss Beatrice Lofthouse[1], Mr William Cambridge[1], Professor Lorna Marson[1,2], Mr Ben Stutchfield[1,1]

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Abstract

Introduction: Liver grafts are currently matched by blood group and size. Due to the immune privilege of transplanted livers HLA matching is not routinely undertaken. Emerging evidence suggests HLA matching may be beneficial for specific patient groups. This systematic review aimed to determine patient and graft outcomes in HLA matched liver transplant patients.

Methods: Criteria included primary articles exploring effects of typing for liver transplantation, identified from PubMed/MEDLINE and Web of Science databases until January 2022. Risk of bias assessed using the Newcastle-Ottawa scale. Cochrane protocols (vote counting and sign test syntheses) were used to determine proportions of studies favouring HLA typing.

Results: All 28 included articles (Figure 1) were cohort studies with low/medium risk of bias. Graft survival syntheses favoured HLA matching 'across all patients' in studies of both living (LDLT) and deceased donor liver transplantation (DDLT), where 1 study showed a beneficial effect, and 1 showed no effect, and LDLT alone, where 2 studies showed benefit, 4 showed no effect, and 1 showed harm (Figure 2). Additionally, matching was favoured in 'Adult-only' DDLT recipients where 1 study showed benefit, and 1 showed no effect. For rejection syntheses, matching was favoured 'across all patients' for studies of LDLT, DDLT, and both, and for certain subgroups including 'Adult-only', 'Paediatric-only', 'Tacrolimus-treated', and 'Negative Lymphocyte Crossmatch'. Patient survival syntheses favoured matching 'across all patients', and for 'Adult-only', 'Primary Biliary Cholangitis', and 'Hepatitis/Viral/Cirrhosis Diseases' subgroups, in DDLT studies. Graft failure syntheses favoured matching 'across all patients' in studies of LDLT alone, and both LDLT & DDLT.

Discussion: Findings evidenced disparate benefits of typing on graft and patient outcomes for different subgroups; study populations were heterogeneous. Additionally, numerous studies reported no effect, or harmful effects. Small numbers of studies, underpowered statistical syntheses and non-randomized studies, limit evidence justifying typing in clinical practice.

PRISMA 2020 Flow Diagram of Included Studies

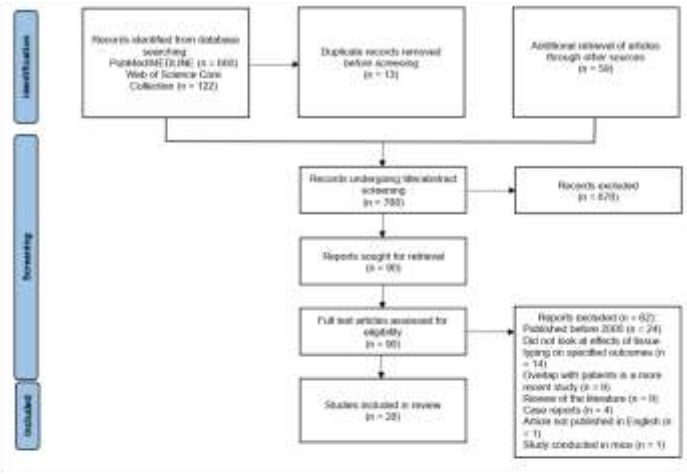

Figure 1: Harvest Plot of the Direction of Effects of Tissue Typing on Graft Survival and Total Risk of Bias Score of Included Studies Across All Patients

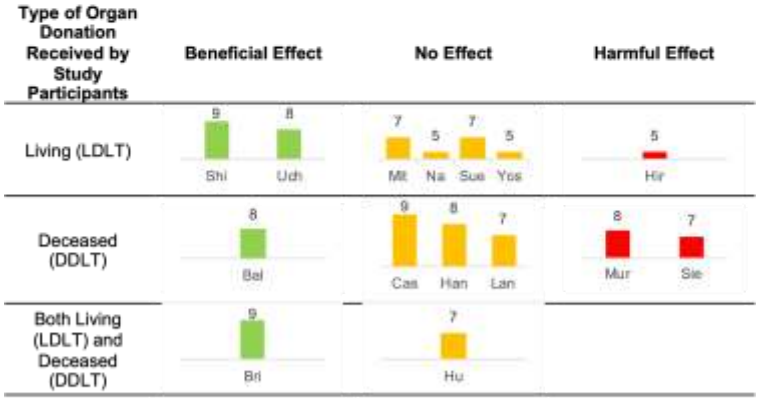

Figure 2: Harvest Plot showing the results of the vote counting method for the direction of effects of tissue typing on graft survival across all patients. Each individual bar along the x-axis represents an included study, labelled according to the study key. The y-axis (height of the bar) represents the risk of bias total score of that study. The colour of the bar represents whether the study evidences a beneficial effect (green), no effect (orange), or a harmful effect (red) of tissue typing on graft survival. **Abbreviations –** DDLT: Deceased Donor Liver Transplantation; LDLT: Living Donor Liver Transplantation

Categories: H&I (HLA typing - crossmatching - immunologically complex recipients)

P043: Pushing the boundaries of delisting unacceptable HLA in highly sensitised patients - expanding possibilities by using C1q assay

Ms Riddhi Singh[1], Pamela Hughes[2], Mr Mark Lobb[2], Dr Adrienne Seitz[2,3], Dr Andrew Lewington[3,4], Dr Brendan Clark[2], Dr Sunil Daga[3,4]

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Abstract

Introduction: Identifying HLA-specific antibodies in patients prior to kidney transplant is an established risk stratification tool toward improved outcome. The varied pathogenicity of HLA antibodies by their levels or functional characteristics is established in retrospective studies. Their use in the clinical practice of delisting is slowly evolving. As a centre with interest in HLA incompatible transplantation, we are exploring other ways to push the boundaries to improve transplantation opportunities. This study aims to show the utility of the C1q assay in improving the probability of transplant.

Methods: Current samples from 15 wait-listed highly sensitised patients (HSPs) with existing HLA IgG SAB results were selected and re-tested using the OneLambaTM C1qScreen to detect C1q-binding antibodies. We used the NHSBT matchability calculator and estimated chance of transplant tools (http://odt.nhs.uk/pdf/NHSBT_Tools.pdf) to assess the impact of delisting C1q negative specificities. Statistics were calculated using GraphPad Quickcalcs.

Results: Calculated reaction frequency (cRF) defined by IgG HLA-specific antibodies was (MFI ≥ 2000) -100% (n=9), 99% (n=2), 98% (n=2), 96% (n=1) and 93% (n=1).). The overall change in opportunity by listing only C1q-binding HLA antibodies as unacceptable is shown in table 1. This produced drop in cRF (p=0.057) and matchability points (p=0.008). As a result, there was a predicted increase in the offer rate (p=0.053) and 1-year estimated chance of transplant (p=0.029) compared to listing total HLA antibodies. Patients that demonstrated an increased chance of transplant showed a 3 to 5 fold increase.

Output	Mean (range)	Median (IQR)
cRF reduction	12% (0-96%)	4% (0.5-15%)
Matchability point reduction	1.07 (0-5)	1 (0-1.5)
Increase in offer rate (n:10000)	54.45 (0-3820)	77 (30-694)
Increase chance of transplant	5% (0-21%)	0% (0-10%)

Table 1: Differences in output after applying C1q assay based delisting (compared with IgG SAB assay)

Conclusion: This study shows a strong potential improvement in transplant opportunities for HSPs by selectively listing preformed C1q-binding HLA antibodies instead of total IgG HLA-antibodies. This approach may push the boundaries of delisting in the context of novel desensitisation on the deceased donor waiting list and virtual crossmatch process.

Categories: H&I (HLA typing - crossmatching - immunologically complex recipients)

P044: Are higher quality donor lungs being optimally utilised in the UK?

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Abstract

Introduction: Lung transplant numbers in the UK have dropped and remain 53% lower compared to pre-COVID activity. The number of patients on the active lung transplant list in March 2022 was 239, compared to 210 in 2013. Despite this, only 9% of Donation after Circulatory Death (DCD) and 17% of Donation after Brain Death (DBD) lungs offered were utilised for transplant in 2021/2022. In response, NHSBT and the Cardiothoracic Transplant Advisory Group (CTAG) established a lung offer review scheme in keeping with similar pathways already established for livers, kidneys, and pancreases. We examined early experiences.

Method: Donor lung offers were retrospectively reviewed to develop the definition of a Higher Quality Lung (HQL) donor. A consensus was formed by Clinical Leads for Utilisation (CLUs), and the CTAG approved the HQL definition. This was followed by the development of an Offer Review Scheme which was also approved by CTAG.

Results: The HQL definition is shown in Table 1. A pilot phase looking at HQL donor offer declines ran from April to September 2022, during which 16 HQL declines were identified. Following the pilot phase, all HQL donor offer declines are being reviewed and discussed with the relevant Centre Director to examine reasons for decline and enable improved lung utilisation.

Table 1: HQL donor criteria

High Quality Lung Donor criteria (all must be met to qualify)
No history of malignancy
No evidence of HBsAg +ve
No evidence of HCVAb +ve
No evidence of HIV +ve
No evidence of HTLV +ve
Age: 16 - 55 years
Smoking history: age < 30 or smoking ≤ 20packs/year
pO2 ≥ 40 kPA with FiO2 1 and PEEP 5 at offering
Mechanical ventilation ≤ 7 days

Discussion: Lung utilisation is at an historic low in the UK. HQL criteria offer a reference point and encourage consistency between centres. The Offer Review Scheme will identify barriers to lung utilisation and will allow the development of future key performance indicators to improve lung utilisation.

Categories: Clinical - heart and lung (heart and lung transplant - surgery - recipient clinical care and management)

P045: A vision for a better future - a technological novelty service improvement to empower self-management of cardiothoracic organ recipients and reduce medication non-compliance

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Royal Papworth Hospital, Cambridge, United Kingdom

Abstract

Objectives: The NHS is focused on becoming a pioneer of technological innovation worldwide. To accomplish this goal and uphold our Trusts History of Innovation, the Transplant Nursing team is focused on improving staff and patients experience, by providing a new platform which looks to empower patients self-management, early detection of medication non-compliance and a low carbon transformation tool accessible to transplant patients. This idea will allow the team to influence and shape a better future for our Cardiothoracic Transplantation services.

Methods: Designed to empower patients through their post-transplant journey, the Transplant Nursing Team is creating an electronic and mobile platform, alongside the Trusts Digital Services and the Multidisciplinary team. Building on patients and the team feedback, the app will serve as a digital platform to provide easy access to all our transplant recipients, focusing on empowering patients, by educating and allowing patients to accurately review their therapeutic regimen. To the team, it will allow easier, more accurate monitoring of medication compliance.

Results: The App is in development, built on the positive feedback from both patients and Transplant team alike. Their valuable input serves as a guide of service users expectations.

Discussion: As a Transplant team we want to provide the best possible outcomes through innovation and positive changes, allowing issues to be tackled promptly, triaging patients information, medication compliance and ultimately minimising unnecessary hospital visits.

This new platform will hopefully serve as the beginning of a technological revolution for our services, offering todays transplant patient, the technology of tomorrow. Supporting and empowering, educating and serving as a guide for our patients whilst considering Local and National strategic objectives from a quality of care, technological and environmental level.

Moreover, the establishment of this app serves as a further example of how the Transplant team focuses on innovation, collaboration, and excellence in patient care.

Categories: Clinical - heart and lung (heart and lung transplant - surgery - recipient clinical care and management)

P046: A national survey on enhanced recovery after surgery for liver transplant recipients: Current practices and trends in the United Kingdom

Ms Carrie Scuffell[1], Dr Emily Bonner[1], Dr Dave Cressey[1], Dr Jane Danby[1], Dr Louise Macdougall[1], Dr Steven Masson[1], Mrs Siobvan Davison[1], Mr Peter Robinson-Smith[1], Mr Colin Wilson[1], Professor Joerg-Matthias Pollok[2], Mr Dimitri Raptis[2], Dr Michael Spiro[2], Professor Derek Manas[1], Mr Aimen Amer[1]

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Abstract

Introduction: Despite being established in many specialties, Enhanced Recovery after Surgery (ERAS) has not been widely adopted in liver transplantation. The aim of this survey was to understand current national practices and sentiment towards ERAS in liver transplantation.

Methods: A national web-based survey was designed and sent to consultant surgeons, anaesthetists, hepatologists and transplant coordinators at all UK adult liver transplant centres between February-April 2022. Respondents were requested to answer the survey in the context of uncomplicated liver transplant. Data was analysed according to individual responses and where appropriate, responses were grouped according to transplant centres.

Results: All four disciplines, at all liver transplant centres were represented in the responses. No units had a formal ERAS pathway for all recipients. Of the 116 eligible respondents, 54% were considering implementing ERAS within 18 months. Most respondents (62%) report rarely inserting fine bore NG tubes whereas 93% regularly insert drainage tubes. Only 12% of respondents routinely use portocaval shunts or portosystemic bypass shunts. The commonest time to extubation is 2-6hr (45%). Opiate based PCA is the most common analgesia (79%) with 55% of respondents reporting routine discontinuation of PCA between 48-72hr. Only 11% discontinue prophylactic antibiotics immediately postoperatively but 45% routinely discontinue within 24hr. Gut decontamination is not routinely used (73%). Over half of respondents start postoperative oral or enteric diet within 24hr and 44% remove NG tubes within 24hr. 32% of respondents report central lines remaining beyond 48hr. Although 32% reported urinary catheter removal within 48hr, 13% reported keeping them beyond 72hr. The majority (90%) of respondents reported an average length of stay between 7 and 15 days.

Discussion: Despite slow uptake of ERAS in liver transplantation, appetite is increasing. The opinions of transplant specialists have been highlighted and are being used to help with standardisation of a local ERAS protocol for liver transplant recipients.

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P047: Survival outcomes of salvage liver transplantation after surgical resection or ablative therapies for early-stage hepatocellular cancers vs primary liver transplantation: Systematic review and meta-analysis

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[1]University of Edinburgh, Edinburgh, United Kingdom. [2]Edinburgh Transplant Centre, EDINBURGH, United Kingdom

Abstract

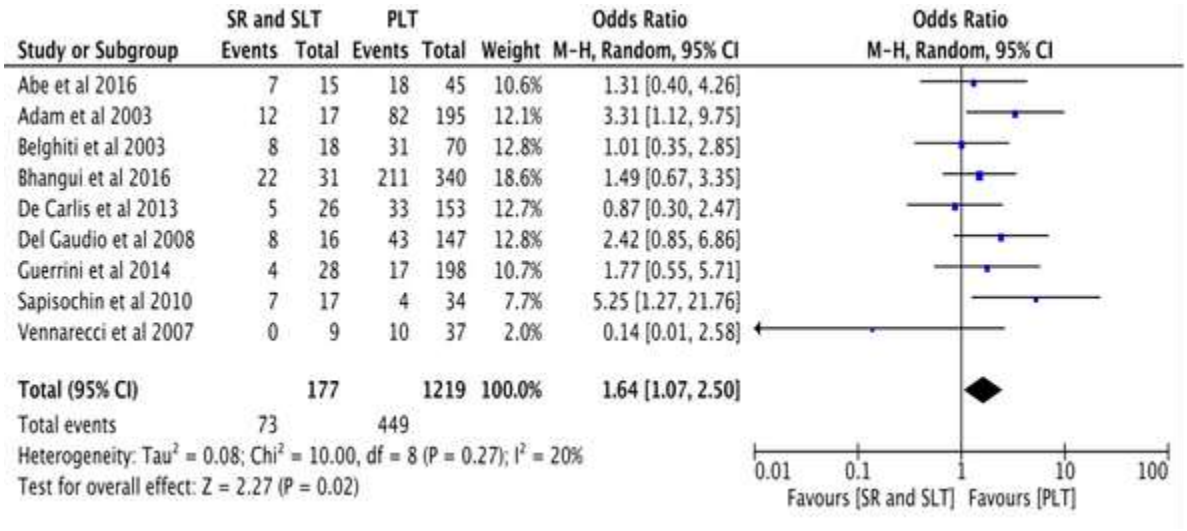
Introduction: Salvage liver transplantation (SLT) after surgical resection (SR) or locoregional ablative therapies (LRAT) is utilised in hepatocellular carcinoma (HCC) patients with very early/early-stage and preserved liver functions. However, recurrence and survival outcomes of SLT when compared to primary liver transplantation (PLT) are disputed by several studies. This systematic review and meta-analysis compared the clinical outcomes of SLT after SR or LRAT with PLT.

Method: MEDLINE, EMBASE, CENTRAL and Web of Science databases were searched to identify studies comparing risk estimates of mortality and recurrence for SLT (after SR or LRAT) vs PLT. Selection was based on inclusion criteria to include studies comparing patients with HCC classified as very early/early-stage as per EASL practice guidelines 2022. Risk of bias was reviewed using the Newcastle-Ottawa Scale. A random effects model assessed primary endpoints based on evaluation of heterogeneity.

Results: 5734 patients from 16 studies were included. For SLT after SR, the odds ratio of mortality at 1-,3-and 5-years were comparable to PLT. However, the odds of HCC recurrence at 1-,3- and 5-years were higher when SLT after SR was compared to PLT, particularly at 5 years (OR [95%] =1.64 [1.07 - 2.50]), as shown in Figure 1. For SLT after LRAT vs PLT, the odds ratios of mortality HCC recurrence and mortality showed no statistically significant difference compared to PLT, but interpretations are limited by high heterogeneity of included studies.

Discussion: Very early/early-stage HCC patients who underwent SLT after SR had higher risk of long-term of recurrence when compared with PLT, which could be explained by increased risk of surgical challenges when SLT is performed. The use of LRAT with SLT showed comparable outcomes to PLT, limited by the heterogeneity and small number of studies included.

Figure 1. Odds ratio of HCC recurrence at 5 years comparing SLT after SR vs PLT.



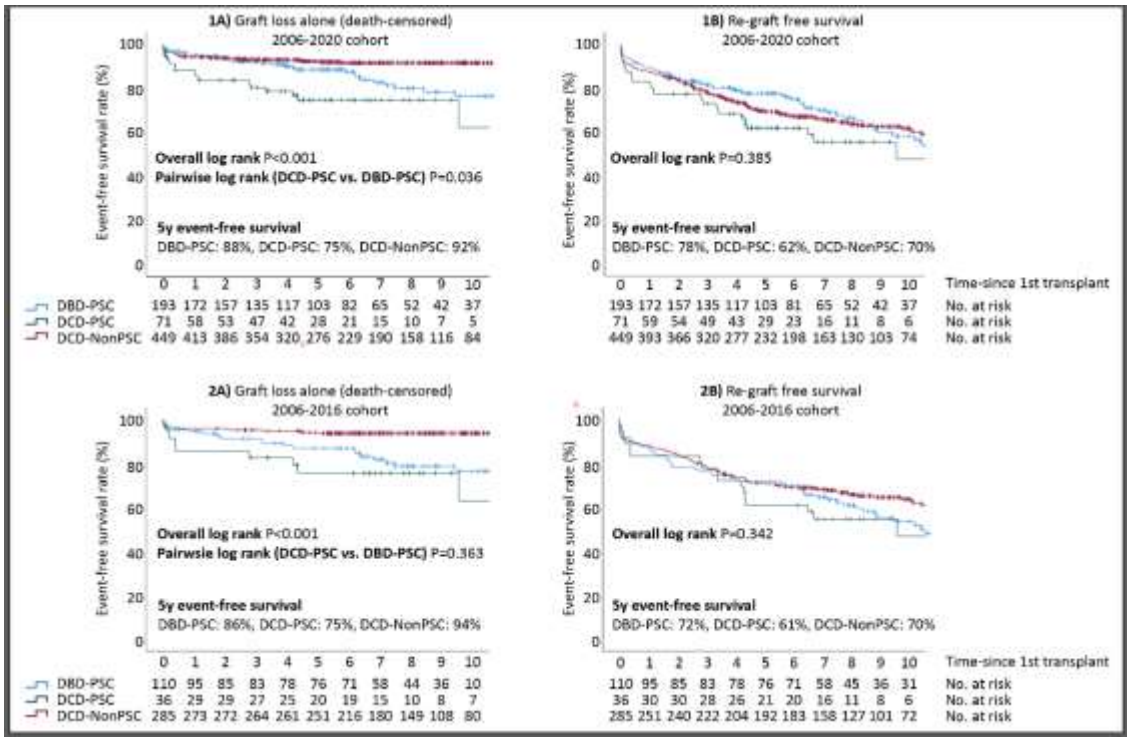
Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P048: Long-term outcomes following Donation after Cardiac Death (DCD) liver transplantation in Primary Sclerosing Cholangitis (PSC).

Dr Arul Suthananthan[1], Dr Nadir Abbas[2], Dr Amr Alnagar[1], Dr Eyas Almomani[1], Mr Graham Caine[1], Dr James Ferguson[1], Professor Thamara Perera[1], Associate Professor Palak Trivedi[1]

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

Abstract



Introduction: Liver transplantation is the only life-extending intervention for individuals with PSC. Whilst donation after brain death (DBD) is the practice of choice, patients may endure prolonged waitlist times due to young age. Equally, outcome data following DCD transplantation are conflicting, particularly with regards to long-term follow-up.

Methods: Long-term outcomes following DCD transplantation in PSC (DCD-PSC) were compared to DBD recipients (DBD-PSC). First, we validated 1y-outcomes presented in our previous study (liver transplants performed 2006-2016: PMID:28690174) with a contemporary cohort transplanted 2016-2020. Next, we evaluated long-term outcomes in the combined cohort of patients (transplanted 2006-2020), alongside 5y-outcomes specifically in the 2006-2016 cohort, including for non-PSC patients (DCD-NonPSC).

Results: In the 2016-2020 cohort, 1y-risk of death-censored graft loss was not significantly greater in the DCD-PSC group (odds ratio [OR]:2.6; 95% CI: 0.96-7.0), nor was the risk of all-cause mortality (1.14; 0.39-3.38) or regraft-free survival (2.66; 0.79-8.89). In the combined 2006-2020 cohort, 17 patients experienced graft loss in the DCD-PSC group (25.4%), compared to 30 in the DBD-PSC group (14.8%) and 36 in the DCD-NonPSC group (7.9%) (Fig1A). Regraft-free survival was not significantly different between PSC groups, and both were inferior to DCD-nonPSC (Fig1B). On restricting analysis to patients with a minimum 5y follow-up since first transplant,

the risks of death-censored graft loss (hazard ratio [HR]: 1.44; 0.66-3.14), all-cause mortality (0.62; 0.29-1.34) and regraft-free survival (1.14; 0.66-1.97) were not significantly greater for DCD-PSC vs. DBD-PSC (Fig2A+B). However, among patients in the DCD-PSC group experiencing an event, 88% of graft losses occurred within five years of transplantation vs. 60% in the DBD-PSC group.

Conclusion: Regraft-free survival rates are similar among PSC patients receiving a DCD and DBD liver graft. However, in patients in need of re-transplantation, the majority of DCD-PSC graft losses occur early, which has clinical implications given the young age of PSC transplant recipients.

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P049: What time should we avoid transplant surgery in the UK?

Miss Sarah Beale[1], Miss Cecelia McIntyre[1], Mr Ian Currie[1,2]

[1]NHSBT, Bristol, United Kingdom. [2]Edinburgh Transplant Centre, Edinburgh, United Kingdom

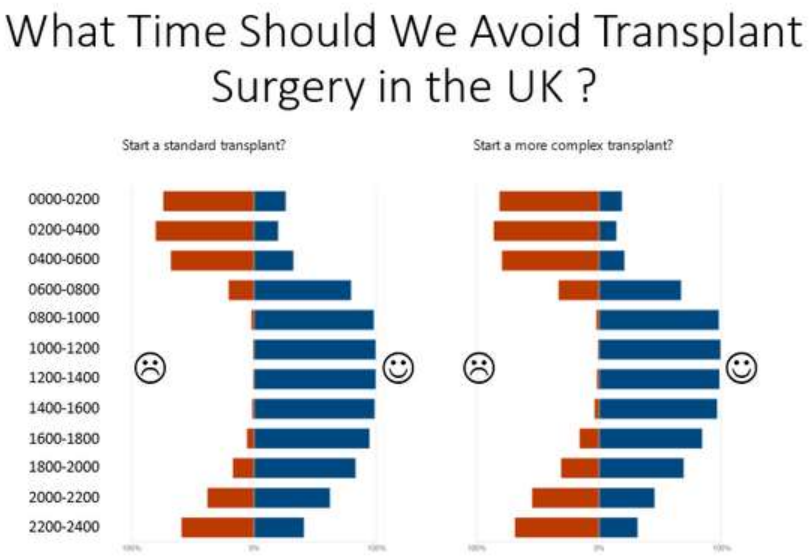
Abstract

Introduction: Transplant surgery may be highly complex from surgical and anaesthetic perspectives. Despite this, a significant volume of deceased donor transplant operations now take place overnight. This reduces safety margins and is at odds with practice in all other surgical disciplines. Accordingly, surgeons, anaesthetists and theatre staff in all UK transplant units were surveyed to understand the views of the transplant community around the timing of transplant surgery for different transplant types.

Methods: Transplant Unit Directors in the UK were emailed a survey link to be shared with Consultants in Transplant Surgery, Transplant Anaesthesia and Senior Transplant Perioperative Staff. The survey was designed to elicit staff type and transplant type (organ; DBD/DCD). Respondents indicated time frames when 'knife to skin' should be generally accepted or very much avoided in 'standard' and 'more complex' transplant operations. Multiple responses were permitted for those staff involved in multiple transplant types.

Results: 683 responses were received from 31/32 transplant centres, including 283 surgical, 183 anaesthetic and 217 perioperative data returns. These covered DBD(399) and DCD(284) transplants in adults(580) and children(103) treated in abdominal(527) and cardiothoracic(156) centres. Responses covered kidney(218), liver(204), split liver(40), pancreas(53), small bowel/multivisceral(12), heart(95) and lung(61) transplantation. Averaged across all staff groups and transplant types (Figure), the UK data suggested that that knife-to-skin time between 10pm and 6am should be avoided in the case of 'standard' recipients, and 8pm to 6 am in 'more complex' transplants.

Conclusions: Transplant surgery may be highly complex in very frail patients, requiring additional unscheduled consultant support. Despite this, the global trend to minimise overnight operating is reversed in UK transplantation. This survey confirms the UK transplant community is united in its concern regarding overnight transplant surgery. All efforts should be made to reverse this current trend.



Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P050: Outcomes of livers with prolonged duration of ex situ normothermic perfusion: Can liver transplantation be a daytime activity?

Mr Rohit Gaurav, Mr Andrew Butler, Ms Corrina Fear, Ms Lisa Swift, Ms Rachel Webster, Prof Chris Watson

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Abstract

Introduction: Normothermic ex-situ liver perfusion (NESLiP) gives the opportunity to assess and modify marginal livers. Additionally, it also helps overcoming the time barriers by increasing the preservation time. NESLiP can be employed from the donor hospital until implantation or once the liver arrives at the recipient centre in a cold box. In this study, we discuss our experience of liver grafts subjected to prolonged NESLiP.

Methods: Retrospective analysis of livers undergoing NESLiP at our institute from May 2017 till January 2022. Patients were divided into two groups based on the duration of NESLiP (<10 hours and >10 hours) and outcomes compared. All livers underwent blood-based perfusate.

Results: There were 203 (DBD 80; DCD 123) livers undergoing NESLiP during the study duration resulting in 154 (76%) liver transplants. Thirty-five (30%) out of these were perfused for more than 10 hours before implant with median 20.2 hours of total preservation. There was no difference in early graft function or renal function.

Parameters	NESLiP <10 hrs (n=119)	NESLiP >10 hrs (n=35)	p-value
DCD (%)	60 (50)	24 (69)	0.082
DRI (Feng et al, AJT2006)	2.0 (1.6 – 2.4)	2.2 (1.9 – 2.7)	0.035
UK DLI	1.4 (1.0 – 1.8)	1.6 (1.2 – 1.9)	0.21
Total preservation duration, hrs	15.4 (13.7 - 17.1)	20.2 (18.1 - 23.0)	<0.0001
NESLiP duration, hrs	7.2 (5.7 - 8.5)	12.0 (10.8 - 13.7)	<0.0001
UKELD	54 (51 – 59)	54 (50 – 58)	0.66
Peak ALT in first week	429 (207 – 771)	384 (200 – 669)	0.546
MEAF score	3.8 (2.5 – 5.4)	3.8 (2.8 – 5.5)	0.816
AKI (%)	35 (29)	11 (31)	0.836
Values are medians (interquartile range) or number (percentage) Donor risk index (DRI); Alanine transaminase (ALT); Model for early allograft function (MEAF); Ischaemia type biliary lesion (ITBL)			

Discussion: This experience suggests that prolonged NESLiP is safe. It is useful in manging logistics with increased preservation time.

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P051: Does time to death in donors after circulatory death (DCD) impact recipient outcome in liver transplantation?

Mr Abdullah Malik[1], Mr Samuel Tingle[1], Dr Chris Varghese[2], Dr Ruth Owen[1], Mr Rodrigo Figueiredo[1], Mr Aimen Amer[1], Professor Steven White[1], Professor Derek Manas[1], Mr Colin Wilson[1]

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Abstract

Background: Following withdrawal of life-sustaining treatment (WoLST) an agonal phase occurs, reducing flow of oxygenated blood to the liver graft causing ischaemic injury. UK practice is to abandon donor hepatectomy if the functional warm ischaemia time (FWIT) exceeds 30-minutes in donors after circulatory death. We assessed what effect donor time to death (TTD) had on recipient outcomes following liver transplantation.

Methods: Data were extracted from the NHS Blood and Transplant registry on liver graft recipients from 2006 to 2021. TTD was the time from WoLST to donor asystole. The primary end point was 1-year graft survival. Potential predictors were fitted into a hierarchal Cox proportional hazards regression model, with multiple imputation for missing data.

Results: 1558 liver graft recipients were included. Median TTD was 13-minutes (IQR 9-17 minutes); TTD occurred between 0-10 minutes in 347 (33.9%), 10-16 minutes in 382 (37.3%), and >16 minutes in 296 (28.9%). Forty-three donors had a TTD >30minutes (2.8%). TTD was not available in 533 donors (34.2%). TTD was not predictive of graft failure at 1-year (HR 0.82, 95% CI 0.61-1.11, p=0.2) or recipient mortality at 1-year (HR 0.93, 95% CI 0.61-1.42, p=0.7). Hepatectomy time predicted graft failure at 1-year (HR 1.87, 95% CI 1.23-2.83, p=0.003), but did not predict recipient survival (HR 1.43, 95% CI 0.82-2.48, p=0.2). On sensitivity analyses, TTD >30 minutes was not significantly associated with graft failure. In a separate model, FWIT was not associated with 1-year graft or patient mortality, but hepatectomy time remained significant.

Discussion: TTD did not impact risk-adjusted graft or recipient survival at 1-year, however prolonged hepatectomy time was associated with worse graft survival. Expanding the 30-minute FWIT cut-off may increase the number of donors proceeding to liver graft retrieval, with subsequent transplantation. Further prospective evaluation of the risk of recipient harm from liver grafts retrieved out with current criteria is warranted.

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P052: Bridging locoregional treatment prior to liver transplantation for Cirrhotic patients with Hepatocellular Carcinoma within Milan criteria: a systematic review and meta-analysis

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Abstract

Introduction: Our aim was to perform a meta-analysis to assess the benefit of bridging locoregional treatment (LRT) before liver transplant for cirrhotic patients with hepatocellular carcinoma (HCC) already within Milan criteria at diagnosis.

Methods: We searched PubMed/Medline, Scopus and Google Scholar databases for articles published up to June 2022. We included original studies with HCC cases within Milan criteria at diagnosis comparing patients with and without bridging LRT before liver transplant. Twenty-six retrospective original studies were included.

Results: Out of the 9,068 patients within Milan criteria, 6,435 (71%) received bridging LRT and 2,633 (29%) did not. Most frequent LRTs were transarterial chemoembolization, radiofrequency ablation and microwave ablation. Most of patient and tumour characteristics were similar between the two groups. Maximum tumour diameter on scans was slightly larger in the LRT arm (mean difference: 0.36 cm, p=0.004). The LRT group had also slightly more frequently multifocal disease (RR: 1.21, p=0.02) and disease extent outside Milan criteria (RR: 1.3, p=0.03) on pathological examination of explanted livers. There was no difference between the two arms in waiting time for transplant, dropout rates, disease-free survival at 1, 3, 5 years after transplant, or overall survival at 3 and 5 years after transplant. However, cases with LRT had better overall survival at 1 year after transplant (HR: 0.54, p=0.009).

Discussion: It is unclear which is the exact benefit of bridging locoregional treatment for cirrhotic patients with HCC within Milan criteria at diagnosis. There is perhaps an advantage regarding short-term overall survival after liver transplant.

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P053: Kidney graft outcomes following kidney versus simultaneous liver-kidney transplantation in children – a comparative study using UNOS database analysis

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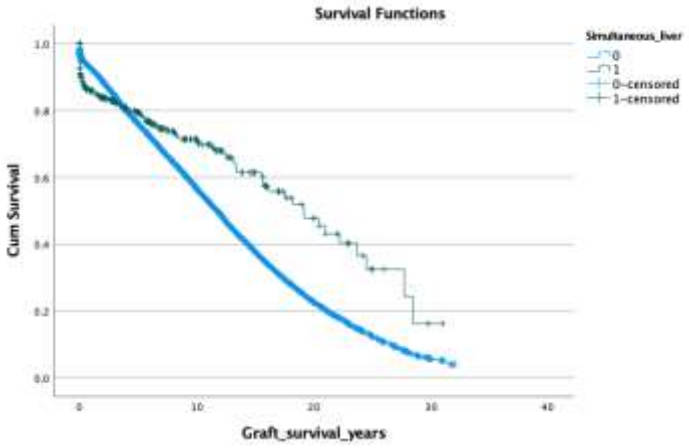
Abstract

Introduction: Simultaneous liver-kidney transplantation may confer an immunological advantage to the kidney graft. The aim of this study is to explore kidney graft outcomes after kidney versus simultaneous liver-kidney transplantation in children following the analysis of a large database.

Methods: Data were retrieved and analysed on kidney and combined liver-kidney transplants performed in paediatric recipients (younger than 18 years old) from October 1987 until September 2020, from the United Network for Organ Sharing (https://unos.org/). SPSS v28 was used for statistical analysis.

Results: There were 23597 kidney transplants (Group 1, 9628 female, median age 12, IQR 8) and 373 simultaneous liver-kidney transplants (Group 2, 183 female, median age 9, IQR 9). 10785 (45.7%) kidney grafts failed versus 109 (29.2%) kidneys from the simultaneous liver-kidney transplant group (P<0.001). Delayed graft function was present in 2068 (8.8%) in Group 1 and 70 (19%) in Group 2 (P<0.001). Primary non-function was 248 (1.1%) in Group 1 versus 7 (1.9%) in Group 2 (P=0.198). Kaplan-Meier Survival analysis showed a statistically significant difference between the two Groups (Log Rank of <0.001).



Discussion: Delayed graft function was worse following simultaneous liver-kidney transplantation in children when compared to kidney transplantation alone in this large comparative database analysis. Despite this, simultaneous liver-kidney transplants in children have a better kidney graft survival than those who have a kidney transplant alone. This may be due to the protective immunological effect of the liver transplant.

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P054: Outcomes following expedited cardiothoracic offering after super urgent liver acceptance

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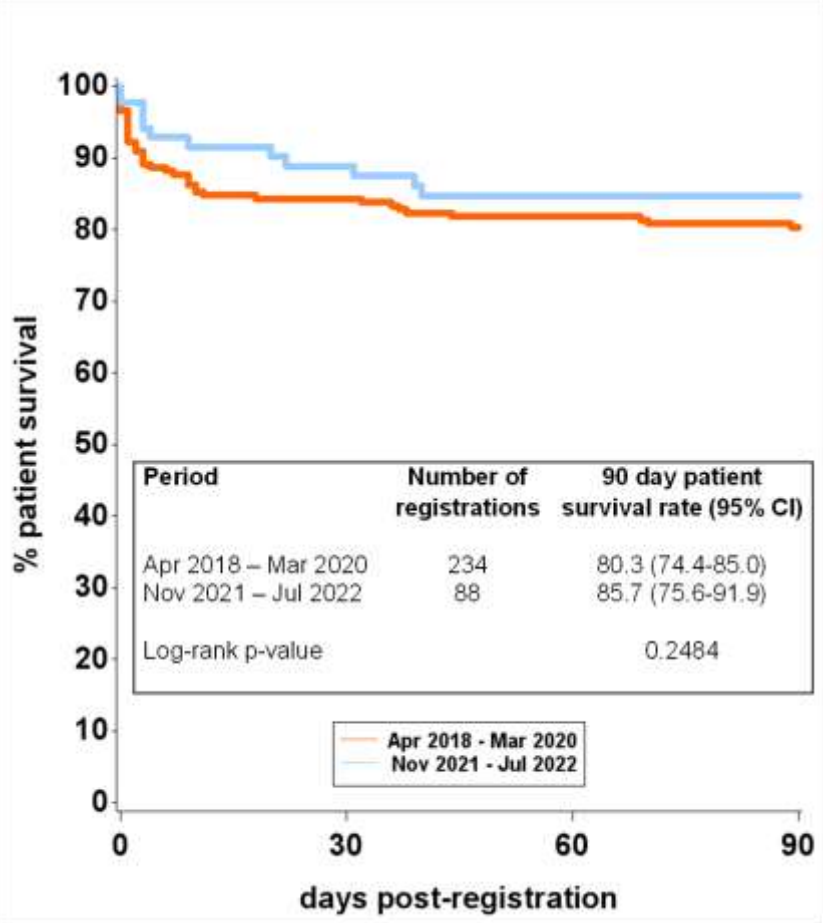
Abstract

Introduction: Liver recipients registered on the Super Urgent (SU) waiting list are critically ill, hence transplantation must occur as soon as possible to prevent mortality. Any prolongation of the pathway from donor registration to organ retrieval increases mortality risk. Therefore, this study investigated the effects of expediting cardiothoracic (CT) offering on outcomes of SU liver transplantation.

Methods: With Cardiothoracic Advisory Group support, expedited CT offering ('block offering') now takes place as soon as the donor liver is accepted for a SU recipient. All CT centres simultaneously receive such offers for heart and lungs for all potential recipients. To assess outcomes, data were obtained from the UK Transplant Registry for all ventilated and/or encephalopathic SU registrations and transplants between 1 April 2018 and 31 March 2020 (standard offering group; 'pre-SUP'), and 1 November 2021 and 31 July 2022 (block offering group; 'post-SUP'), irrespective of donor CT offering. SU recipient outcomes from registration were compared between the two cohorts.

Results: There were 291 SU liver registrations pre-SUP, of which 242 (83%) were ventilated and/or encephalopathic, compared to 115 registrations of which 95 (83%) were ventilated and/or encephalopathic post-SUP. In donors with CT offering, the time from SU acceptance to SNOD request for NORS teams, indicative of CT offering time, fell from 3.3 (IQR; 2.0-5.5; n=135) to 2.5 (IQR; 1.7-4.4; n=61) hours. Overall, transplantation rate increased (77% v 85%) and death/de-listing (for deterioration) on the list decreased (12% v 10%). 90-day survival from listing for all such SU recipients improved between periods but did not reach significance (Figure).

Discussion: Patients registered on the super-urgent liver waiting list have a high risk of death if transplantation is not carried out as soon as possible. This study demonstrates that expediting cardiothoracic offering may result in improved outcomes for SU liver transplant recipients.



Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P055: Liver transplantation assessment: The impact of delay to listing for being 'too well'

Miss Meenashe Suresh[1], Mr Piero Alberti Delgado[2], Miss Jingjing Wang[1], Dr Thomas Manship[2], Mr Ben Stutchfield[2,1], Mr Chris Johnston[2,1], Mr Ahmed E Sherif[2,1]

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Abstract

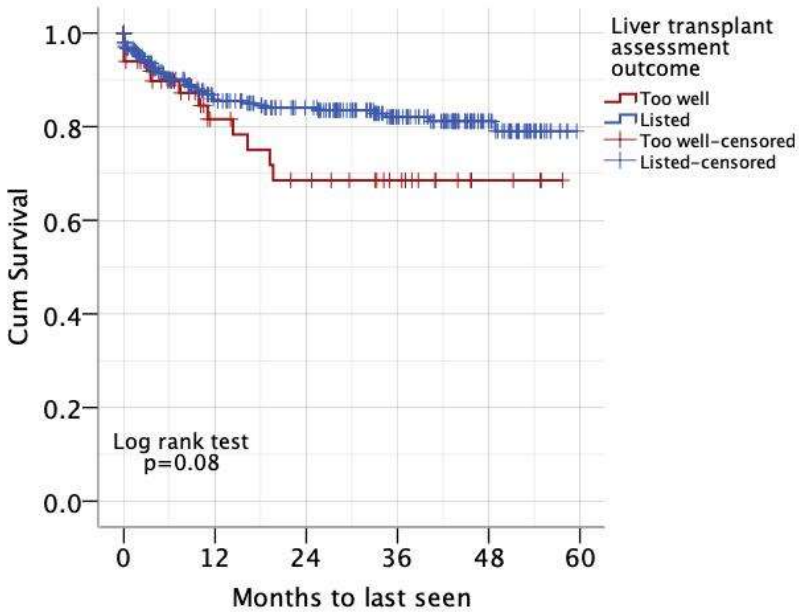
Introduction: Liver transplantation is the curative treatment for end-stage liver disease. Candidates who meet the UK listing criteria for chronic liver disease (CLD) proceed to the assessment stage, where their suitability for liver transplantation is established and a subsequent outcome appointed. This is either being listed, deferred, or declined. A subgroup of candidates is deferred based on being 'too well'. Although these candidates meet the CLD national threshold for transplantation, they are not listed. The aim of the study is to retrospectively investigate to investigate the ramifications of assessment outcomes on candidate survival and clinical outcomes.

Methods: Data on liver transplant candidates referred for assessment at Edinburgh Transplant Centre between April 2017 – April 2022 was retrospectively collected. Univariate and multivariate statistical analyses were performed to investigate the impact of the liver transplant assessment decision on the study primary outcomes.

Results: 855 patients with CLD were assessed for liver transplantation during the study period. Of this group, 391 patients (45.7%) were listed for transplantation, whilst 73 patients (8.5%) were deferred for being 'too well'. Patients' demographics in both groups were comparable. Median UKELD in the 'too well' group (52.8) was significantly lower than listed group (55.7), p=<0.001. Only 2% of 'too well' group were listed and transplanted, while 77.9% of patients listed were transplanted during the follow-up period. All-cause mortality was 17.9% in 'too well' group compared with 8.1% in the listed group. Kaplan Meier's survival analysis is demonstrated in Figure 1. Patients in the 'too well' group invariably had lower cumulative survival than those listed after assessment, although this was not statistically significant.

Discussion: CLD patients meeting minimum UK listing criteria might be disadvantaged if they get deferred for being 'too well' at the time of their first assessment.

Figure 1. Kaplan-Meier survival analysis in patients listed and too well.



Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P056: What are the real benefits of Intraoperative continuous renal replacement therapy during liver transplantation

Mr Jameel Alfarah[1], Mr Eyas Almomani[1], Mr Moath Alarabiyat[1], Mr Angus Hann[1,2], Ms Sarah Banks[1], Ms Anisa Nutu[1], Ms Rebecca Sanabria Mateos[1], Mr Hynek Mergental[1,2], Mr John Isaac[1], Mr David Bartlett[1], Dr Thomas Faulkner[1,3], Dr Andrew Owen[1,3], Professor Keith Roberts[1,2], Proferssor Thamara Perera[1,2]

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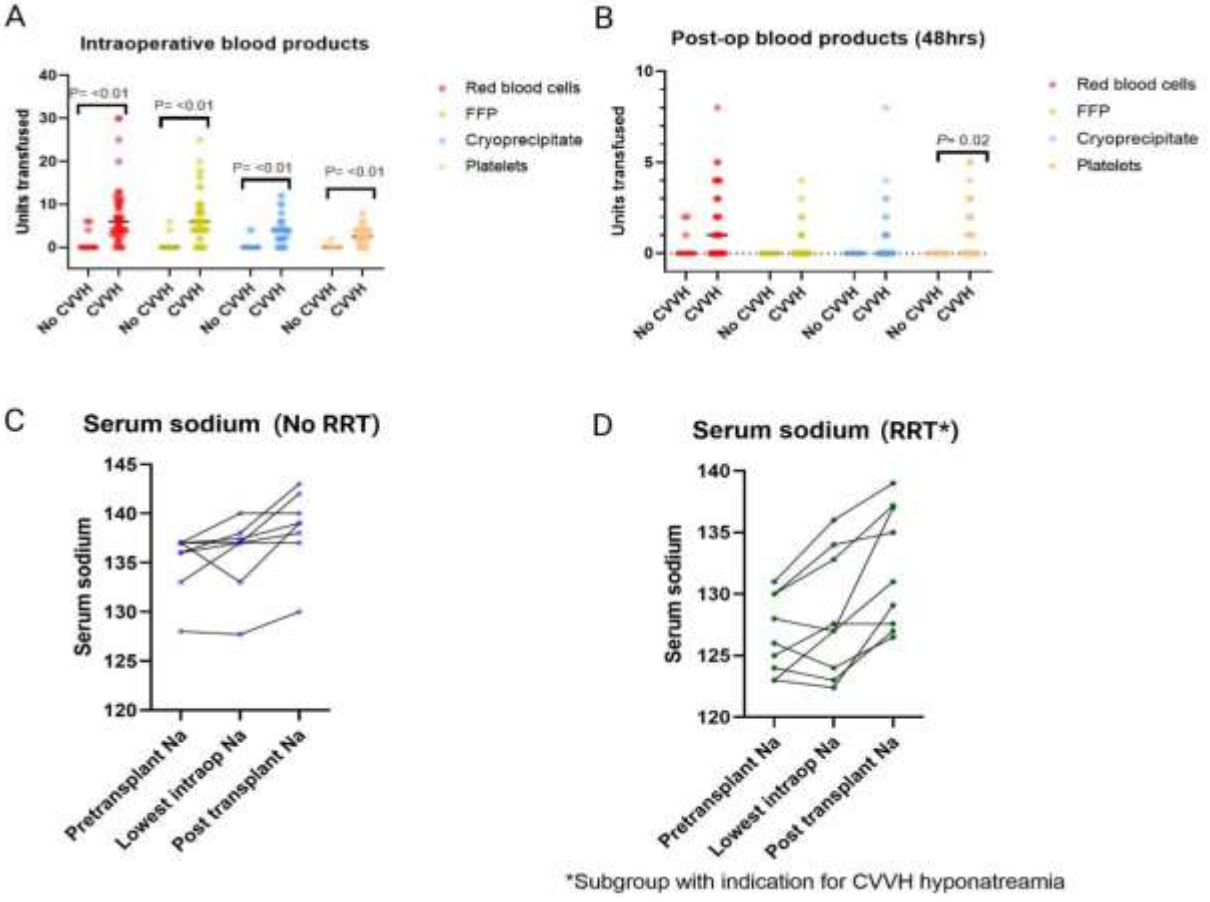
Abstract

Introduction: Liver transplant (LT) candidates are at extremes of acute (ALF) or chronic liver failure and suffer from biochemical, metabolic and electrolyte disturbances. Our aim was to assess impact of intra-operative renal replacement therapy (IO-RRT) on electrolyte, haemodynamic and metabolic control, dialysis dependance and graft survival.

Methods: A single centre case-control study. Patients who were considered for IO-RRT at time of transplantation listing from January 2019 till September 2022 were included. Control group were patients who were considered for but did not receive IO-RRT. Variables collected include patients demographics, donor characteristics, peri-operative parameters, dialysis dependence (DD) and graft and patient survival. Minimum follow up was 3 months.

Results: Total of 42 patients were included. 34/42 received IO-RRT. Indications for Liver transplant, RRT and donor/recipient characteristics (table 1). Most common indication for IO-RRT was end-stage renal disease. Both groups had similar UKELD scores and median GFR at time of LT. Intra-operative hyperkalaemia (p= 0.089), hyponatremia (p= 0.847) (Figure 1.C-D) and base excess (BE) (p= 0.255) were not significantly different. Patients who received IO-RRT had significantly more blood products transfusions (figure 1.A-B). Patients who received IO-RRT had better acid-base control (BE -1.2 vs -5.7, p= 0.014) but were more likely to require RRT in the direct post-operative period (32/34 vs 5/8, p= 0.016). No significant difference in dialysis requirement, graft or patient survival at 3 months follow-up was noticed.

Discussion: IO-RRT provides excellent metabolic and electrolyte control. The intention for use of IO-RRT during LT is based on the premise that patients with acute illness and impaired kidney function may poorly tolerate significant intra-operative shifts in fluid volume and metabolic and electrolyte levels. However, in our limited series IO-RRT did not seem to change patients outcomes whilst added on to staff and cost burden.



*Subgroup with indication for CVVH hyponatreamia

Cohort (n)	no RRT (8)	IO-RRT (34)	p
Age*	60	47	**0.001**
UKELD	55	59	0.165
CCI*	8	4	**0.001**
Indication for LT			
ARLD	3 (38)	10 (29)	
ALF	0	6/34 (17)	
NASH	2 (25)	2 (5)	
HBV/HCV	0	2 (5)	
PBC/PSC	1 (12)	6 (18)	
Other diseases	2 (25)	6 (18)	
Indication of intra-op RRT at time of transplant			
Hyponatraemia (NA≤130) , fluid overload	3(37)	9(26)	
AKI (acidosis, hyperkalaemia, high ammonia)	0 (0)	13(38)	
HRS 1&2 (anuria, GFR<60) and ESRD	5(62%)	14(41)	
Donor characteristics			
DRI	2.035	1.578	0.084
DBD	8	34	
Renal parameters			
eGFR Pre	56	56	0.598
eGFR30	41	61	0.142
eGFR90	41	53	0.365
AKI	0 (0)	13 (38)	
CKD	5 (63)	13 (38)	
Organ support pre-transplant	0	15 (44)	
RRT pre-transplant	0	15 (44)	
Ventilator pre-transplant	0	5 (15)	
IO-RRT goals			
Electrolyte control			
Na (intra op)	137 (127-140)	136 (122-149)	0.847
K intra (intra op)	4.1 (3.62-4.5)	4.6 (3.3-9.3)	0.089
K >5.5 (intra op)	0	3 (9%)	
Metabolic control			
Lactate (intra op)*	2.3	4.4	**<.001**
BE (intra op)	-7.8	-6	0.255
Lactate (post op)*	0.94	2	**0.005**
pH (post op)	7.28	7.35	0.096
BE (post op)*	-5.7	-1.2	**0.014**
Blood products requirements	Figure 1 (a-b)		
Post-transplant outcomes			
RRT in ITU*	5 (63)	32 (94)	**0.016**
Days RRT	3.5 (0-20)	5 (1-56)	0.187
Days on ventilator*	1 (0-3)	5 (2-30)	**0.003**
ITU stay	5.5 (2-10)	7 (2-62)	0.222
DD 30	0(0)	7 (20)	0.16
DD 90	0 (0)	3 (8.8)	0.383
Graft Survival 30	8 (100)	31 (91.2)	0.383
Graft survival 90	8 (100)	32 (91.2)	0.383
Overall survival 30	8 (100)	33 (97.1)	0.623
Overall survival 90	100	33 (97.1)	0.623

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P057: Early liver transplant failure after normothermic perfusion: Not everything ends well

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Abstract

Background: Liver transplantation has gained immensely from the evolution of organ perfusion technology in the last decade. There is sufficient evidence in the literature about suitable short- and long-term outcomes of both in situ (NRP) and ex situ (NESLiP) normothermic perfusion techniques. They potentially mitigate risk of marginal donors or high-risk recipients or a combination of both. However, there are instances were not everything ends in success. In this study, we discuss our experience of early liver transplant failure following normothermic perfusion.

Method: Retrospective analysis of all adult liver transplants undergoing either NRP, NESLiP or both sequentially at our institute from January 2017 till September 2022. Those transplants which failed (graft loss or patient death) within 30 days were included.

Results: There were 90 NRP liver transplants and 163 (DBD 82; DCD 81) NESLiP liver transplants during the study period. Thirty livers received sequential NRP and NESLiP. Overall, 30-day transplant failure after normothermic perfusion was 5% (NRP group: 4%, NESLiP: 6% and sequential NRP/NESLiP: 10%). Commonest reason (64%) for early graft failure was hepatic artery thrombosis (HAT). This was the predominant reason for graft failure after NRP or NESLiP. Primary graft nonfunction (PNF) was seen in two patients, one each in NESLiP and sequential NRP/NESLiP group. There were 2% early posttransplant deaths: Heart failure 3, Covid 1, accelerated rejection 1, PNF 1 and intraoperative bleeding 1.

No of Transplant failure	16
Donor type, NESLiP group	DBD 5; DCD 7
Donor withdrawal period, mins*	16 (11-17)
Donor asystolic period, mins*	11 (14 – 17)
Duration of NRP, min	132 (124 – 142)
Duration of NESliP, hours	8.7 (7.5 - 12.0)
Cold ischaemic time, hours	7.0 (5.3 – 9.6)
Recipient age (median, IQR), years	50 (38 – 60) years
Recipient UKELD	54 (51 – 62)
MEAF score†	5.0 (3.1 – 6.6)
Graft survival, 30-day	96.5%
Patient survival, 30-day	98.0%

*DCD grafts

†Model for Early Allograft Function Score (MEAF) in liver grafts surviving more than 3 days

Conclusions: Our experience suggests that normothermic techniques have greatly decreased PNF as the reason for graft loss. They successfully mitigate the uncertainty involved in liver transplantation.

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P058: Imaging based liver transplant selection criteria for patients with hepatocellular carcinoma: accuracy and impact on survival

Miss Diana Wu, Dr James Vassallo, Dr Callum Worsley, Dr Chris Bellamy, Dr James Gordon-Smith, Miss Anya Adair

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Abstract

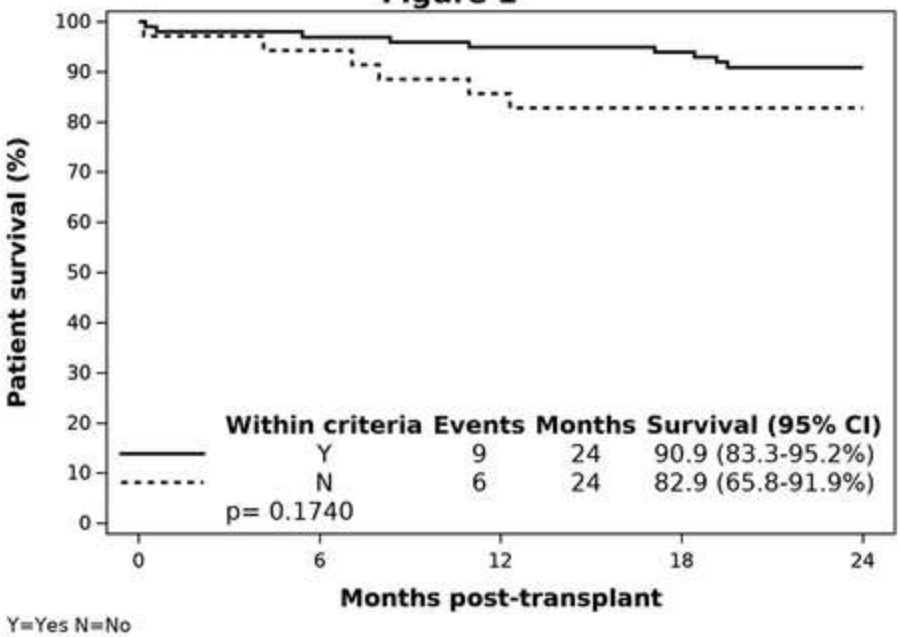
Introduction: Liver transplantation is a recognised curative treatment for early-stage hepatocellular carcinoma (HCC) associated with cirrhosis and strict imaging criteria are employed to ensure best use. We sought to establish how many patients undergoing liver transplantation for HCC were subsequently found to be outwith NHSBT liver transplant selection criteria on explant pathology, and determine any differences in survival.

Methods: Pat hology reports of explant livers from all transplants performed for HCC at our centre between January 2015 and December 2020 were cross-referenced with pre-transplant imaging reports and transplant criteria. Two-year survival outcomes were analysed using Kaplan-Meier estimates with the log-rank test.

Results: 140 patients were included. Pathology reports showed that 98(70.7%) patients were within transplant criteria, 35(25%) were outwith criteria, 1(0.7%) had an unclassifiable lesion and in 5(3.6%) no malignancy was identified. Median interval between imaging and transplantation was 46 days, and was >90 days in 23(16.4%) cases. Overall 2-year survival was 88.8%(95%CI: 82.1-93.1). 2-year survival was 91% and 83% for patients within and outwith transplant criteria respectively (p= 0.174) (Figure 1). Patients outwith transplant criteria with >5 HCCs (n=18, 13.4%) had the poorest survival at 77.8% (p= 0.009) (Figure 2).

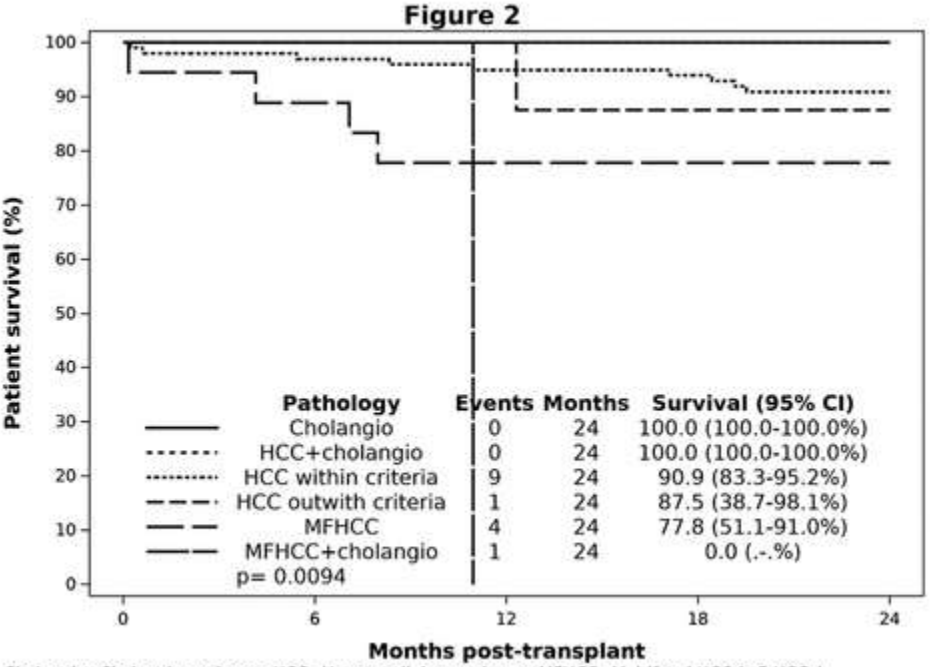
Discussion: In a significant proportion of patients undergoing liver transplantation for HCC, pre-operative imaging failed to accurately identify the pathology/burden of disease, resulting in transplantation outwith transplant criteria. These patients had poorer survival outcomes, although statistical significance was not reached. Patients found to have multiple small HCCs on explant pathology had significantly poorer outcomes. Poor sensitivity of imaging in identifying this cohort is a limiting factor in ensuring the best use of liver transplantation. Patients with cholangiocarcinoma on explant did not have poorer outcomes however numbers were small. Establishing prospectively maintained registries with large cohort data is essential to determine reproducibility of our findings.

Figure 1



Y=Yes N=No

Figure 2



Cholangio=Cholangiocarcinoma HCC=Hepatocellular carcinoma MFHCC=Multifocal HCC (>5 HCCs)

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P059: Prognostic factors for survival after emergency retransplantation for primary non-function in liver transplant recipients: Is it possible to predict futility?

Mr James Halle-Smith[1,2], Mr Lewis Hall[2], Mr Angus Hann[1,2], Dr Asif Arshad[1], Dr Matthew Armstrong[1], Dr Mansoor Bangash[1], Dr Nick Murphy[1], Dr James Cuell[1], Dr John Isaac[1], Dr James Ferguson[1], Prof Keith Roberts[1,2], Prof Darius Mirza[1,2], Prof Thamara Perera[1,2]

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

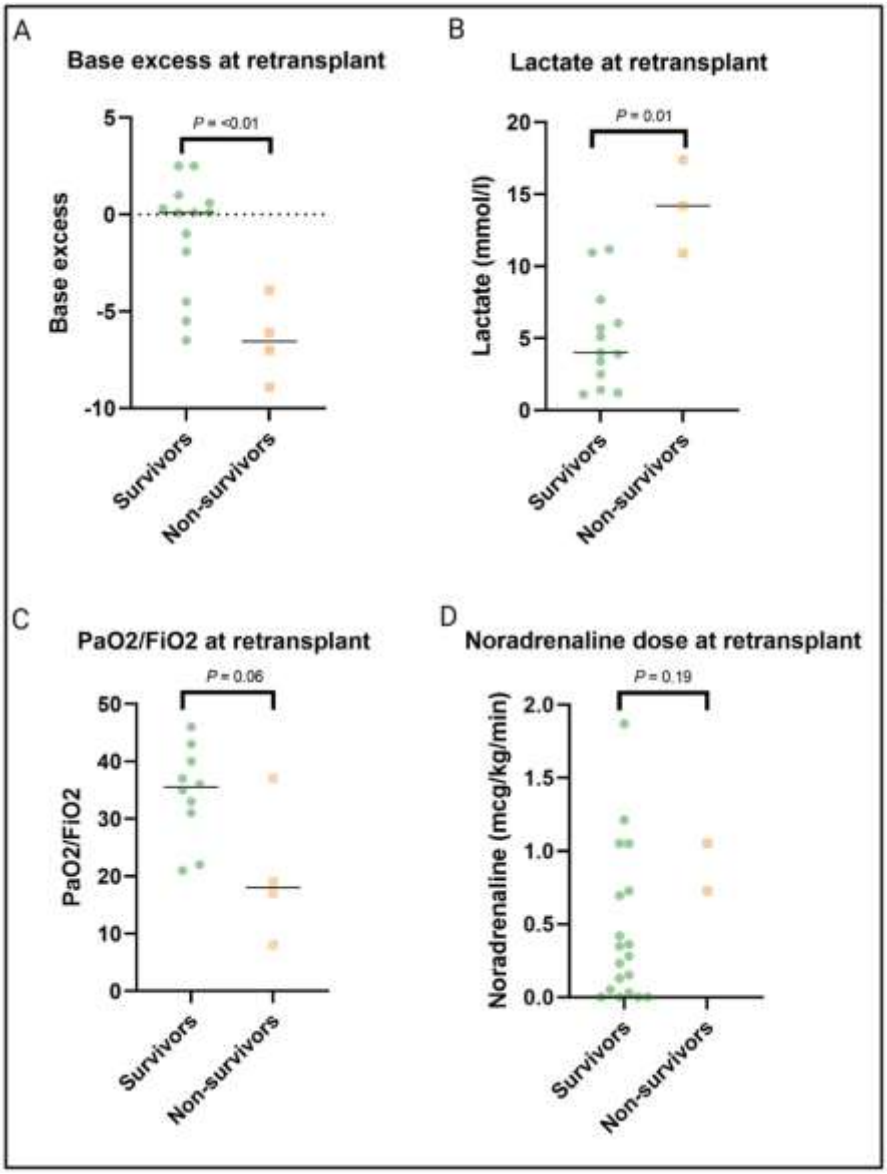
Abstract

Introduction: Primary non-function (PNF) is a feared complication of liver transplantation (LT) requiring emergency rescue retransplantation (RT). Organ dysfunction often complicates PNF and reduces the chances of a recipient being able to tolerate emergency RT. The aim of this study was to compare the severity of organ failure between recipients who did and did not survive RT for PNF.

Methods: This retrospective observational study compares measures of organ dysfunction immediately before emergency RT for patients who survived and those that died (within the 90 days) after emergency RT for PNF between 2010-2020 at a single centre.

Results: A total of 23 patients out of 1937 LTs in total (1.2%) underwent emergency RT. Of these, 5 (22%) died within 90 days of emergency RT for PNF. Lactate levels (14.2 vs 2, p=0.014) and the fraction of inspired oxygen (FiO2) (75% vs. 30%, p=0.01) were significantly greater in those that did not survive more than 90 days after emergency RT, with the base excess also being significantly more negative in this group (-6.5 vs. 0.1, p=0.01). The noradrenaline requirement before emergency RT was not significantly different between the two groups. In terms of laboratory blood tests, the only significant difference was in the bilirubin values between the two groups which was greater in those that survived emergency RT.

Discussion: In this small retrospective study there is evidence critical physiological parameters that may be able to guide decisions regarding emergency RT in PNF patients. This is important because transplant clinicians must balance the needs of these severely unwell recipients against those on the waiting list, and aim to avoid futile RT. Research in this area is limited by the small number of PNF patients and the lack of an agreed definition. Therefore, multicentre collaboration is advised to both increase patient numbers and work towards an agreed definition.



Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P060: Impact of Hepatic Artery anastomosis on post-transplant arterial complications

Mr Saad Rehman, Mr Angus Hann, Miss Oana Anisa Nutu, Dr Graham Caine, Mr David Bartlett, Miss Rebeca Sanabria.Mateos, Prof Keith Roberts, Prof Thamara Perera

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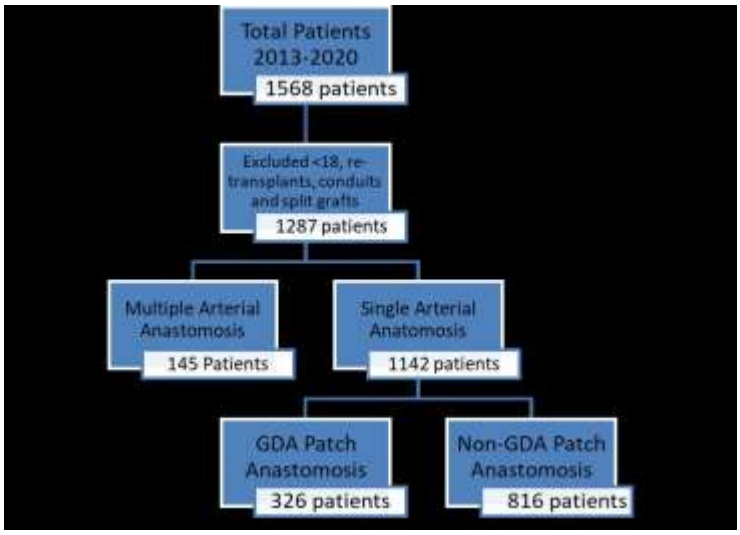
Abstract

Introduction: Hepatic artery complications develop in up to 9% of liver transplant patients and have been well-described. There is, however, minimal data on the impact of arterial anastomosis specifically on these complications. The aim of this study was to assess the impact of hepatic arterial reconstruction on arterial complications after primary liver transplant.

Methods: A retrospective analysis of deceased donor primary liver transplants between 2013 and 2020 was performed. Patients <18 years of age, living donor or split grafts or patients who needed an arterial conduit were excluded. Patients with multiple or single anastomoses were considered as separate groups. Single anastomosis cohort was further classified into a 'patch' (where the anastomosis was constructed between CHA/GDA patch of donor and recipient arteries) and non-patch group (Figure 1). Data on demographics, operative details and outcomes was collected and analysed. The incidence of hepatic artery thrombosis (HAT) and stenosis (HAS) in each group was compared.

Results: A total of 1287 patients were included and this comprised 145 (12%) and 1142 (88%) patients with multiple or single anastomoses respectively. In the multiple anastomosis group, the incidence of HAT and HAS was 3.4 and 4% respectively. The single arterial anastomosis cohort was further divided into those having GDA patch [326 (40%)] and non-patch [816 (60%)] anastomosis. Incidence of HAT was 0.3% and 4% in patch and non-patch groups respectively (P= 0.0001). Furthermore, radiologically proven HAS was documented in 14 (4%) and 48 (6%) patients in GDA patch and non-patch groups respectively (Table 1).

Discussion: Hepatic arterial reconstruction site and technique seems to have an impact on arterial complications. Patch to patch anastomosis seems to be associated with a significantly smaller number of HAT in our study. We conclude that this anastomotic arrangement is a natural lie for arterial reconstruction and should be utilised whenever feasible.



Vascular Complications	Multiple Anastomses (145 patients)	Single Anastomosis (1142 patients)	
		GDA/GDA Patch **(326 patients)**	Any Other Combination **(816 patients)**
Total HAT	5 (3.4%)	1	33 (4%) (P< 0.0001)
Early HAT	0	1 (0.3%)	13 (1.5%)
Late HAT	5	0	20 (2.5%)
Radiologically proven HAS	6 (4%)	14 (4%)	48 (5.8%)

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P061: Simultaneous liver and thoracic transplantation in a specialist United Kingdom centre

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Abstract

Introduction: Simultaneous liver and thoracic transplantation is a life-saving procedure for patients with dual organ failure. Operative and logistical complexity of combined heart-liver (HLTx) and combined lung-liver (LLTx) transplantation limit the wider adoption of such a specialist procedure. We report a consecutive series of patients who underwent simultaneous liver and thoracic transplants in a specialist centre.

Methods: We performed a retrospective review of patients undergoing combined liver and thoracic transplantation from 2001-2021. Patients were discussed at a joint liver-thoracic multi-disciplinary team meeting. Perioperative care was managed jointly by liver and thoracic anaesthetic teams. Immunosuppression was guided by cardiothoracic protocols.

Results: Seven patients (5M:7F, age range 21-54) underwent HLTx/LLTx. Four underwent HLTx transplantation whereas 3 underwent LLTx all combined with a simultaneous liver transplant. All grafts were from brain-dead donors. Indications for HLTx were failing Fontan circulations with associated liver cirrhosis (n=3) and failing Fontan circulation with solitary 6.6cm hepatocellular carcinoma treated with 5 rounds of trans-arterial chemoembolization pre-transplantation (n=1). None of the HLTx patients had left ventricular assist devices in place. Indications for LLTx were cystic fibrosis with associated cirrhosis (n=2) and alpha-1 antitrypsin deficiency (n=1).Median time to transplantation was 225 days and 143 days in the HLTx and LLTx groups, respectively. The following complications were also managed; for HLTx biliary stricture needing hepaticojejunostomy (n=1), sternal debridement (n=1), resternotomy for haemodynamic compromise (n=1) and for LLTx endoscopic management of a biliary stricture (n=1). There was one mortality in the series in a HLTx who was highly sensitized and developed acute rejection with multiorgan failure and died on day 12. The remaining six patients are alive and well following transplantation, with follow-up ranging from 8 months to 15 years.

Conclusions: Combined liver and-thoracic transplants are a high-risk life-saving intervention, but can produce acceptable outcomes in selected patients despite the complexity and logistical issues.

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P062: Implementation of expedited cardiothoracic offering for super urgent liver registration

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Abstract

Introduction: Liver recipients registered on the Super Urgent (SU) waiting list are critically unwell. Transplantation must therefore take place as soon as possible to prevent mortality. Unfortunately, the pathway to organ retrieval is now prolonged, increasing risk for the SU liver recipient. It was determined to reduce this risk by expediting cardiothoracic (CT) offering and to assess the barriers to implementing this critical change.

Methods: With Cardiothoracic Advisory Group support, expedited CT offering ('block offering') was triggered as soon as the liver was accepted for a SU recipient. All CT centres received all offers for heart and lungs for all possible recipients simultaneously, rather than sequential offers ('routine/named offering'). Each case was then reviewed by a multidisciplinary group and developmental/best practice themes were identified.

Results: From 1/11/21 to 5/11/22, 87 registrations occurred where the liver was allocated to a SU recipient and CT organs were offered. Developmental/Positive Themes were noted in Hub Operations (71/100), CT recipient centres (86/5), SNODs (58/52) and NORS teams (32/3), as shown in Figures 1 and 2. The most common developmental themes were delayed closure of the block offer (n=26), re-review of CT offer (n=43), delayed mobilisation of NORS teams (n=41) and delay in NORS arrival (n=26). The most common positive themes were Hub informing SNOD of SU status (n=67), CT and liver consultants in direct communication (n=5), good SNOD communication around delay requests (n=25) and CT/Abdo NORS in direct communication (n=2).

Discussion: This study, utilising case-by-case review after expedited CT offering, has for the first time revealed key steps affecting the commencement of donor surgery after SU liver acceptance. These results will support focused interventions across the four professional groups, further speeding the process to deliver SU liver transplantation as quickly as possible.

Fig 1

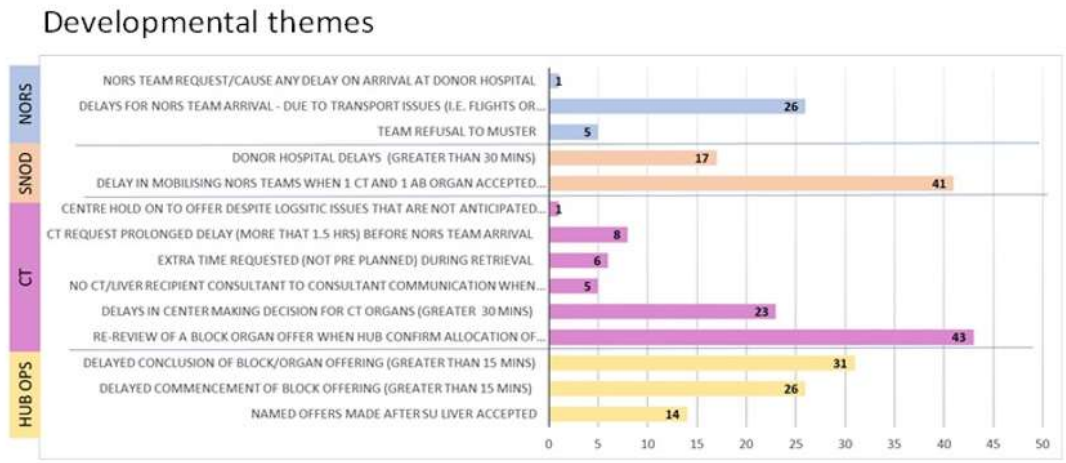
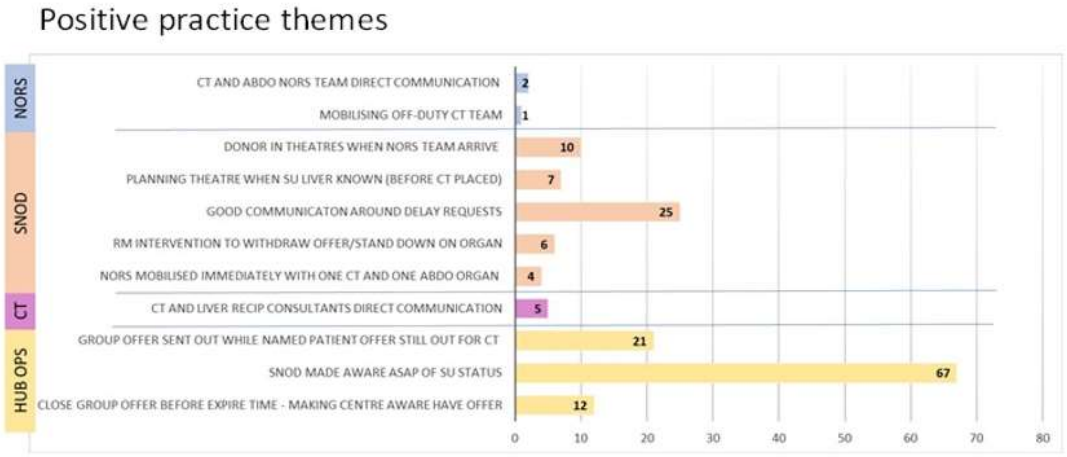


Fig 2



Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P063: The impact of changes to organ allocation and legislation on the transplant coordinator workload: a comparative analysis

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Abstract

Introduction: Recently, UK deceased donor abdominal organ transplantation has been influenced by changes to both organ donor legislation and organ allocation policies; with the changes resulting in increased numbers of donor organ offers. We wanted to see if these changes had affected the overall on-call transplant coordinator workload for our centre.

Methods: In our Trust, on-call recipient coordination falls to the transplant coordinator specialist nursing team. The on-call transplant coordinator undertakes this role alongside their specialist nurse duties. They receive organ offers for all adult abdominal organ groups, covering the service 24/7. We compared two different 5 month periods of on-call both pre (2016/17) and post (2022) the national changes described above to see how these changes had influenced our workload.

Results: Overall, we saw an 18% increase in the total number of offers and screening calls between the 2 periods analysed (2016/17 n= 1054, 2022 n= 1292) and a 26% increase in the number of deceased donor transplants (2016/17 n= 95, 2022 n= 128); figure 1. Heatmapping of offers identified that deceased donor kidney offering activity was more prevalent during the day compared to deceased donor liver offering activity which happened predominantly at night. Furthermore, the heatmaps identified that the timing of offering had advanced from between the hours of 22:00-04:00 to 00:00-06:00 for both total number and liver specific offers. There were no significant time points identified in heatmapping for pancreas and bowel offers due to the low numbers seen.

Discussion: Although we have seen a significant increase in the coordinator workload from 2016/17 to 2022, this is associated with a favourable increase in the number of deceased donor organ transplants performed at our centre. Comparison analysis and heatmapping can allow teams to identify pressure points and gaps in services to actively plan for future service provision.

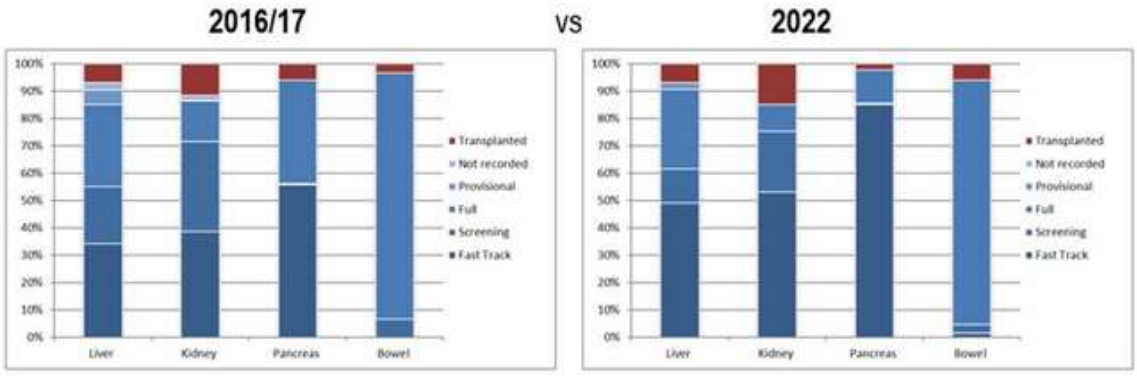

Figure 1: 5 month organ utility comparison 2016/17 vs 2022

Categories: Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P064: Factors associated with improved outcomes in pancreas transplant for people with diabetes

Miss Amy Fowler, Miss Marie Yang, Dr Victoria Salem, Dr Monika Reddy, Dr Adam McLean, Mr Anand Muthusamy

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Abstract

Introduction: People with diabetes and end-stage renal disease may be offered a pancreas transplant if there is a defined large additional benefit of removing insulin treatment/achieving normoglycaemia. There are three types of solid organ transplant: simultaneous pancreas-kidney (SPK), pancreas after kidney (PAK) and pancreas transplant alone (PTA). However, pancreas transplant is a significantly higher risk procedure than kidney transplant alone and it is important to identify recipient- and donor-related risk factors which may impact outcome.

Methods: We interrogated clinical records, aiming to determine risk factors associated with two-year all-cause graft failure in 98 individuals who received pancreas transplantation at our unit between 2010 and 2020.

Results: Overall, our pancreatic graft survival rate was 83% aligning with national figures. 17 patients lost graft function within two-years of transplant. Univariate analysis revealed five significant variables associated with two-year graft failure: body mass index (BMI), transplant type, three-month post-transplant HbA1c, immediate post-transplant serum amylase and cold ischaemic time (CIT) (*Figure 1*). None of these factors survived multivariate correction.

Discussion: Obesity increased the odds of graft failure eight-fold and cardiovascular disease was unlikely to be the confounding reason for this. Rigorous pre-transplant cardiovascular work-up meant there were few cardiovascular events in the early post-operative phase and we found no association between cardiovascular disease and graft failure. SPK was associated with reduced odds of graft failure by 76% compared with PAK and PTA. Three-month HbA1c (≤41mmol/mol) has potential to predict graft success. Raised serum amylase in the short post-transplant period was unexpectedly associated with increased odds of long-term success and could not be placed in the context of pancreatitis. Increased CIT is a donor risk factor well-accepted to increase risk of graft failure. In conclusion, our audit demonstrated excellent survival data and five variables that, with confirmatory analysis, could be used clinically to aid pancreas transplant recipient selection.

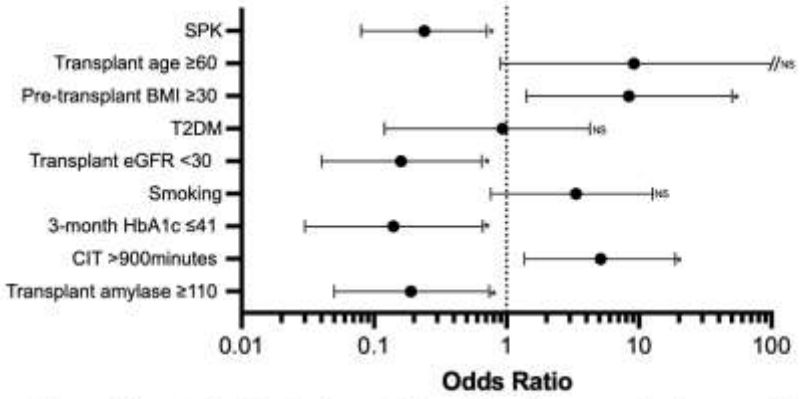

Figure 1: Forest plot of univariate analysis: odds ratios comparing demographic and clinical features with two-year all-cause graft failure. *Statistical significance is represented by * ($p<0.05$) and NS (not significant).*

Categories: Clinical - pancreas and islet (pancreatic transplant (all types) - surgery - recipient clinical care and management)

P065: Evaluating the role of c-peptide measurements in the management of individuals with diabetes undergoing pancreas transplant

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Imperial College Kidney and Transplant Centre, London, United Kingdom

Abstract

Introduction: For individuals undergoing pancreas transplant for insulin-dependent type 1 (T1) or type 2 (T2) diabetes mellitus (DM) with severe complications such as end-stage renal failure, recipient selection and monitoring are crucial to graft success. The British Transplant Society guidelines recommend the use of stimulated c-peptide, a biochemical measure of endogenous beta cell insulin secretory reserve, to identify those who may have had their diabetes type misdiagnosed, and as a measure of pancreas graft function. However, since c-peptide is renally cleared, its interpretation is challenging in the presence of kidney dysfunction. We evaluated the utility of c-peptide measurements in our cohort of individuals with diabetes undergoing pancreas transplant, usually in the setting of simultaneous kidney transplant.

Methods: We studied the medical records of 99 individuals who underwent solid organ pancreas transplantation at our unit between 2010 and 2020. Pre-transplant c-peptide and 24-month post-transplant biochemical measures, clinical diabetes characteristics and transplant outcomes were compared between individuals with T1DM and T2DM.

Results: 12% of patients receiving pancreas transplant had a diagnosis of T2DM. Pre-transplant c-peptide, comprising fasting or random measurements, was measured in only 38% of individuals and was significantly higher in T2DM than T1DM (p=0.0064) (Figure 1). No referral diabetes diagnosis was formally revised by the transplant team but up to four individuals with T1DM and high c-peptide levels (>600pmol/L) may have been misdiagnosed. Random and stimulated post-transplant c-peptide was measured when graft dysfunction or failure was suspected and helped to confirm residual beta-cell function and identify insulin resistance in two individuals with T1DM, who responded to metformin and liraglutide respectively.

Discussion: Our study has demonstrated that c-peptide has potential use in recipient selection, graft monitoring and drug management of patients undergoing pancreas transplant. However, poor overall c-peptide data highlights the need for more consistent recording and standardisation of c-peptide measurements.

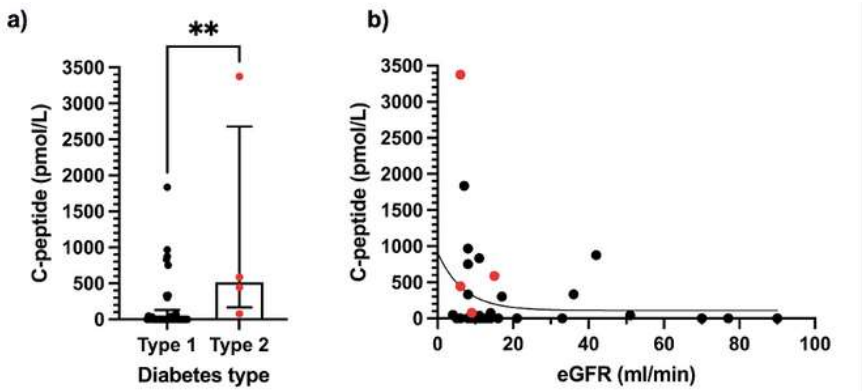

Figure 1. Pre-transplant c-peptide levels of individuals with type 1 (n=34) and type 2 diabetes (n=4, highlighted in red) in terms of a) distribution and b) correlation with pre-transplant eGFR. a) Individual results are plotted with bar height representing median and error bars representing interquartile range (IQR).

Categories: Clinical - pancreas and islet (pancreatic transplant (all types) - surgery - recipient clinical care and management)

P066: Severe acute rejection following pancreas after kidney transplantation: a case presentation

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Abstract

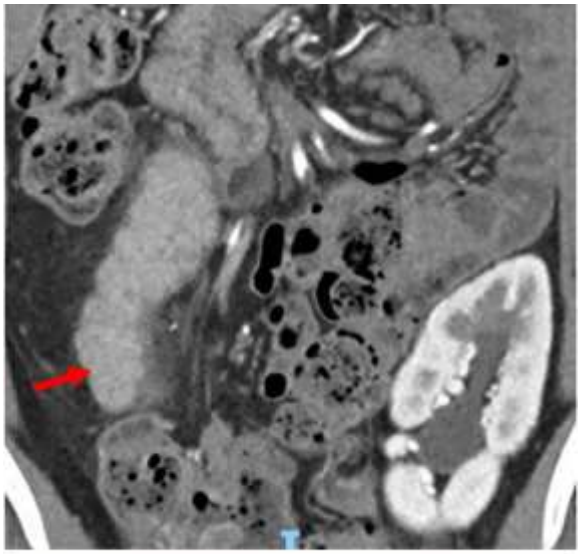

Figure 1 – CT demonstrating parenchymal oedema and surrounding inflammatory stranding, suggestive of graft pancreatitis.

Background: Acute rejection following pancreas after kidney (PAK) can result in graft loss, with associated morbidity and mortality. There is little evidence for optimum management. We present a case of severe acute rejection in a PAK recipient.

Case presentation: A 32-year-old female underwent PAK transplantation (DBD, HLA 2:1:0), after a live donor kidney transplant 5 years earlier. Duodenoduodenal anastomosis was used at implantation. Induction was with Alemtuzumab, followed by standard maintenance regimen (tacrolimus, mycophenolate mofetil and prednisolone). The recipient was readmitted with a rise in serum amylase and lipase 5 months post-transplant. Amylase and lipase peaked at 1528u/L and >3000u/L, respectively. CT demonstrated pancreas graft oedema, suggestive of graft pancreatitis (figure 1). Endoscopic biopsy of donor duodenum showed severe ulceration, with no cause identified. The recipient had low IgG4 subclass immunoglobulins and newly positive for anti-GAD antibody. Treatment was started for presumed rejection with pulsed methylprednisolone and antithymocyte globulin (ATG). CT-guided pancreas graft biopsy showed acute T-cell mediated rejection, with septal fibrosis, minimal C4d staining and negative donor specific antibodies. Sirolimus was introduced into maintenance immunosuppression following biopsy. Normal renal function was maintained throughout the rejection episode, with good glycaemic control.

Outcome: Following addition of sirolimus, amylase and lipase remained high with a C-peptide level of 0.54nmol/L. Consideration was given to further ATG and steroids, however the risks of malignancy and/or

severe infectious complications associated with further ATG were not justified given the recipient had optimal beta-cell function and a beta-2 score 31.02. The recipient was restarted on insulin 449 days post-PAK transplant.

Discussion: We present a complex case of acute severe rejection in a PAK recipient, resolving following addition of sirolimus. Although duodenoduodenostomy provided endoscopic access for biopsy, CT-guided biopsy confirmed the diagnosis. Graft biopsy and treatment of severe acute rejection represent significant challenges, with evidence limited to single centre case series.

Categories: Clinical - pancreas and islet (pancreatic transplant (all types) - surgery - recipient clinical care and management)

P067: Pregnancy post simultaneous pancreas and kidney transplantation

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Abstract

Introduction: End-stage renal disease from diabetic nephropathy is associated with significantly reduced fertility and a high-risk of pregnancy complications. Simultaneous Pancreas-Kidney (SPK) transplant offers an improved quality of life and increased fertility allowing the option for motherhood to be a realistic goal for SPK recipients. Here we present a case series of three SPK recipients from a single centre who had successful pregnancies post-transplantation. Data was retrieved on the three women relating to immunosuppression, graft function, blood pressure, HbA1c and history of pregnancy events including delivery. The collaboration with obstetric and transplant services was examined with a to develop a post SPK transplant, pregnancy plan.

Case Series: Case 1: 35-year-old female became pregnant 4-years post transplantation and went on to give birth under elective c-section at 36 weeks gestation. Case 2: 39-year-old female became pregnant 3 years post-SPK transplant on her second round of IVF treatment and gave birth under elective c-section at 34 weeks' gestation. Case 3: 32-year-old female became pregnant 2 years post-SPK transplant and gave birth at 33 weeks under elective c-section. All three cases were planned pregnancies.

Outcome: All cases switched Mycophenolate Mofetil at pre-pregnancy counselling due to risk of miscarriage and congenital malformations to azathioprine (Cosica et al, 2015). Graft function for all cases remained stable pre-during and post pregnancy taken from creatinine and HbA1c levels.
A collaborative approach was taken between obstetric and transplant teams to provide support during the pregnancy and deliveries. All babies were delivered via planned c-section with on-hand transplant surgical support.

Discussion: Planned pregnancy can be successful post SPK with sustained graft function in the recipient. Adjustment to immunosuppression is best discussed prior to pregnancy and a collaborative approach between services works well. There is scope for a standardised and collaborative care plan for recipients who wish to become pregnant post SPK.

Categories: Clinical - pancreas and islet (pancreatic transplant (all types) - surgery - recipient clinical care and management)

P068: Utility of ramp test time in patients undergoing assessment for renal transplantation

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Abstract

Introduction: Prior to renal transplant listing, cardiovascular screening is performed in order to stratify the risk of cardiovascular disease (CVD). During pre-assessment in our centre, patients undergo a "ramp test" (a timed assessment to walk 130m), which is a simple, rapid and non-invasive method of quantifying exercise tolerance. The purpose of this study is to correlate ramp test time (RTT) with:

1. transplant waiting list status;
2. nuclear medicine or echocardiographic cardiac stress testing;
3. post-transplant cardiovascular (CV) events and mortality.

Methods: Retrospective analysis of all patients that underwent pre-assessment. Data collection included patient demographics, history of CVD and diabetes, RTT, ejection fraction and evidence of myocardial ischaemia, transplant list status, any subsequent CV event (defined as any acute event/intervention related to CVD), and mortality. Three distinct groups were analysed: (1) patients unable to perform the ramp test; (2) RTT ≥2mins; (3) RTT ≤1min.

Results: 1508 patients were pre-assessed for transplantation between November 2014 and June 2022, of which 1302 had RTTs recorded. Mean RTT was 86 seconds (SD±26 seconds). Patients with RTT ≤1min were younger and had less pre-existing CVD (Table 1), of whom 93% had normal cardiac function by stress testing. Over half of the patients who either had RTT ≥2mins or were unable to perform the test had abnormal cardiac function, with a 3-year mortality of about 30% (Figure 1).

Discussion: RTT can be used to assess cardiovascular fitness and suitability for transplantation. Patients who are unable to perform the test are unlikely to be listed for transplantation, with a quarter suffering a CV event post-assessment. In contrast, patients with RTT ≤1min are almost all activated on the waiting list with no subsequent CV events. The low rate of CV events or abnormal stress tests in this group may allow early activation without the need for extensive cardiovascular assessment.

Table 1.

			UNABLE TO PERFORM	RTT ≥ 2 MINS	RTT ≤ 1MIN	p-value
DEMOGRAPHICS	Total number of patients, n		89	92	67	
	Mean follow-up, months (SD)		32 (±17)	52 (±28)	33 (±20)	<0.0001
	Mean age, years (SD)		60 (±9)	60 (±10)	42 (±13)	<0.0001
	Sex (M:F)		49:51	50:50	84:16	<0.0001
	Mean BMI, kg/m^2 (SD)		29.3 (±5.7)	29.7 (±5.3)	25.7 (±4.8)	<0.0001
	Median frailty score (IQR)		5 (4-6)	4 (3-6)	2 (1-3)	<0.0001
	History of CVD, n (%)		41 (46)	37 (40)	1 (1.5)	<0.0001
	History of diabetes, n (%)		47 (53)	60 (65)	8 (12)**	<0.0001
CARDIAC STRESS TESTING	Stress testing performed, n (%)		43 (48)	71 (77)	27 (40)	<0.0001
		Normal	24 (56)	56 (79)	25 (93)	0.001
		Activated	11 (46) *	25 (45)	23 (92) ^	
		CV event	6 (25)	11 (20)	0	
		Died	5 (21)	13 (23)	1 (4)	
		Abnormal	19 (44)	15 (21)	2 (7)**	0.001
		Activated	1 (5) *	4 (27)	0	
		CV event	10 (53)	7 (47)	0	
		Died	5 (26)	4 (27)	2 (100) **	
	Stress testing not performed, n (%)		46 (52)	21 (23)	40 (60)	<0.0001
		Activated	0	2 (10)	39 (98)	
		CV event	6 (13)	4 (19)	0	
		Died	28 (61)	15 (71)	1 (3)	
TRANSPLANT LIST STATUS	Activated, n (%)		12 (13) *	31 (34)	62 (93)	<0.0001
	Excluded, n (%)		77 (87)	61 (66)	5 (7)	
OUTCOME	CV event, n (%)		22 (25)	22 (24)	0	<0.0001
	Died, n (%)		38 (43)	32 (35)	4 (6)	<0.0001

Table 1. Patient demographics and outcomes of cardiac stress testing, transplant list status and survival according to RTT

*All patients unable to perform the ramp test and activated on the transplant list had a normal cardiac stress test, except for one patient, who had an abnormal stress test, was activated, and died from a post-operative myocardial infarction

** All 8 diabetic patients in the RTT≤1minute group underwent cardiac stress testing, with all 8 having a normal test

^ 2 patients with normal cardiac stress testing were not activated: 1 patient was excluded due to untreated TB; 1 patient died from a post-operative wound infection

** 2 patients with abnormal cardiac stress testing died from intracerebral haemorrhages during work-up

Figure 1.

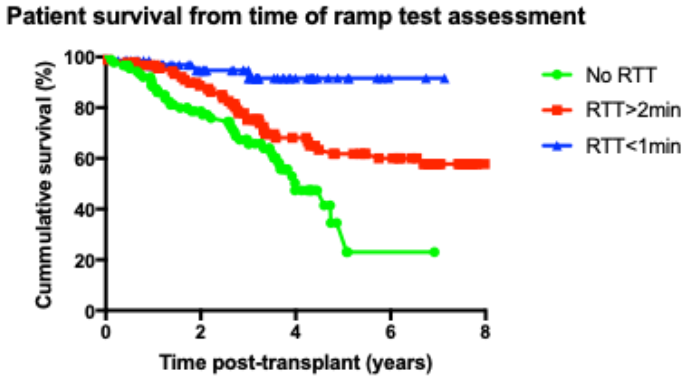

Figure 1. Kaplan–Meier curves showing patient survival from time of assessment, with censoring at last follow-up. p<0.0001 overall, log-rank test.

Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

P069: Does normothermic machine perfusion reduce recipient cardiac instability following kidney transplantation? A randomised controlled trial subgroup analysis

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Abstract

Introduction: In transplantation, reperfusion of the organ within the recipient can be associated with cardiovascular instability, termed “post-reperfusion syndrome” (PRS). This has been shown to be associated with inferior outcomes in liver transplantation, but relatively little work has been performed to assess its frequency or effects in kidney transplantation. Likewise, normothermic machine perfusion (NMP) prior to liver transplantation has been shown to reduce the incidence of PRS, however this has not yet been investigated in kidney transplantation.

Methods: As part of an existing randomised controlled trial examining outcomes of NMP prior to donation after circulatory death kidney transplantation, a single-centre subgroup analysis was undertaken to compare the incidence of PRS following NMP versus static cold storage. PRS was defined as reduction in recipient mean arterial pressure of 15% or more within five minutes of reperfusion, lasting more than one minute. Secondary outcome measures included intraoperative inotrope and vasopressor use, volume of intravenous fluid and blood transfusion requirements, and rise in post-operative inflammatory markers.

Results: During the study period, twenty-five kidneys were randomised to NMP and 24 were randomised to SCS alone. Four recipients (16.7%) met the criteria for post-reperfusion syndrome in the static cold storage group, and no recipients (0%) in the normothermic machine perfusion group had post-reperfusion syndrome. This did not reach statistical significance following intention-to-treat analysis (p=0.05). Following reperfusion, there was no difference in the use of inotrope/vasopressor infusions (12 (48%) versus 11 (45.8%), p=0.89). A rise in post-transplant inflammatory markers was observed in both groups and was comparable (p>0.05 throughout).

Discussion: Kidneys undergoing NMP did not demonstrate improved intraoperative haemodynamics compared to static cold storage, though the study was likely to have been underpowered. Further work is needed to determine whether NMP use prior to kidney transplantation leads to reduced incidence of PRS.

Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

P070: Assessing the quality and standardisation of operation notes for kidney transplantation

Miss Jozel Ramirez[1,2], Miss Ffion Dewi[1], Dr Shona Gardner[1], Mr Thomas Nieto[1]

[1]North Bristol NHS Trust, Bristol, United Kingdom. [2]University of Bristol, Bristol, United Kingdom

Abstract

Background: Clear and detailed operation notes are critical for continuity of care and good medical record keeping. For organ transplantation, this is especially pertinent for accuracy of Human Tissue Authority (HTA) data reporting after surgery. Poor documentation can also have consequences on post-operative management and medico-legal practice. This project aims to assess the quality of operation notes for kidney transplantation against set standards.

Methods: Information from operation notes on all adult kidney transplants in North Bristol NHS Trust from January to August 2022 were retrospectively collected. Data was assessed against the Royal College of Surgeons (RCS) Good Surgical Practice guidelines and set criteria collated from renal transplant consultants and coordinators on information deemed important for inclusion in a kidney transplant operation note.

Results: Sixty-eight operation notes were reviewed, of which 52 (76%) were deceased (26 DCD, 23 DBD, 3 unspecified) and 16 (24%) were live kidney transplantations. Good adherence to the majority of RCS operative criteria was seen (Table 1), except reported blood loss (28%). Varying level of detail was provided for complications and post-operative instructions. Information regarding donors included: donor ID (deceased) (40%), age (59%) and cause of death (19%). The appearance and quality of the donated kidney/vessels were described (68%) (Table 2), ranging from quantifiable to subjective descriptors (biopsy, no. and length of vessels, perfusion quality, size). Critical time periods including cold ischaemic time (56%), re-perfusion (99%) and 'out of ice' (99%) were reported in the majority of cases.

Discussion: Varying level of information is provided in renal transplantation operation notes, with room for improvement in meeting the RCS and local standards set. We are developing a quality improvement project leading on from our results to improve standardisation of operation notes, including post-operative instructions, to improve patient safety and quality of transplant data reporting (e.g. HTA-B forms).

Table 1. RCS Good Surgical Practice criteria for operation notes and percentage adherence of documentation (%)

	Percentage, % (n)
Date and time	100 (68)
Name of operating surgeon/assistant(s)	100 (68)
Name of theatre anaesthetist	79 (54)
Operative procedure carried out	100 (68)
Incision	100 (68)
Operative diagnosis	100 (68)
Operative findings	100 (68)
Any problems/complications	13 (9)
Closure technique	100 (68)
Anticipated blood loss	28 (19)
Antibiotic prophylaxis	100 (68)
DVT prophylaxis	100 (68)
Detailed post-operative instructions	100 (68)
Signature present	100 (68)

Table 2. Locally set criteria of critical information for kidney transplant operations and adherence of documentation (%)

	Percentage, % (n)
Donor number (deceased only)	40 (21)
Donor age	59 (40)
Cause of death (deceased only)	19 (10)
Left or right donor kidney specified	87 (59)
Description of arteries	75 (51)
Description of veins	71 (48)
Description of ureter	51 (35)
Quality/appearance of kidney (incl. damage, anatomy)	68 (46)
Quality of perfusion (deceased only)	6 (3)
Perfusion fluid (batch no. and expiry date)	72 (49)
Withdrawal of life sustaining Tx (deceased only)	8 (4)
Asystole (deceased only)	19 (10)
CMV status	1 (1)
HLA MM	7 (5)
Crossmatch type (virtual/FXM/CDC)	4 (3)
Cold ischaemic time (h/min)	56 (38)
Warm ischaemic time (h/min)	28 (19)
Cross-clamp (time)	22 (15)
Clamps off/re-perfusion (time)	99 (67)
Out of ice (time)	99 (67)

Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

P071: Kidney transplantation with duplex ureters-problematic if discovered ‘late’, but salvageable

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Abstract

Introduction: Ureteric duplication (UD) occurs in around 1% of the population and is often asymptomatic. UD can be unilateral or bilateral. Living kidney donor work-up imaging should identify UD. By contrast, in deceased donor transplantation, UD may be found at retrieval, benchwork or go unrecognized. We examined outcomes from living and deceased donor kidney transplants with UD.

Methods: A single institution retrospective review of a database of kidney transplants performed between 1991-2021.

Results: Over 6000 kidney transplants were performed. 24 kidney transplants with duplex ureters (~0.4%) were identified. Separate Lich-Gregoir or ‘double-barrelled’ single anastomosis techniques were used with stents placed in all ureters.

Nine cases were from living donor kidneys and all duplex ureters were identified pre-donation. There were no early urinary tract complications. One patient had recurrent transplant pyelonephritis, requiring graft nephrectomy for urosepsis and chronic rejection 7 years post-transplant. Median recipient eGFR at 3 months and 1 year was 40 and 54mls/min respectively.

Fifteen cases were from deceased donor kidneys: three as part of simultaneous pancreas-kidney transplants (20%). In one (6.7%) dual kidney transplant, both kidneys had UD not identified pre-implantation. On-table uretero-pyelography confirmed the presence of one duplex ureter but a transplant urinoma developed, requiring re-exploration and implantation of the second ureter. Median recipient eGFR at 3 months and 1 year was 50 and 46mls/min respectively. However, within the post-transplant first year, 3 cases (20%) required re-exploration and ureteric re-implantation for ureteric stenosis.

Conclusions: In living donor kidney transplantation with duplex ureters, there is little additional risk of recipient complications and excellent outcomes were demonstrated. In deceased donor kidney transplants, duplex ureters are rare but also difficult to recognise. When unrecognized urinoma may develop, requiring re-exploration and implantation of an unrecognized 2nd ureter. Re-implantation of ureteric stenosis appeared more frequent in this cohort but can produce acceptable outcomes. Communication between transplanting centres about UD may be useful.

Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

P072: Enhanced recovery pathway following deceased donor kidney transplantation

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Abstract

Introduction: Despite widespread implementation in most surgical disciplines, enhanced recovery pathways (ERP) remain under-utilised in renal transplantation. Following the success of an ERP in living donor (LD) kidney transplantation (KT) in 2019, demonstrating a reduction in length of hospital stay (LOS), we sought to extend the principles of ERP to deceased donor (DD) KT.

Methods: A prospective single centre study investigated outcomes of DD KT recipients following implementation of ERP over a 1-year period. Specific features of the ERP, adapted from the LD KT ERP, included:

- Early patient familiarisation with post-KT care
- Optimised fasting times, pre-operative Preload™ carbohydrate drink and early reinstatement of enteral nutrition
- Early weaning of intravenous opioids
- Education booklets enabling shared patient-staff daily targets
- Goal-directed mobilisation
- Urinary catheter removal on Day 4 post-surgery
- Early discharge planning

Comparison was made with a contemporaneous cohort of LD transplant recipients. Primary outcomes were LOS and readmission rates, with particular focus on DD transplant recipients who experienced primary graft function (PGF).

Results: 142 DD and 71 LD transplants were performed between October 2021 and October 2022, with a median LOS of 8 (range 4 - 32) and 6 days (range 4 - 42) respectively. DD recipients had a delayed graft function (DGF) rate of 48%, and overall 66% of DD recipients had a LOS ≤ 10 days. DD recipients with primary graft function (PGF) had no difference in median LOS compared to LD transplant recipients (6 days in both groups, $p = 0.81$) or readmission rates ($p = 0.53$).

Discussion: ERP in DD kidney transplantation is feasible, and for those recipients who experience PGF, LOS is comparable to LD transplant recipients. Despite DGF rates approaching 50%, ERP enabled LOS ≤ 10 days in two-thirds of this cohort. ERP should become an integrated part of standard care in all KT recipients.

Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

P073: The clinical impact of positive perfusion fluid cultures in deceased donor kidney transplant recipients - a local audit

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Abstract

Introduction: There is currently no agreed standard perioperative prophylactic anti-microbial regime for kidney transplantation. At our institute, prophylactic regimes differ in antibiotic type and number of doses, depending on the donor type. Donor after brainstem death(DBD) and Donor after circulatory death(DCD). Historically, this difference was based on the perceived risk of microorganism contamination at the time of organ retrieval. We aimed to examine the incidence and clinical relevance of positive organ donor perfusion fluid culture and to review the local antibiotic and preservation fluid protocols.

Methods: A retrospective audit of deceased donor renal transplant recipients was carried out over a 5-year period between 2016-2021. The local transplant and microbiology databases were interrogated along with patient electronic records. Incidence of donor perfusion fluid culture positivity was compared between organs from DBD and DCD donors. For those recipients where donor preservation fluid was positive, recipient samples (blood, urine, sputum, drain fluid and ear, nose, mouth and wound swabs) were examined for culture positivity and organism type.

Results: 528 deceased donor recipients were included (345 and 183 DBD/DCD respectively) The incidence of positive donor fluid culture in DBD and DCD cohorts was 13% vs 4% respectively (NS). Of those recipients where donor preservation fluid was culture positive, 12.5% of DBD and 4.16%of DCD recipients developed a positive sample culture of any source (NS). None of the organisms identified in the donor fluid cultures were reproduced in the recipient cultures.

Discussion: No statistically significant difference was seen in the incidence of donor perfusion fluid culture positivity between the DBD and DCD cohorts. None of the recipients were found to have positive cultures with identical bacteria to the donor perfusion fluid. These findings have informed the change in local antibiotic protocol, reducing the variability between prophylactic regimes and the number of perioperative doses that recipients receive.

Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

P074: Indications for and techniques of native nephrectomy in autosomal dominant polycystic kidney disease

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Abstract

Introduction: We review the clinical indications, timing and surgical techniques for native nephrectomy (NN), together with the associated pathological findings in patients with ADPKD at our institute.

Methods: A retrospective review of ADPKD patients who received a kidney transplant was performed. NN was performed via a midline or rooftop open incision, laparoscopic or hand-assisted-laparoscopic(HAL) approach with an 8-10cm infra-umbilical incision.

Results: 348 kidney transplants were performed for ADPKD from 1999-2020;184(53%) were male and 189(54%) were deceased-donor transplants. NN was performed on 92(26%) patients,51(55%) were male. Mean-age at time of NN was 49±9yrs and age at transplantation 52±12(P=0.043). Over time, we observed a change from bilateral to unilateral NN. Unilateral NN was performed in 44(47%) patients of whom 14(32%) subsequently had staged contralateral NN. NN timings were pre-transplant(n=44,48%), simultaneous(n=1,1%) and posttransplant(n=47,51%). Indication for NN included pain (n=26, 28%), infections (n=22, 24%), combination of pain+infection+haematuria(n=25,27%), space(n=6,7%) and tumour suspicion(n=7,8%). Histology revealed renal cell carcinoma in 6 specimens from 4(4.3%) patients. NN was performed via open surgery in 46(50%) and laparoscopic-assisted in 46(50%) patients. The length of hospital stay post-NN was significantly longer with open compared with laparoscopic techniques (12±6V5±5 days;p=0.003).NN did not influence patient survival or graft survival when compared to non-NN ADPKD patients(p=0.17 and p=0.54 respectively).

Conclusions: In our experience, 26% of ADPKD patients required NN that was approximately equally performed pre and post transplant. There has been a shift from bilateral to unilateral NN in ADPKD. HAL NN is feasible and safe in these large kidneys with decreased morbidity and shorter length of hospital stay than open surgery

Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

P075: Transplantation of a deceased donor horseshoe kidney

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Abstract

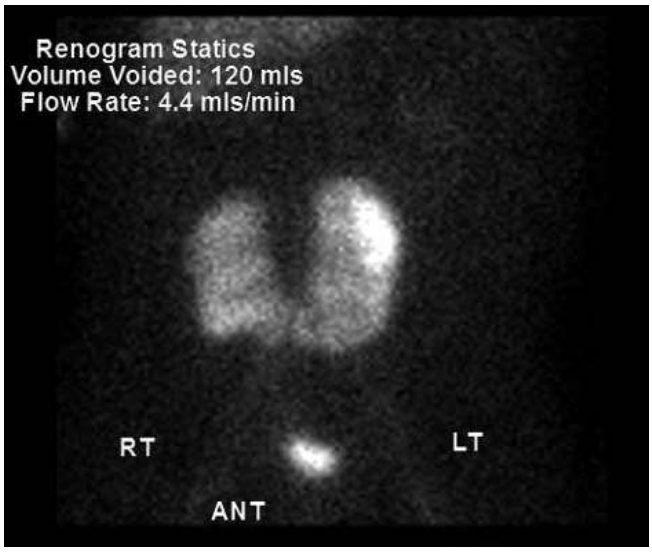
Introduction: Shortage of organs for transplants has increased the waiting time leading to utilisation of organs from ECD donors and use of anomalous kidneys like horseshoe kidneys.

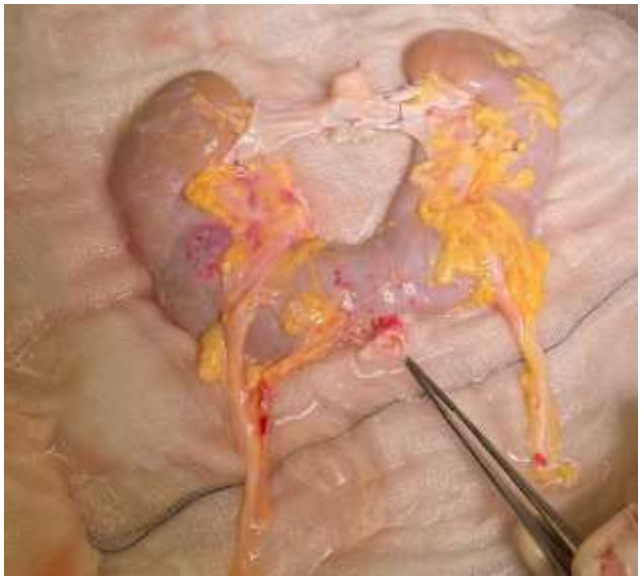
Case Presenation: We report a case of deceased donor horseshoe kidney transplant in a 31-year-old male patient with ESRD secondary to IgA nephropathy. A fast-tracked DCD kidney from a 20-year-old female with hypoxic brain damage and a creatinine of 81 was declined by many centres for various reasons. The horseshoe kidneys were retrieved en-bloc.

Technique: Benching involved removing all perinephric fat to visualize the kidneys. The redundant distal IVC was stapled and excised preserving only the proximal end with both renal veins. Similarly, only a proximal segment of the aorta was preserved with both renal arteries coming off it. A short segment of the distal aorta at the lower end containing accessory lower polar arteries was preserved. The proximal end of this was stapled and the distal end kept open. On completion, leak ruled out.
Midline transperitoneal approach was used to gain exposure of the aorta/common iliac artery and the IVC. The open end of the donor IVC and the aorta was anastomosed to recipient IVC and the aorta respectively using 4/0 polypropylene. The lower aortic segment containing accessory lower polar arteries was anastomosed to the left CIA using 5/0 polypropylene. Both the ureters were separately anastomosed to the bladder using 4/0 PDS over a JJ stent. The total WIT time was 1hr 29mins with operating time of approximately 6hr.The graft had excellent perfusion.

Outcome: Patient was discharged on day 5 with primary function. His current graft function remains excellent with a creatinine of 95.

Discussion: Despite multiple descriptions of horseshoe kidney transplants in the literature, many remain underutilised due to lack of surgical expertise. Here, we have described our surgical technique of benching and implantation.





Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

P076: Improving peri-operative fluid management in renal transplant recipients: a re-look at post-operative intensive care unit admissions

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Abstract

Introduction: A retrospective study of 1527 renal transplant recipients found that the incidence of intensive care unit (ICU) admissions was 20%, with this most commonly being for hypotension (1). In 2021, we looked at ICU admissions for our renal transplant recipients, focussing on their fluid status as a potential contributing factor to hypotension and thus ICU admissions. We found that 22% of patients were admitted to ICU, and 90% of these were for hypotension. In those admitted to ICU we found a trend towards reduced peri-operative fluid administration and reduced day 1 urine output, overall we also found unnecessarily prolonged fasting times. We presented the results within the trust and at the BTS conference 2022, and have since implemented new guidance on peri-operative fluid administration.

Methods: Single-centre retrospective study of 30 consecutive renal transplant recipients following the introduction of our new guidance, comparing the outcomes to those of the previously presented group. We aim to address whether pre- and intra-operative fluid administration has improved, and whether this has an impact on rates of hypotension and thus ICU admissions.

Patients were identified from the Transplant Surgery Database, and data was extracted to populate a pre-determined proforma covering demographics, peri-operative fluid management, medical management, and clinical parameters.

Results: Preliminary results have highlighted reduced fasting times, improved intra-operative fluid administration, and reduced ICU admissions since implementation of our new guidance. We will present the complete results and conclusions on the incidence of ICU admissions in the final presentation.

Discussion: Following on from our 2021 study, we have amended our anaesthetic protocol for renal transplantation to include 20-30ml/kg of intravenous fluid (minimum 1500ml) intra-operatively, and we do not place central venous lines as standard to guide volume therapy. Improving fasting times and peri-operative fluid administration may reduced ICU admissions in renal transplant recipients.

Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

P077: Salvage of deceased donor renal transplant with iatrogenic external iliac artery dissection following catheter angiogram

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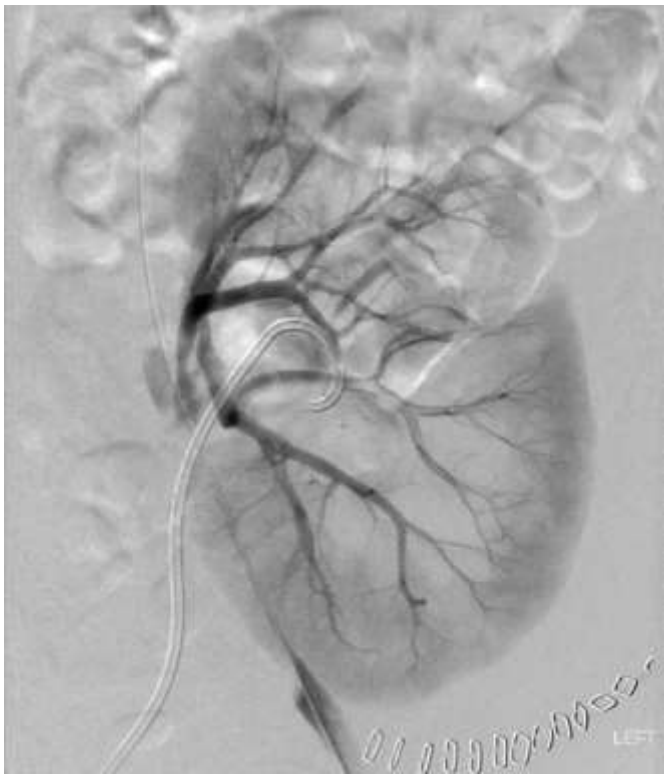
Abstract

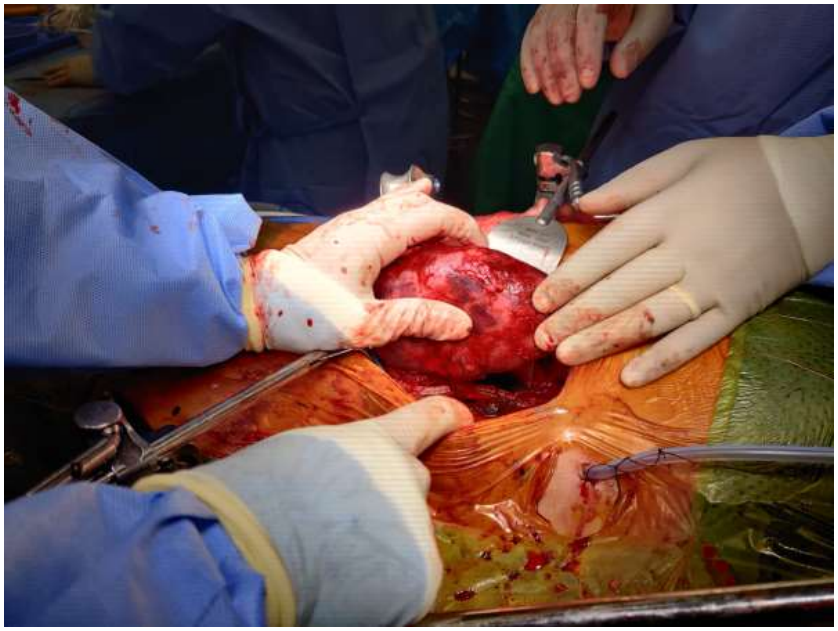
Introduction: Iatrogenic external iliac artery (EIA) dissection is extremely rare in renal transplant but can be catastrophic to both the kidney and lower limb without timely intervention.

Case report: A 44-year-old female with ESRD of unknown aetiology underwent her second deceased donor right renal transplant to the left iliac fossa. A single renal artery (RA) and vein were anastomosed to the left EIA and external iliac vein respectively with good reperfusion and unremarkable post-operative ultrasound. She had delayed graft function (DGF). CT and ultrasound scans were performed on day 5 for abdominal pain which demonstrated increased graft size with poor enhancement, and tardas parvus waveform with elevated resistive indices and patent renal vein respectively. On surgical exploration, a swollen allograft with good arterial trace was seen. The kidney was repositioned to the subrectus pouch. The patient was discharged on day 11 with function but was subsequently readmitted after 24 hours with fever, graft tenderness and anuria. Repeat ultrasound showed new diastolic flow reversal. Catheter angiography demonstrated patent RA without evidence of RA stenosis with proximal irregularity of the left EIA and reduced flow distally, thought to be due to vasospasm. Subsequent CT angiography showed multiple areas of allograft infarct with patent RA but 4.5cm thrombus within the left EIA . Immediate re-exploration identified complete EIA dissection. This was managed by in situ venting of renal vein with EIA excision and placement of an 8mm Dacron interposition graft to which the RA was anastomosed.

Outcome: Postoperatively , the patient remained in DGF and was discharged after two weeks with slowly improving graft function. At 2.5 years post-transplant the creatinine is 232.

Discussion: Dissection of the EIA can be a hazardous risk putting the transplanted kidney at risk warranting explantation. Here, we were able to salvage the kidney by prompt imaging and early surgical intervention.





Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

P078: A retrospective review of perioperative tranexamic acid in acute renal transplants

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Abstract

Introduction: The Royal College of Surgeons England has recently recommended perioperative tranexamic acid (TXA) for the reduction of major bleeding and need for blood transfusion without increasing the risk of thrombotic events. End-stage renal disease is associated with a bleeding diatheses. The use of TXA during acute kidney transplants is yet to be evaluated.

Methods: We perform a single-centre retrospective review of kidney transplants from Oct 2021 – Oct 2022 comparing patients who did and did not receive intraoperative TXA. We collected demographic, process, and outcome measures from electronic records from admission to two weeks post-operative. Outcome measures included post-operative haematoma, blood transfusion, graft vessel and non-graft associated thrombosis. Fischer's exact test and t-test were used for dichotomous and non-dichotomous data respectively. P-values are given to 3 dp.

Results: Preliminary results found 9/77 patients received single dose TXA of 500mg or 1000mg. Patients receiving TXA had a higher incidence of post-operative haematoma (4/9 vs 5/68; p=0.009) without statistical difference in development of graft vessel thrombosis (0/9 vs 4/68; p=1). No patients developed non-graft associated thrombotic events in the early post-operative period. One patient in the non-TXA group had both graft artery and vein thrombosis and suffered early graft loss. Patients receiving TXA were more likely to need blood transfusion (8/9 vs 17/69; p<0.001) with greater units per patient (3.79 +/- 2.95 vs 0.47 +/- 1.03; p<0.001).

Discussion: The retrospective nature of this dataset likely represents unmatched cohorts with patients receiving TXA having been deemed more likely to develop intra/post-operative bleeding or have been bleeding at the time of TXA administration. However, the data demonstrates safety of single-dose intraoperative TXA in acute kidney transplants without incidence of graft vessel on non-graft associated thrombosis in the TXA group. This data indicates the need for a formal systematic review and collection of multi-centre data.

Categories: Clinical - renal surgical (kidney - transplant and living donor surgery - novel techniques)

P079: WITHDRAWN

P080: Clinical and native histological predictors of recurrent IgA nephropathy after kidney transplantation

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Abstract

Introduction: Although recurrent IgA Nephropathy (r-IgAN) in kidney transplant recipients (KTR) has been regarded as benign, there is increasing evidence that r-IgAN may lead to late allograft loss in a significant proportion of recipients. Data on histological risk predictors of r-IgAN is limited. We investigated the incidence, clinical and histologic predictors, and outcomes of r-IgAN in KTR.

Methods: KTR with biopsy-proven IgA nephropathy between 2005 and 2020 at two tertiary nephrology centres in North-west England were evaluated. Demographic, clinical, and native kidney histological data were analysed. Risk factors and allograft outcomes were assessed using Cox proportional hazard method.

Results: r-IgAN was diagnosed in 35 of 203KTR(17%). mean age was 45±13yr, and median follow-up was 7yr. Time to recurrence and recurrence to graft loss were 4.8yr(IQR 2.7-6.7) and 2.9yr(IQR 1.3-4.3) respectively. Factors associated with r-IgAN include younger age(Hazard ratio[HR] 0.68, 95%CI 0.51-0.9; p=0.009); higher pre-transplant proteinuria(HR 1.21, 95% CI 1.09-1.35; p<0.001); living donor graft(HR 2.32, 95%CI 1.1 - 4.6;p=0.016), Cyclosporine use(HR 2.82, 95%CI 1.07-7.41;p=0.035); history of acute rejection(HR 2.33, 95%CI 1.14-4.77;p=0.020); higher proportion of native glomeruli with segmental sclerosis (HR 1.05, 95%CI 1.01-1.09; p=0.014). Death-censored graft loss was 11 times higher in recipients with r-IgAN (HR 11.0, 95%CI 4.35-27.7; p<0.001).

Conclusion: Younger age, higher pre-transplant proteinuria, living donor allograft, history of acute rejection and cyclosporine use were the clinical predictors of rIgAN. The native histological phenotype of higher degree of segmental sclerosis was also associated with IgAn recurrence. Recipients with r-IgAN were 11 times more likely to lose their graft than those without recurrence. At-risk recipients should be closely monitored with a low threshold for allograft biopsy.

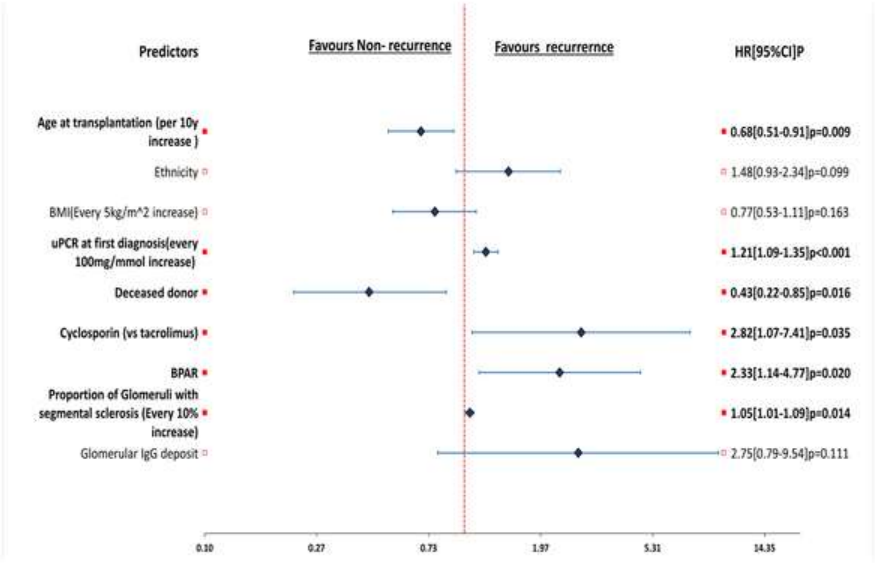

Fig 1: Clinical and histological predictors of recurrent IgA nephropathy by univariate analysis. BPAR, biopsy Proven acute rejection

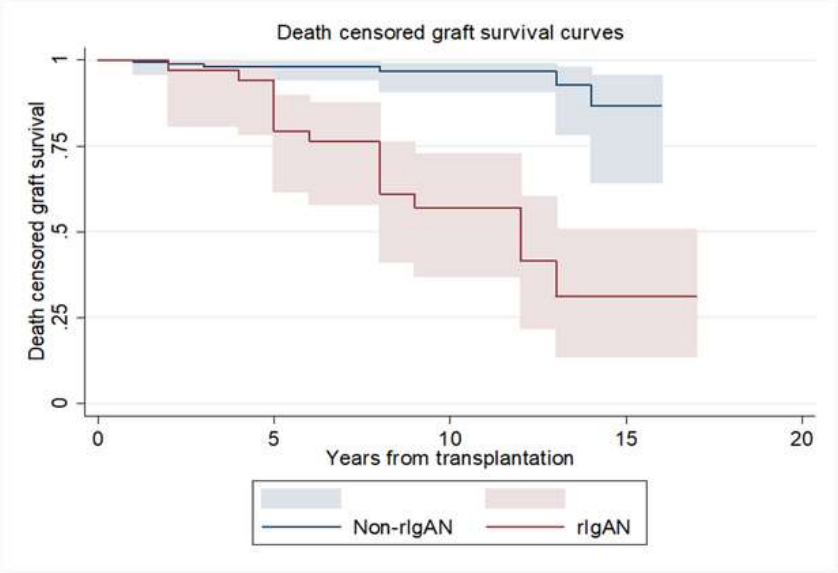

Fig 2: Death-Censored allograft survival following GN recurrence compared to Non-recurrence.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P081: Active Surveillance for Prostate Cancer in Patients Being Activated for Renal Transplantation

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Abstract

Introduction: Guidelines are becoming more permissive to the concept of activating patients onto renal transplant (RT) waiting lists with low-risk prostate cancer (CaP) on active surveillance (AS) protocols. We adopted this practice in 2011, and present our experience, with comparison made between different Gleason grade groups.

Methods: A prospective review was conducted of men considered for RT, with a new diagnosis of CaP between 2011-2022. Patients with low-risk CaP (PSA ≤10ng/ml, ≤T2 on MRI and Gleason 3+3) and low-volume intermediate risk CaP (PSA ≤10ng/ml, ≤T3 on MRI and Gleason 3+4) on active surveillance were considered eligible. AS involved 3-monthly PSA, interval MRI +/-transperineal prostate biopsy (TPB) every 12-18 months.

Results: 21 men (mean age 61.5) met our inclusion criteria. Mean PSA at activation was 6.1ng/ml. 15/21 had G3+3 on biopsy (mean PSA 6.2), and 6/21 had low-volume G3+4 (mean PSA 6.0). Mean follow up was 48 months (3-113 months).

11 patients were transplanted; median time from CaP diagnosis to transplant was 25 months (range 8-68 months). 3 were suspended from RT waiting list (medical reasons), 2 remain active on the waiting list, while 5 are completing assessment.

6 patients died due to medical causes (4 post-RT; 1 on waiting list; 1 suspended from waiting list). No patient died from CaP.

One patient with G3+3 disease had CaP progression 28-months post-RT, and was treated with ADT & radiotherapy. One patient with G3+3 progressed to G3+4 on AS TPB; He opted into a trial of SBRT. All other patients with GS 3+3 and G3+4 CaP remain stable on AS.

Discussion: Our results show AS for low and, appropriately selected, intermediate-risk prostate cancer appears safe for men being considered for RT. AS enables progression to RT in a timely fashion, aiming to optimise life-expectancy whilst avoiding morbidity of other CaP treatments.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P082: Patient and transplant specific factors associated with death post-allograft failure

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Abstract

Introduction: With limited improvement in the long-term longevity of kidney allografts, evidence on how to best manage persons post-transplant failure is required. Herein, we investigate patient outcomes following transplant failure, to help identify areas for clinical improvement and derive future research hypotheses.

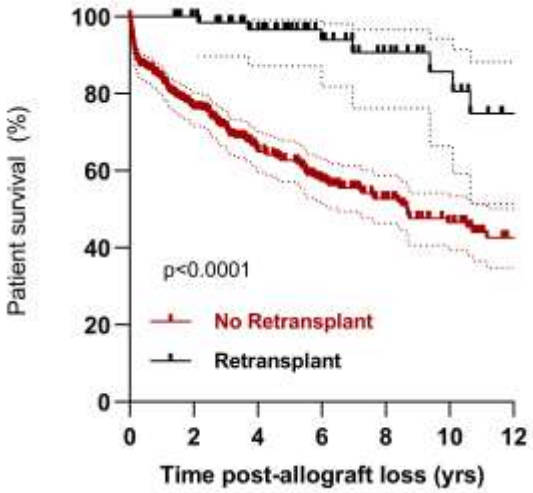
Methods: All patients who experienced transplant failure from 2523 kidney transplant recipients were identified over a 15-year period. Patients and transplant specific covariates were analysed in a risk adjusted cox-proportional hazards regression model for patient survival post-transplant failure. Single-agent immunosuppression is maintained post-transplant failure unless patients undergo graft nephrectomy.

Results: From 2523 transplants, 492 (19.5%) patients experienced allograft failure; with a 1-yr and 5-yr death censored allograft survival of 87.2% and 74.2% respectively.

76 (15.4%) of patients who lost their grafts were re-transplanted, and re-transplantation was associated with superior survival (Figure 1). For those not retransplanted, 164 (39.4%) died, with a median survival of 8.7 (6.2-11.2) years post-graft loss. Causes of death were cancer (7.3%), cardiac (22.6%), infection (43.3%) and other (26.9%).

Covariates associated with death included: increasing age at time of failure (HR 1.04 (1.02-1.05), p<0.0001), re-transplantation (HR 0.4 (0.19-0.63), p=0.0005), white ethnicity (HR 1.48 (1.09-2.02), p=0.012), DSA (HR 0.67 (1.48-0.95), p=0.025). 137 (27.8%) patients underwent a graft nephrectomy, which had no impact on survival. For patients not re-transplanted; increasing age (HR 1.03 (1.02-1.05), p<0.0001), diabetes (HR 1.61 (1.16-2.26), p=0.005), DSA (HR 0.71 (0.50-1.00), p=0.05) and white ethnicity (HR 1.58 (1.14-2.19), p=0.006) associated with death. Treatment of rejection episodes had no impact on survival.

Discussion: Prognosis post-graft failure is poor, unless patients re-transplanted. Graft-nephrectomy does not improve survival. There is a risk of significant confounding associated with survival, further analysis is being planned incorporating immunosuppression levels and inflammatory markers.



Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P083: Impact of Dysgeusia on transplant recipients with Refractory Cytomegalovirus with/without resistance receiving Maribavir: Post-hoc analyses from a Phase 3 randomized trial

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Abstract

Introduction: In a Phase 3 study (SOLSTICE;NCT02931539), maribavir (MBV) was superior to investigator-assigned therapies (IAT; val/ganciclovir, foscarnet, cidofovir) for CMV clearance at Wk8 (primary endpoint) in transplant recipients with refractory CMV with/without resistance. Dysgeusia (taste-disturbance disorder) was the most common treatment-emergent adverse event (TEAE) in the MBV arm. We report the impact of dysgeusia on patients (pts) treated with MBV.

Methods:352 pts were randomized 2:1 to 400mg MBV/BID or IAT (8wks tx, 12wk-follow-up). Pts on IAT could enter MBV rescue arm (≥3wks tx, after meeting pre-specified criteria). TEAEs were evaluated [AE of special interest: dysgeusia (ageusia, dysgeusia, hypogeusia, and/or taste disorder)]. Post-hoc analyses: assessment of primary endpoint and change in body weight (BW) in pts with/without dysgeusia.

Results: Out of 234 pts on MBV, 108 (46.2%) had dysgeusia (on tx); considered tx-related in 103 (44.0%). Dysgeusia was mild (n=86), moderate (n=17) in severity and led to discontinuation in 2 (0.9%) pts in the MBV arm. The primary endpoint was achieved in 72 (66.7%) MBV and 2 (40.0%) IAT pts with dysgeusia, and 59 (46.5%) and 26 (23.2%) pts without dysgeusia, respectively (Table). Median change from baseline (min, max) in BW (kg) at Wk8 was similar in pts on MBV with/without dysgeusia (0.9 [−9,9] vs 0.1 [−16,16]), and in pts with dysgeusia in MBV and IAT (0.9 [−9,9] vs −0.9 [−9,8]). Median MBV-tx duration (days [range]) was 57 [2–64] (study-assigned) and 57 [22–60] (rescue). In pts reporting dysgeusia (study-assigned:n=108; rescue:n=11) resolution was seen on-tx in 44 (37%); ongoing dysgeusia at last tx date (n=75, 63%) resolved off-tx in 67 (89.3%) pts.

Discussion: Dysgeusia was common in the MBV arm but was generally mild/moderate with almost no effect on body weight (on-tx). These post-hoc analyses in pts with/without dysgeusia are consistent with results reported in SOLSTICE.

Confirmed CMV viremia clearance response at Study Week 8 by treatment group, with and without dysgeusia (randomized set)[1]

	Maribavir n=235[a]	IAT n=117[a]
Patients with dysgeusia	**n=108**	**n=5**
Responders, n (%)	72 (66.7)	2 (40.0)
Non-responders, n (%)	36 (33.3)	3 (60.0)
Adjusted difference[b] (95% CI)	26.7 (-17.18, 70.52)	
Patients without dysgeusia	**n=127**	**n=112**
Responders, n (%)	59 (46.5)	26 (23.2)
Non-responders, n (%)	68 (53.5)	86 (76.8)
Adjusted difference[b] (95% CI)	23.2 (11.56, 34.92)	

Patients with confirmed CMV viremia clearance at the end of Study Week 8 are considered responders regardless of whether the study-assigned treatment was discontinued before the end of the stipulated 8 weeks of therapy. Plasma CMV DNA assessments after starting alternative anti-CMV treatment or rescue treatment are not evaluable for the assessment of study-assigned treatment effect. Randomized subjects with no efficacy data are treated as non-responders.

[a]One patient in each treatment group was randomized but did not receive study-assigned treatment. The safety set included patients who received any dose of study-assigned treatment: maribavir, 234; IAT, 116.

[b]Unadjusted difference in proportion (maribavir – IAT) and the corresponding 95% CI are computed by the normal approximation method.

1. Silveira *et al.*, American Transplant Congress (ATC) 2022

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P084: Management of patients with a failing kidney transplant: A survey of UK-based renal units

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Abstract

Introduction: Management of patients with kidney allograft failure is complex. There is limited evidence on which to base management decisions. The study investigated variation in current UK practice patterns.

Methods: Between March-November 2022 a practice survey was electronically distributed to renal transplant and referral unit representatives via NHS Blood and Transplant's Kidney Advisory Group and the UK Kidney Association membership. Basic statistics (chi2 and Fisher's exact test) were used to describe the data.

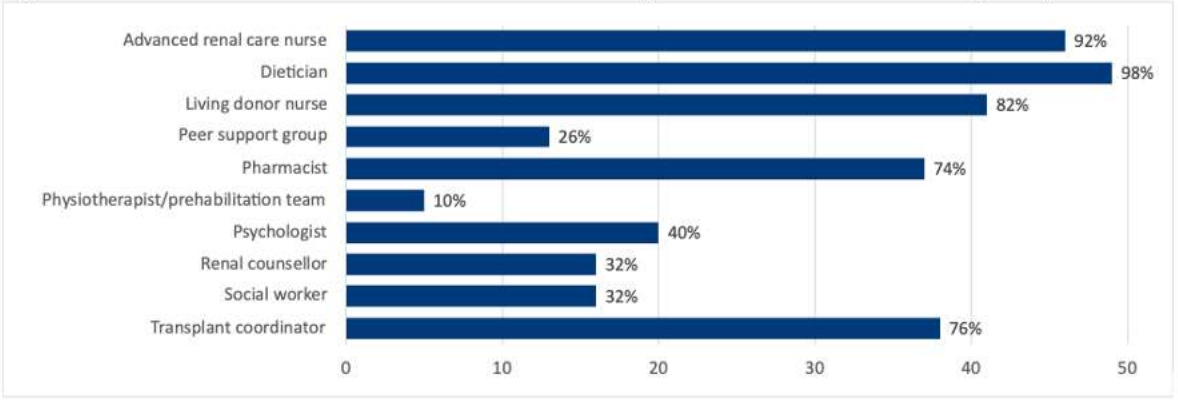
Results: Responses were received from 53/68 adult renal units, including all transplant units. Results are presented in Table 1. Thirteen centres (24.5%) had local protocols for failing transplant management. Patients in different units are managed in different clinics: general transplant clinics (52.8%), dedicated low clearance transplant clinics (22.6%) and general low clearance clinics (17.0%). Referral centres see the majority (73.3%) of their failing transplant patients in general transplant clinics, whereas transplant centres see the majority (73.9%) in low clearance or other clinics (p-value=0.003). The majority of patients have access to multi-disciplinary care (98.1%) but this rarely includes a prehabilitation team or peer support group (figure 1). For centres transferring care to a low clearance clinic, 53.1% refer at clinician's discretion rather than a set eGFR. Modification of the immunosuppressive regimen varies between centres before and after graft failure. 71.7% do not routinely modify immunosuppression at the time of transplant failure. Of those centres that do, 60.0% modify the calcineurin inhibitor (CNI) alone. 84.6% of centres modify immunosuppression if re-transplantable patients receive dialysis prior to transplantation. 61.4% stop the antiproliferative and reduce the CNI. 9.1% stop all immunosuppression routinely for re-transplantable candidates.

Discussion: There is considerable heterogeneity in all aspects of the care of patients with failing kidney allografts. Further research is needed to investigate whether variation in UK-centre practice is associated with variation in patient outcomes.

Table 1. Failing transplant management: Transplant vs Referral centres

Failing Transplant Management	Transplant centres n=23	Referral centres n=30	Chi2 or Fisher's exact p-value
Unit protocol? n (%)			
• No	16 (69.6)	24 (80.0)	0.4
• Yes	7 (30.4)	6 (20.0)	
Where patients with failing transplants are managed, n (%)			
• General transplant clinic	6 (26.1)	22 (73.3)	
• General low clearance	6 (26.1)	3 (10.0)	0.003
• Tx low clearance	9 (39.1)	3 (10.0)	
• Other	2 (8.7)	2 (6.7)	
Time of transfer to low clearance clinic, n (%)			
• No transfer – remains in general transplant clinic	6 (26.1)	15 (50.0)	
• Clinician discretion	8 (34.8)	9 (30.0)	
• eGFR <15	0	3 (10.0	0.07
• eGFR <18	4 (17.4)	1 (3.3)	
• eGFR <20	4 (17.4)	2 (6.7)	
• Other	1 (4.4)	0	
Immunosuppression modification prior to graft failure? n (%)			
• No	3 (13.0)	2 (6.7)	
• Only if toxicity	13 (56.5)	20 (66.7)	
• Yes - CNI	3 (13.0)	6 (20.0)	0.5
• Yes – anti-proliferative	2 (8.8)	0	
• Yes – both CNI and anti-proliferative	2 (8.7)	2 (6.7)	
Immunosuppression modification if re-transplantable candidates receive dialysis prior to re-transplantation, n (%)			
• No	5 (21.7)	3 (10.3)	
• Yes, stop anti-proliferative and continue dose CNI	6 (26.1)	7 (24.1)	0.3
• Yes, stop anti-proliferative and reduce CNI	9 (39.1)	18 (62.1)	
• Yes, stop all	3 (13.0)	1 (3.5)	
When is transplant nephrectomy considered? n (%)			
• Occasionally for specific indications	20 (87.0)	21 (70.0)	0.2
• Rarely (<5% failed grafts in unit)	3 (13.0)	9 (30.0)	
Post-nephrectomy immunosuppression management, n (%)			
• Unchanged	1 (4.4)	1 (3.3)	
• Reduction	4 (17.4)	3 (10.0)	
• Complete withdrawal	11 (47.8)	16 (53.3)	0.95
• Dependent on nephrectomy	6 (26.1)	8 (26.7)	
• Patients do not undergo nephrectomy	1 (4.4)	2 (6.7)	

Figure 1. Number of centres with access to the following members of the multi-disciplinary team



Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P085: Tubuloreticular inclusions: a new prognostic biomarker in kidney transplantation

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Abstract

Introduction: Tubuloreticular inclusions (TRIs) seen on electron microscopy (EM) are classically associated with lupus nephritis (LN) and systemic viral infections in native biopsies. Traditionally a marker for enhanced type I interferon expression, little is known about their significance post-transplant. We aimed to look at a large cohort of transplant biopsies showing TRIs to investigate associations and outcomes.

Methods: A retrospective analysis was performed on two prospective databases; an in-centre transplant registry and a histopathology database holding data on all kidney biopsies performed at our centre. All patients biopsied since 2015, who had EM examination were included. Where more than one biopsy showed a TRI the earliest one was included. Demographic, clinical and transplant data was collected from the laboratory records.

Results: 2283 kidney transplant biopsies were performed between January 2015 and November 2022; 1898 (83.1%) had EM performed. Of 1898 with EM, 176 (10.8%) had evidence of TRIs. Of 176 patients, 34% were female, the median age was 52.2 (38.9-59.4) years, 32% had underlying glomerulonephritis as their cause of ESKD, 65% were deceased donors and 75% were of non-white ethnicity.

TRIs were associated with serological evidence of autoimmunity (16%), viral infections (26%) and donor specific antibodies (28%), with no association found in 41%. Rejection occurred in 49%, including 31% of patients with no recognised association with TRIs.

Allograft outcomes were poor, with all-cause allograft survival and death-censored allograft survival of 66% and 60%, after a follow up of 1.9 ±1.8 years post index biopsy. A comparison with a matched control group is planned.

Discussion: In extension to previous work, we show that TRIs appear to be associated with alloimmunity. In this regard they may be a useful biomarker especially in cases where the diagnosis is unclear, or biopsy findings are 'subthreshold'. Irrespective of aetiology, TRIs are associated with poor outcomes and warrant further consideration.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P086: Transplant workup in the older patient

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Abstract

Introduction: Nearly half of all new ESRF patients are older than 65 years. Assessing older patients for transplant can be arduous, due to multiple comorbidities, decreased functional status and cognitive impairment. We investigated possible correlations between age and transplantation work-up complexity and outcomes.

Methods: We audited transplant referrals between Jan '17 and Dec '21 (436 total referrals, average age 53) and compared age at referral with work-up outcome and time spent to reach outcome. Comparisons were made with patients 65 and older (87 referrals, average age 68) with those 64 and younger (350 referrals, average age 49). Further comparison was made with time to work-up outcome with all ages of referrals.

Results:

Final Outcomes	65+		64 and under		χ^2
	Number of patients	% of referrals	Number of patients	% of referrals	p value
Death	15	17	44	12	0.254
Unfit	43	49	79	23	<0.001
Activated	20	23	151	43	<0.001
Transplanted	15	17	94	27	

Table 1. Number of patients in the two different age groups that achieved each outcome.

We noted a significant difference in number of patients achieving activation or being deemed unfit between patients over 65 and under 65 (Table 1). There was no significant difference in patients who passed away during work-up.

Median time spent on work-up was 32 weeks in under 65's and 24 weeks in over 65s, with no significance noted. Comparison of data at all ages did not show a clear pattern between age and work-up burden.

Discussion: As expected, patients over 65 are less likely to be activated on the transplant waitlist. However, specific delineation between over and under 65's doesn't provide a clear association when looking at more specific data relating to work-up burden. Frailty could be a better indicator of what age is commonly believed to represent, i.e. clinical burden of patient's comorbidities. This work provides the foundation for further research into whether frailty assessment strategies could form a key part of the transplant referral process to better improve patient and service outcomes.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P087: Barriers to timely transplant listing: single centre experience

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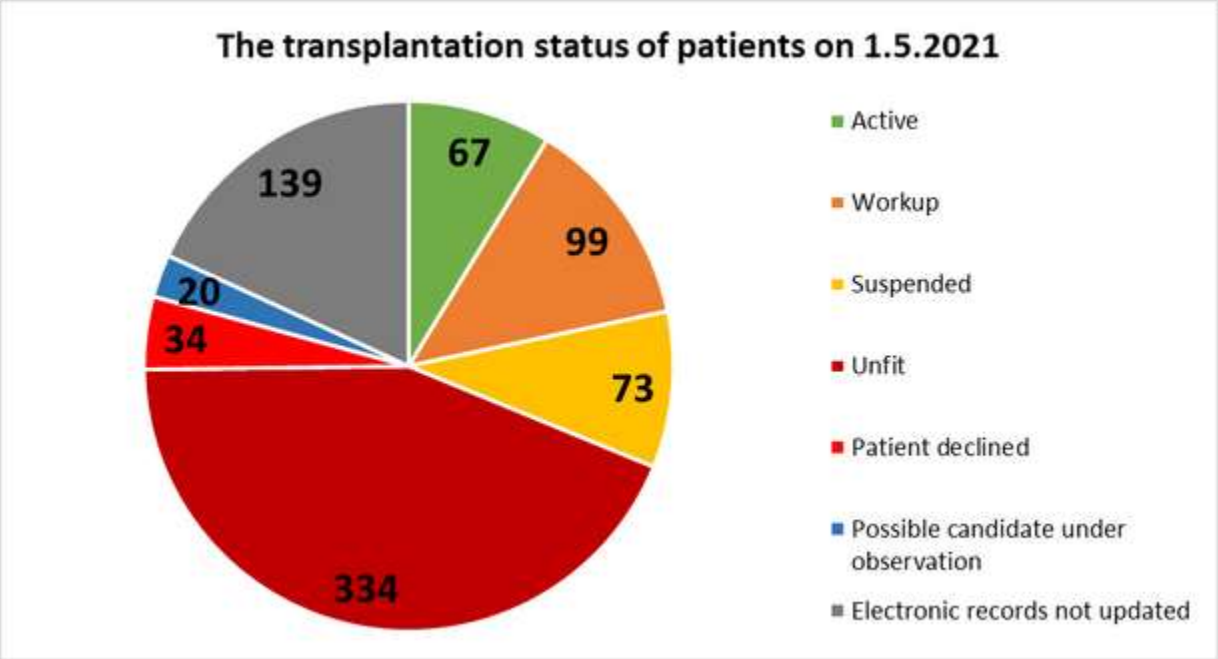
Abstract

Introduction: Transplantation is the gold standard treatment for kidney replacement therapy. Ideally all patients should have a pre-emptive decision regarding transplant suitability. We reviewed all patients with chronic kidney disease G5, on dialysis or with a failing renal transplant, to assess timeliness of referral for transplantation and reasons for delays.

Methods: Using our electronic systems we identified patients with eGFR <15 with or without previous transplants, or currently on haemodialysis and peritoneal dialysis. Data were collected on 1.5.21 including demographics, previous transplantation, dialysis start date, transplant suitability, date of referral to transplant surgeons, date of activation on the national waiting list and investigations required for listing.

Results: We identified 766 patients (466 male, 300 female) of whom 303 were pre-dialysis, 346 were on haemodialysis (HD), 98 were on peritoneal dialysis (PD) and 19 had a failing transplant.



627 patients (82%) had a documented decision about transplantation on their electronic record. Old age and comorbidities were the commonest reasons given for unsuitability for transplant listing. Once referred, the average time for surgical review was 85 days. The commonest delays to reach a decision were waiting for imaging and other specialities input. 12% of patients are not listed after surgical review as their GFR is too high for listing.

77 of 244 referrals (31%) to see a surgeon were made after the patient started dialysis.
Of 160 patients who were listed at any point, 93 (58%) were activated on the national list before needing dialysis.

Discussion: We identified areas for improvement; ensure all patients have a transplant suitability decision made and recorded at the advanced kidney care clinic with timely referral for listing, reduction in waiting time to see a surgeon, reduction in time in obtaining imaging or other speciality reviews and more robust electronic record keeping.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P088: Sharing regional capacity in deceased donor kidney transplantation: experience from an urban collaborative

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Abstract

Introduction: To enable kidney transplantation in the event of resource limitation, extreme peaks in activity or major incidents, an organ sharing protocol was developed in 2019. This established a system for safe transfer of recipient and donor organ for transplantation between five units. We describe the activity and outcome over the initial 21 month period.

Methods: Data on kidney transplants performed via this collaborative scheme were obtained from NHS-BT. Local outcomes for length of stay, complications, graft function, survival and patient death were collected in recipient centres.

Results: 16 recipients (mean age 52 years) were transplanted in 21 months. The two main reasons for referral were capacity at the referring centres and an IT system failure at one centre. Kidneys came from 10 DCD donors (62.5%) and 6 DBD donors (37.5%); mean KDPI was 65% and mean KDRI was 1.26. 50% of donors fulfilled standard criteria and four donors had an AKI. 10 patients were first transplant recipients and three were highly sensitised (CRF >85%). Mean cold ischaemic time was 12 hours 26 minutes. Two cases required more than one consultant surgeon. Three patients required arterial reconstruction, including one iliac artery reconstruction. Four patients required level 2 or above care. Six patients had delayed graft function. Two patients required CRRT. Median creatinine at seven days was 245 µmol/L (six patients) and 124.5µmol/L at three months (four patients). The median length of stay was 7.5 days. There were 2 deaths, both from community acquired COVID post discharge.

Discussion: We describe the activity of a collaborative organ sharing scheme involving five regional hospitals. The utilisation of the sharing scheme enabled 16 transplants to proceed which otherwise would not have occurred. Although initially established for low risk donors and recipients, the scheme has evolved to enable transplantation for a wide variety of donors and recipients.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P089: Assessment of discontinuations and Anti-Cytomegalovirus treatment switching in post-transplant Refractory/Resistant (R/R) Cytomegalovirus (CMV) infections: safety and sensitivity analyses from a phase 3 randomized trial

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Abstract

Introduction: R/R CMV infections are a major cause of morbidity and mortality posttransplant. Current therapeutic options are associated with treatment-limiting toxicities. In the Phase 3 trial, maribavir (MBV) was superior to investigator-assigned therapy (IAT) for achievement of CMV clearance at Wk-8 (primary endpoint) and clearance plus symptom control (Wks 8 through 16) in transplant recipients with R/R CMV infections (SOLSTICE;NCT02931539). We report the impact of discontinuations or treatment switching on CMV viremia clearance at Wk8 in the SOLSTICE trial.

Methods: Patients (pts) were randomized 2:1 to MBV (400 mg/bid) or IAT (val/ganciclovir, foscarnet, cidofovir) for 8-wk treatment, 12-wk follow-up. Those who initiated alternative anti-CMV treatment (including MBV rescue) were considered non-responders. In prespecified and post-hoc sensitivity analyses using different definitions of responder, the impact of premature study discontinuation, treatment discontinuation/switching on the primary endpoint was evaluated. Treatment-emergent adverse events (TEAEs) were assessed.

Results: TEAEs leading to discontinuation were less frequent in the MBV (13.2%) vs IAT (31.9%,on-treatment period). Neutropenia (MBV:0%; val/ganciclovir:19.6%) and acute kidney injury (MBV:0%; foscarnet:12.8%) were the most frequently reported TEAEs leading to discontinuation (Table1). Sensitivity analyses: pts with confirmed CMV viremia clearance at the time of premature study discontinuation (before Wk8 without receiving alternative treatment [MBV:58.3%; IAT:33.3%;p<0.001]) or pts with confirmed CMV viremia clearance at any time during the treatment phase (regardless of early treatment discontinuation [MBV:74.0%;IAT:52.1%;p<0.001]) were counted as responders; significantly greater proportions of pts achieved confirmed CMV viremia clearance at Wk8 with MBV vs IAT (Table2). Post-hoc sensitivity analysis: pts defined as responders if they met primary endpoint (regardless of alternative anti-CMV treatment [including maribavir rescue]) showed a greater response rate with MBV (59.1%) vs IAT (42.7%;p=0.002, Table2).

Discussion: The benefit of maribavir over IAT was observed for the primary endpoint in sensitivity analyses regardless of early discontinuations or the need for alternative treatment.

Table 1. TEAEs leading to treatment discontinuation in ≥2 patients in either treatment group (Safety population)[1]

System organ class Preferred terms	Maribavir (n=234) n (%)	IAT (n=116) n (%)	IAT type: Val/ganciclovir (n=56) n (%)	IAT type: Foscarnet (n=47) n (%)
Any TEAE leading to discontinuation of study-assigned treatment	31 (13.2)	37 (31.9)	18 (32.1)	17 (36.2)
Blood and lymphatic system	0	13 (11.2)	13 (23.2)	0
Anemia		2 (1.7)	2 (3.6)	
Leukopenia		3 (2.6)	3 (5.4)	
Neutropenia		11 (9.5)	11 (19.6)	
Thrombocytopenia		4 (3.4)	4 (7.1)	
Gastrointestinal disorders	4 (1.7)	3 (2.6)	1 (1.8)	2 (4.3)
Diarrhea	2 (0.9)	1 (0.9)	1 (1.8)	0
Nausea	2 (0.9)	1 (0.9)	0	1 (2.1)
Infections and infestations	17 (7.3)	8 (6.9)	4 (7.1)	3 (6.4)
CMV infection	7 (3.0)	1 (0.9)	0	0
CMV infection reactivation	2 (0.9)	0	0	0
CMV viremia	4 (1.7)	2 (1.7)	2 (3.6)	0
Encephalitis CMV	2 (0.9)	1 (0.9)	0	1 (2.1)
Neoplasms (benign malignant and unspecified)	2 (0.9)	2 (1.7)	1 (1.8)	1 (2.1)
Recurrent acute lymphocytic leukemia	2 (0.9)	0	0	0
Nervous system disorders	3 (1.3)	0	0	0
Dysgeusia	2 (0.9)			
Renal and urinary disorders	0	11 (9.5)	0	10 (21.3)
Acute kidney injury		6 (5.2)		6 (12.8)
Renal failure		2 (1.7)		1 (2.1)
Renal impairment		2 (1.7)		2 (4.3)

TEAEs were defined as any adverse event occurring during the on -treatment observation period. The on-treatment observation period was from the time of study-assigned treatment initiation through 7 days after the last dose of study -assigned treatment (21 days for cidofovir), or until the maribavir rescue treatment initiation or the non -study CMV treatment initiation, whichever was earlier. Data for patients who received cidofovir (n=6) and >1 investigator -assigned therapy (n=7) are not presented due to low patient numbers.

IAT, investigator-assigned therapy; TEAE, treatment-emergent adverse event

Table 2. Sensitivity analyses of the primary endpoint (Randomized population)[1]

CMV viremia clearance at end of Week 8 (Response), n (%)	Maribavir (n=235)	IAT (n=117)	Adjusted difference in proportion of responders (95% CIs)[a]	p-value, adjusted[a]
Primary endpoint[2]				
Patients who met criteria of confirmed CMV clearance regardless of whether the study-assigned treatment was discontinued before the end of the stipulated 8 weeks of therapy[b]	131 (55.7)	28 (23.9)	32.8 (22.80, 42.74)	<0.001
Based on alternative definitions of response				
Patients who met criteria of confirmed CMV viremia clearance at the time of premature study discontinuation were included as a responder (pre-specified)[b]	137 (58.3)	39 (33.3)	26.1 (15.61, 36.67)	<0.001
Patients with confirmed CMV viremia clearance at any time during the treatment phase regardless of early treatment discontinuation were included as a responder (pre-specified)	174 (74.0)	61 (52.1)	23.6 (13.18, 33.93)	<0.001
Patients with confirmed CMV viremia clearance at Week 8 regardless of use of alternative CMV antivirals were included as a responder (post hoc)	139 (59.1)	50 (42.7)	17.7 (6.76, 28.59)	0.002

[a]Cochran–Mantel–Haenszel weighted average approach was used for the adjusted difference in proportion (maribavir – IAT), the corresponding 95% CI, and the p-value after adjusting for the transplant type and baseline plasma CMV DNA concentration, as homogeneity was met. [b]Patients who received maribavir rescue or alternative anti-CMV treatment before the end of Week 8 were considered non-responders.

CI, confidence interval.

1. First published: Alexander *et al.*TCT 2022; 2. Marty FM, *et al.* TCT 2021

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P090: Successful HNA3 antibody incompatible living donor kidney transplant against a positive cross match using an antibody removal protocol

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Abstract

Introduction: HNA (human neutrophil antigen)-3 is a bi-allelic system comprising HNA-3a and 3b and expressed on kidneys. Only 5% of Caucasians are homozygous for HNA-3b, who are at risk of HNA-3a sensitisation in pregnancy. Anti-HNA3 antibodies (not part of routine screening) present at the time of transplantation associate with positive crossmatches, high rates of cellular and antibody mediated rejection and early graft loss, even in the absence of HLA antibody. ATG induction and a lower T cell FXM RMF value may anecdotally favour better outcomes. We report the first successful living donor transplantation in a patient with anti-HNA3 antibodies and a high T cell FXM RMF, using ATG with an antibody removal protocol.

Case: A 49-year-old female with APKD on CAPD had an unexpected positive T and B FXM (RMF 13.4 and 3.6 respectively) during living donor transplant work up. CDC cross match was negative. Anti-HNA3 antibodies were detected.

Transplantation occurred after rituximab (30 days previously) and plasma exchange under T cell FXM RMF monitoring (figure 1). Post operatively 5 doses of ATG (1.5mg/kg/day) were given with reducing steroids, tacrolimus (trough 10-12ng/ml) and MMF (750mg bd), alongside nystatin, vGCV and septrin.

Outcome: Graft function is shown in figure 2. A biopsy during an admission at three weeks for urosepsis, treated with IV antibiotics and early stent removal, showed acute tubular injury but no rejection. Acute sub-occlusive external iliac and renal transplant arterial anastomosis thrombus detected causing claudication resolved with heparin. MMF dose has been reduced for neutropenia.

Discussion: This case is the first planned T & B FXM positive living donor renal transplant due to anti-HNA3 antibodies using an antibody removal strategy. Early outcome is good, particularly considering the limited alternative options, including deceased donor transplantation or UKLDSS.

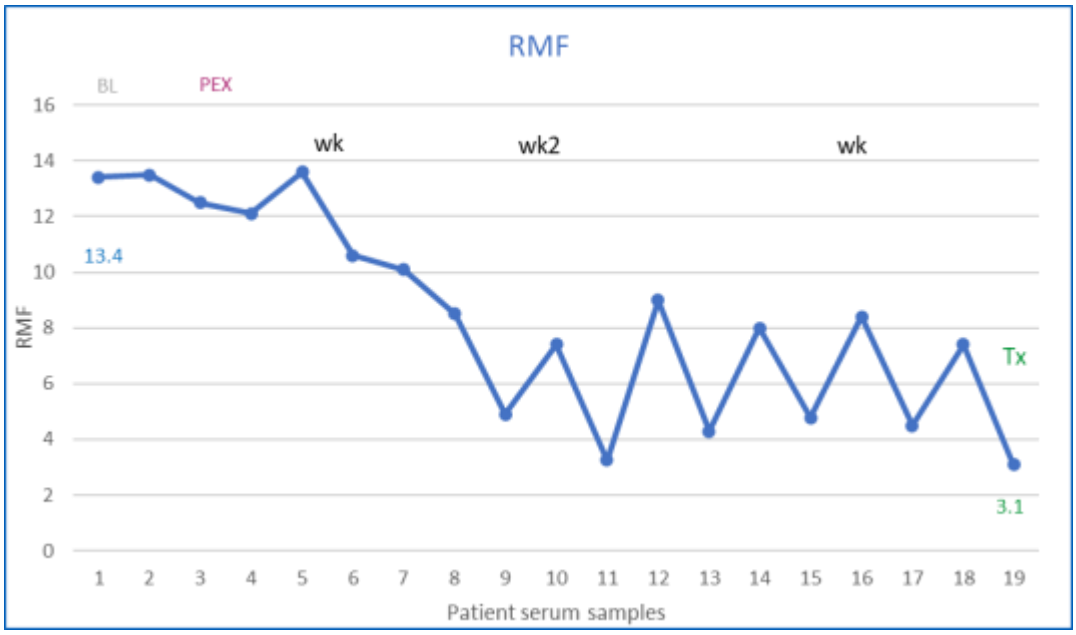

Figure 1: HNA 3 antibody removal monitoring FC-XM

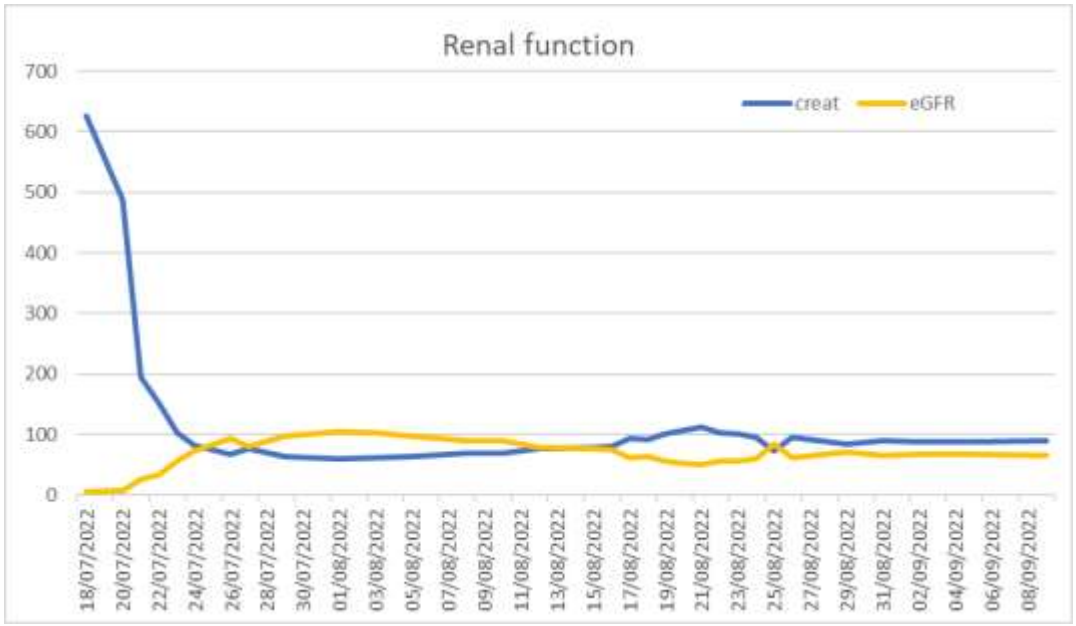

Figure 2: Graft function after transplantation

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P091: Early T-cell mediated rejection after kidney transplant: is the current immunosuppression therapy adequate?

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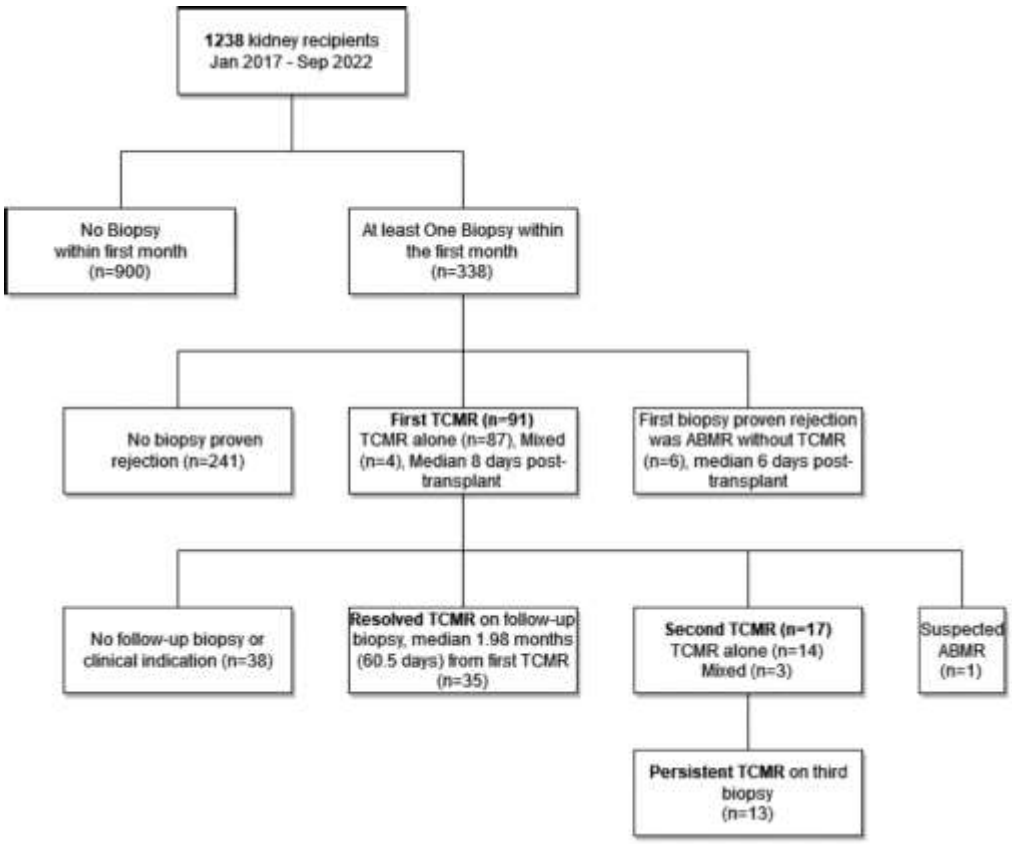
Abstract

Introduction: T-Cell mediated rejection (TCMR) is common in early biopsies undertaken in the context of delayed graft function after kidney transplant. Recent observational studies have highlighted the correlation of early-onset TCMR with later risk to graft and patient survival (1) . Our study evaluates the associations between early post-kidney transplant TCMR and the development of more sinister histological findings (persistent TCMR, superimposed ABMR) and overall graft and patient survival.

Methods: Single-centre observational study between January 2017 and September 2022 focused on the 338 patients (total 1238 kidney transplant recipients) who were biopsied within the first month post-transplant. Primary outcomes were resolution of rejection, graft and patient survival.

Results: Clinical indication of these for cause biopsies was delayed graft function (64.8%) or increase creatinine (35.2%). Of the 338 patients who had a biopsy within one month of transplant, the majority (n = 241) demonstrated no evidence of acute rejection. Overall, the death-censored and all-cause graft survival of patients receiving a biopsy within the first month was 13.2% and 18.7%. 26.9% (91) demonstrated TCMR (including borderline rejection) of whom most resolved clinical or histopathologically with no further sequelae (Figure1). 17 (5%) of biopsied patients went on to have a second biopsy which demonstrated continuing or subsequent TCMR, and most (n = 13) of these demonstrated further persistence on a third biopsy.

Discussion: Compared to a contemporary Canadian cohort, our observations show a much lower rate of persistent TCMR (18.6%) after treatment and good resolution with treatment, albeit in the absence of surveillance biopsies. Interestingly, in our centre, most TCMR occurred 8 days post-transplant, and histological resolution, when achieved, took place around two months after transplant. More work to understand persistent early TCMR effects, and risks associated with this is planned.



Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P092: How safe is induction treatment with T cell depletion for a second kidney transplant?

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Abstract

Background: There is a lack of consensus on choice of induction treatment at the time of a second kidney transplant. Rejection rates are reported to be lower following more intense induction with T cell depletion (anti-thymocyte globulin (ATG) or alemtuzumab), however use of these agents in patients with a history of immunosuppression may result in a greater risk of infectious or malignant complications. The aim of this study was to assess the safety of different induction agents used at the time of a second kidney transplant.

Methods: We performed a retrospective analysis of post-transplant events in the most recent 100 patients receiving a second kidney transplant in a single unit, categorised by induction agent (basiliximab, ATG or alemtuzumab). Following basiliximab or ATG induction, usual maintenance treatment is tacrolimus, mycophenolate mofetil and prednisolone (withdrawn at 3 months). The standard regimen for recipients receiving alemtuzmab induction is steroid-free. Twelve months outcomes were determined from clinical notes and local electronic databases including episodes of rejection, infections requiring hospital admission, viral infections (CMV and BKV), incident malignancies, renal function, graft and patient survival.

Results: Patient demographics by type of transplant and induction agent are shown in table 1. The initial length of stay was significantly longer for patients receiving ATG (15 days, 9 days for basiliximab and 10 days for alemtuzumab). These patients were older, and were more likely to have received a DCD transplant with a greater incidence of DGF. Events occurring in the first 12 months are shown in table 2.

Discussion: In this cohort, induction using T cell depletion for a second transplant was found to be safe, with no increase in adverse outcomes compared to basiliximab. Although recipient eGFR at one year was lower for patients who had received ATG, this is explained by the greater proportion of DCD transplants in this group.

Table 1. Patient demographics by induction agent and type of transplant

Induction agent	Number (%) DBD/DCD/LD	Mean age (years) +/- SD	Number (%) female
Basiliximab (26)	14/1/11 54/4/42	49 +/- 9.9	13 (50)
ATG (37)	5/30/2 14/81/5	57 +/- 10.1 (p<0.01)	10 (27)
Alemtuzumab (36)	16/20/0 44/56/0	43 +/- 11.0 (p<0.05)	17 (47)
None (1)	0/0/1 0/0/100	52	0 (0)

Table 2. Events occurring in the first 12 months

Induction agent	Biopsy proven rejection	Infections requiring admission	CMV viraemia	BKV viraemia	Malignancy	eGFR (ml/min) +/- SD	Graft & patient survival (%)
Simulect (26)	4 (15.3%) ACR (3), AbMR (1)	6 (23%)	1	1	2	54.5 +/- 18.8	92.3, 95.8
ATG (37)	5 (13.5%) (p=0.42) Borderline (3), ACR (1), AbMR (1)	13 (35.1%) (p=0.3)	5 (p=0.25)	2 (p=0.77)	2 (p=0.71)	43.8 +/- 15.3 (p<0.05)	86.5, 97.3
Alemtuzumab (36)	5 (13.9%) (p=0.43) ACR (4), AbMR (1)	6 (16.7%) (p=0.53)	0	0	0	53.5 +/- 21.3 (p=0.84)	91.7, 100
None (1)	0	0	0	0	0	80	100, 100

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P093: Incidence and management of hypertension in renal transplant recipients pre- and post-transplant

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Abstract

Introduction: Although it is evident that hypertension is a common and clinically significant occurrence in renal transplant recipients (RTRs), the effect that renal transplantation itself has on blood pressure (BP) is not clear. This study investigated outcomes in RTRs pre- and three months post-transplant to determine the relationship between renal transplantation and hypertension and evaluate its medical management in these patients.

Methods: Clinical records of adult RTRs in a single tertiary hospital in between January 2018 and December 2019 were used to retrospectively determine demographic data, BP readings and antihypertensive medications prescribed immediately before and at three months after transplantation. The findings were statistically analysed using paired t-tests for differences in means and single-factor analysis of variance (ANOVA).

Results: A total of 294 patients were included, of which 268 (91%) were hypertensive pre-transplant compared to 125 (43%) post-transplant. Mean systolic and diastolic BP readings pre- and post-transplant are demonstrated in Figure 1. There was a mean decrease of 6.8% (12mmHg) in systolic BP and 4.8% (5mmHg) in diastolic BP between pre-transplant and post-transplant readings ($p < 0.01$). The mean number of antihypertensive agents prescribed per patient pre-transplant was 1.33, compared to 1.04 post-transplant ($p < 0.01$). Figure 2 demonstrates classes of antihypertensive agents prescribed pre- and post-transplant.

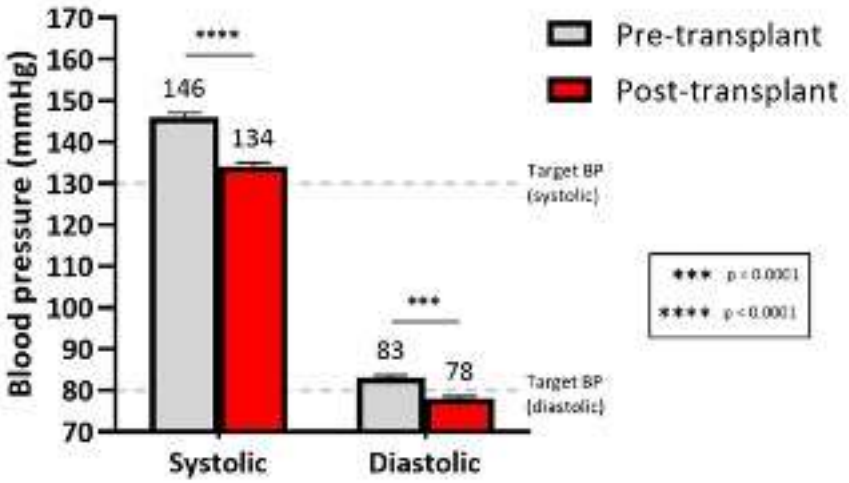

Figure 1: Mean systolic and diastolic blood pressures pre- and post-transplant

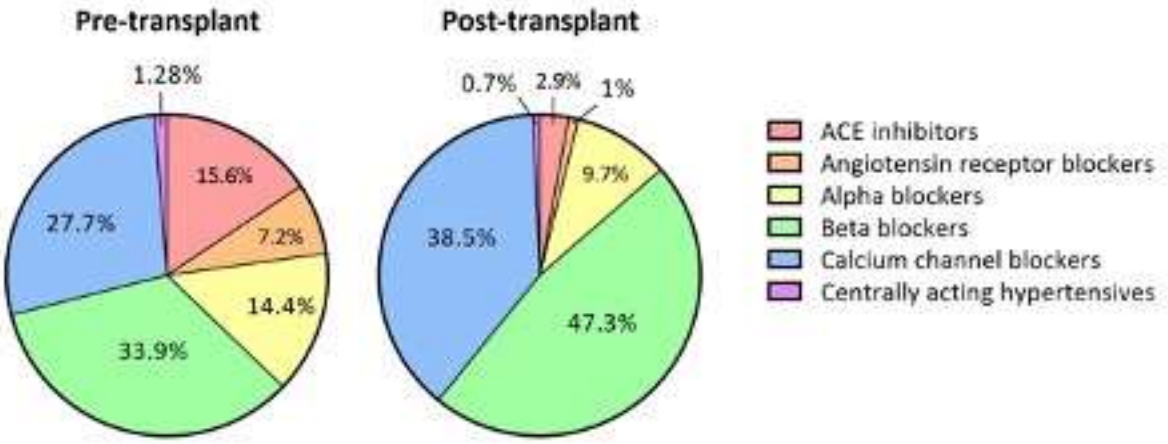

Figure 2: Classes of antihypertensive drugs prescribed pre- and post-transplant

Discussion: Renal transplantation may lead to a reduction in BP and decrease in the prevalence of hypertension in patients with ESRD. This is despite fewer antihypertensive agents being prescribed per patient post-transplant compared with pre-transplant. Calcium channel blockers and beta blockers were the classes of antihypertensive agents prescribed most widely both pre- and post-transplant. The use of agents which act on the renin-angiotensin-aldosterone system decreased dramatically post-transplant.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P094: POWERED Study: Prophylaxis with metformin to prevent PTDM

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Abstract

Advances in immunosuppression have improved kidney transplant outcomes. However, calcineurin inhibitors and steroids, and other transplant-specific and general diabetogenic risk factors, contribute to the development of post-transplant diabetes mellitus (PTDM). PTDM is associated with increased cardiovascular morbidity and mortality, graft loss and infection. Despite its clinical relevance, there has been a historic lack of diagnostic criteria or clear management strategies. Rather than treating patients who have already developed PTDM, new trials are focusing on prevention.

We present the results of a single-centre prospective randomised placebo-controlled trial comparing metformin 500mg OD vs placebo in kidney transplant recipients in the first 3 months post-transplant. 60 patients who passed screening within 10 days of transplant, including eGFR >/=30ml/min and 2hr oral glucose tolerance test (OGTT) <11.1 mmol/L, were randomised to either metformin (n=30) or placebo (n=30). They returned at 3, 6 and 12 months post-transplant for fasting bloods, including OGTT.

The primary endpoint was a diagnosis of PTDM, defined by a positive OGTT. Secondary endpoints included the effect on HbA1c, HOMA-IR, impaired glucose tolerance or elevated fasting plasma glucose, renal function, graft/patient survival and safety.

The groups were well-matched for baseline demographics including age, ethnicity, BMI, cause of ESRF, co-morbidities, immunological risk and induction. There was no significant difference in PTDM development survival curves for positive OGTT (Figure 1; log-rank p=0.53). There was no difference in renal function, HOMA-IR or in safety signal. Whilst glycaemic parameters changed over time, there was no difference between the two groups.

Metformin was not associated with a reduction in the diagnosis of PTDM at this dose and in this study which was significantly impacted by the COVID-19 pandemic, especially with regards to missing data during follow-up. However, there is no contraindication to further studies including larger doses of metformin or patients with positive OGTT at baseline.

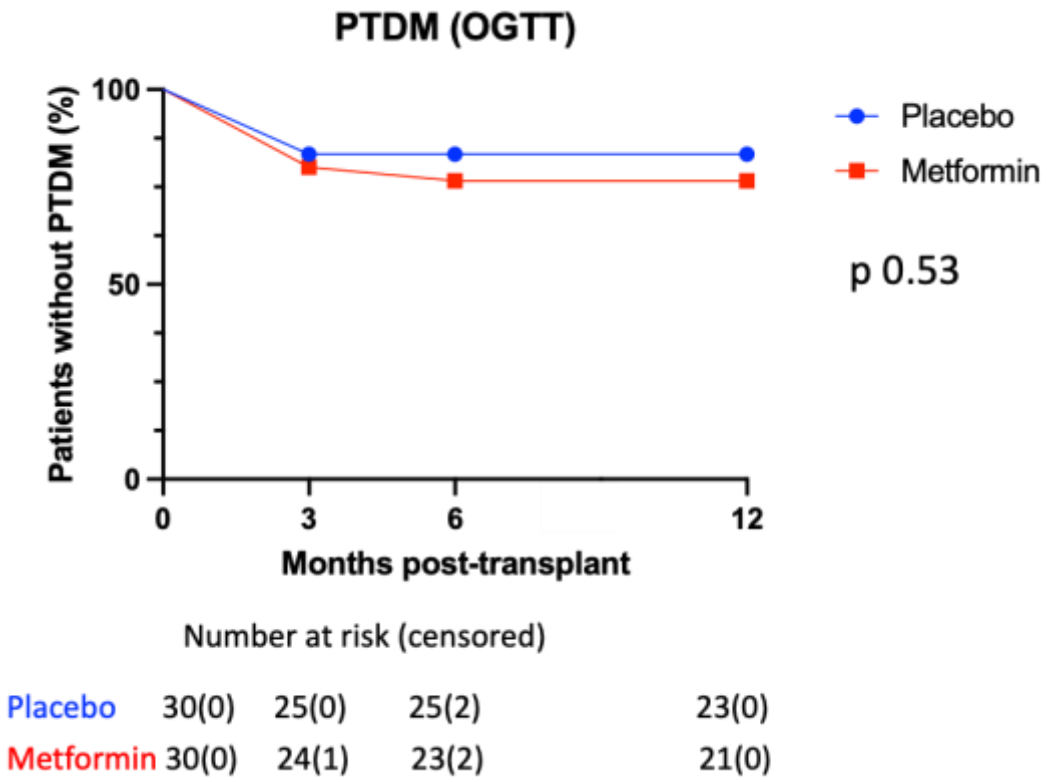

Figure 1

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P095: WITHDRAWN

P096: Comparing the incidence of positive fungal infection in ureteric stent and urine of renal transplant patients, and associated risk factors

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Abstract

Introduction: Our institution noticed an increased number of renal transplantation patients with fungal urinary tract infection (UTI) requiring antifungal treatment. The epidemiology of candiduria is not well described in the literature; with incidences ranging between 0.86-11%. The administration of antifungals leads to the additional burden of immunosuppressive dose adjustment due to drug interactions. Moreover, concerns arise regarding that of systemic fungal infection, and its association with anastomotic pseudoaneurysms, a major complication post-renal transplantation. We aimed to investigate the incidence of fungal infection in 2021, and the risk factors for developing it.

Methods: Patients' data receiving kidney transplants during April-July 2019 and a similar period in 2021 were collected, including age, sex, risk factors including comorbidities (e.g. diabetes), type of immunosuppression pre- and post-transplant, stent removal date, and candida positivity on urine and stent cultures. Data was analysed using Pearson's chi-squared test with Yates' continuity correction, and five logistic regression models to identify independent risk factors for candida UTI.

Results: 69 patients underwent renal transplantation in the 2019 group, and 86 in 2021. Both groups had comparable age (53.24±12.82 vs. 52.11±13.38), gender (males 68.1% vs. 59.3%), diabetes status (37.7% vs. 38.4) and campath induction (89.9% vs. 93.0%). 4.3% (n=3) and 12.8% (n=11) patients had positive candida cultures in 2019 and 2021 (p=0.123). Patients with positive candida cultures were older (59.94±9.07 vs. 51.89±13.24, p=0.028), more likely to have diabetes (78.6% vs. 34.0%, p=0.003) and be female (66.7% vs. 28.6%, p=0.011). Discussion: A non-significant increase in fungal positive stent culture incidence was identified. Candida infection risk increased significantly with diabetes, female sex and increased age. Depleting antibody induction did not appear to increase risk of fungal UTI. We recommend fungal UTIs are still treated, as the risk of developing fungal infections outweighs the side effects of a week's course of antifungals.

Stratified by year			
	2019	2021	P-value
n	69	86	
Age in years (mean (SD))	53.24 (12.82)	52.11 (13.38)	0.596
Sex = M (%)	47 (68.1)	51 (59.3)	0.335
Diabetes = y (%)	26 (37.7)	33 (38.4)	1.000
Campath induction = y (%)	62 (89.9)	80 (93.0)	0.678
MMF/steroids = y (%)	20 (29.0)	26 (30.2)	1.000
Candida positive culture = y (%)	3 (4.3)	11 (12.8)	0.123

Stratified by stent culture result for candida			
	Negative culture	Positive culture	P-value
n	141	14	
Age in years (mean (SD))	51.89 (13.24)	59.94 (9.07)	0.028*
Sex = M (%)	94 (66.7)	4 (28.6)	0.011*
Diabetes = y (%)	48 (34.0)	11 (78.6)	0.003*
Campath induction = y (%)	131 (92.9)	11 (78.6)	0.180
MMF/steroids = y (%)	40 (28.4)	6 (42.9)	0.409

Statistically significant p-values are denoted with an asterisk i.e., $p<0.05$ = *. P-values for continuous variables were derived from a T-test, and Yates' corrected Chi-squared test was used for binary variables.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P097: Recurrence of non-adherence following a second kidney transplant

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Abstract

Introduction: Previously reported contributory factors to non-adherence following transplantation include younger age at the time of transplant, male sex, low socio-economic status and psychological issues including depression and anxiety. Once a graft has been lost secondary to non-adherence, transplant teams may be reluctant to offer re-transplantation due to fears of a recurrence of the same behaviour.

Methods: A retrospective cohort analysis was performed to identify the number of grafts failing due to non-adherence following first and second renal transplants in the same recipients. The last one hundred adult recipients who had received two transplants in a single centre were included (follow up available for 6 months – 9 years). Recipients who were children at the time of their first transplant were excluded. Data was collected using information stored securely on electronic databases.

Results: In this cohort of adult recipients, graft loss due to non-adherence was infrequent (table 1). Although those in the study were adults non-adherence was associated with younger age.

Discussion: This small study provides reassurance that adherence following a second transplant in adults is good, even if the first transplant has been lost due to non-adherence. The overall risk of recurrent non-adherence following transplantation demonstrated in this cohort is likely to be an under-estimate, as recipients who lost their first graft due to non-adherence may be less likely to be considered for re-transplantation. This analysis has also only captured those recipients whose grafts have failed and there may be other recipients for whom non-adherence has had less significant consequences. Future work will compare this cohort with those who received their first transplants in the paediatric service.

Table 1. Demographics of recipients at time of first and second kidney transplants

	First Transplant		Second Transplant	
	Non-Adherent	**Adherent**	**Non-Adherent**	**Adherent**
Male (N = 60)	4 [7%]		1* [2%]	
Female (N = 40)	2 [5%]		0 [0%]	
Age (years) ± 1 SD	29.7 ± 8.0	37.6 ± 11.8**	35.0 ± 0	51.0 ± 10.5

*First graft also lost to non-adherence

** p<0.0001 versus non-adherent

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P098: Outcomes following a second kidney transplant

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Abstract

Introduction: Patients requiring kidney re-transplantation are often more complex than those who are transplant naïve due to the accumulation of co-morbidities and development of HLA sensitisation. These factors can lead to a more extensive pre-transplant assessment and result in a delay in activation and longer waiting time, which may then influence post-transplant outcomes and survival.

Methods: A retrospective electronic database analysis was performed of the most recent 100 adult recipients of a second kidney transplant in a single centre. Demographics and donor characteristics at the time of the second transplant and subsequent outcomes were compared to those at the time of the first transplant for the same recipients.

Results: Clinical characteristics of the cohort are shown in table 1. Despite their greater complexity, a similar number of second transplants were performed pre-emptively compared to the first transplant, and for those patients on dialysis the duration prior to transplantation was also similar. HLA matching was closer for second transplants. The eGFR at 12 months was better for these patients following their second transplant compared to the first (50.6 + 42 + 20.5 ml/minute), despite the increased likelihood of receiving a DCD transplant (31% versus 11%). There was no difference in the incidence of rejection in the first 12 months (14% versus 10%) however more incident malignancies in the first five years (18 versus 8 to date), notably skin squamous cell carcinomas. The number of malignancies is likely to increase as only 44 recipients have reached five years post-transplant. There have been 13 deaths, occurring between 7 days and 8.5 years post-transplant.

Discussion: Re-transplantation is a good option for patients whose first grafts have failed. Recipients are more likely to develop a malignancy, reflecting their older age and duration of immunosuppression. Increased mortality is also attributable to older age and longer duration of renal replacement therapy.

Table 1. Recipient demographics and outcomes following a second kidney transplant.

		First Transplant	Second Transplant	P-Value
Age (years) +/- SD		37.2 ± 11.7	50.8 ± 10.6	<0.0001
Dialysis	Pre	17	16	0.85
	HD	53	75	<0.0001
	PD	30	9	0.0001
Time on Dialysis (months) +/- SD		42.5 ± 41.1	47.4 ± 71.9	0.55
BMI at Transplant		25.9 ± 4.9	26.7 ± 4.9	0.25
Donor Type	Live	35	30	0.45
	DBD	53	39	0.45
	DCD	11	31	<0.001
	Pancreas	1	0	
Mismatch Level	1	4	12	<0.05
	2	10	23	<0.05
	3	43	38	0.47
	4	37	26	0.09
	Unknown	6	1	
Donor Age (years) +/- SD		51.4 ± 12.6	49.0 ± 14.6	0.21
eGFR at transplant (ml/minute)		8.1 ± 3.6	8.7 ± 3.6	<0.0001
eGFR at 12 months (ml/minute)		42.0 ± 20.5	50.6 ± 19.1	<0.01
Rejection (one year)		10	14	0.36
Malignancy (5 years)	Skin	6 (SSC = 2, BCC = 4)	12 (SCC = 9, BCC = 3)	0.14 (<0.05, 0.7)
	Other	2	6	0.15
Nephrectomy		21	3	<0.0001
Inclusion of steroids in IS*		56	86	<0.000001
Duration of Function (days) +/- SD		3915.5 ± 3349.9	1525.5 ± 953.1**	<0.05
Number of Deaths		N/A	13	
Time to death from 2nd transplant (days) +/- SD		N/A	1779 ± 945	
Cause of death	Malignancy	N/A	3	
	Cardiac	N/A	3	
	Infective	N/A	3	
	Renal failure	N/A	1	
	Multi-system failure	N/A	1	
	Unknown	N/A	2	

*IS – immunosuppression; ** Duration of function for the 12 patients whose grafts failed

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P099: There is a lack of focused services for the management of paediatric patients with failed kidney transplants-results of BTS survey of paediatric practice in the UK

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Abstract

Introduction: Advances in antenatal diagnostics and perinatal care led to the increasing number of paediatric patients requiring renal replacement therapy since infancy. With improved surgical techniques, this means that more children are receiving kidney transplants in younger age some of which might require more than one transplant during childhood. There is no national or international guideline advising on the management of paediatric patients with failed transplants(pFT). On behalf of the British Transplantation Society, we surveyed paediatric renal units in the UK investigating management of pFT.

Methods: Online survey consisting of 12 MCQ was sent to all 13 paediatric renal units, ten of which perform kidney transplantation. Data was submitted anonymously.

Results: 11/13 centres completed survey (84%) of which nine were transplant units (90%).63% of all centres looked after 51-100 transplant patients;91% of units had less than 10 patients with eGFR < 20ml/min/1.73m2.Just over a third of all centres (36%) followed up pFT in general transplant clinic;27% in general low clearance clinic whilst 36% answered 'other'. Timing of transfer to low clearance clinic was variable with half of the centres not transferring at all (54%),27% referring when eGFR <20 and in fifth of all centres it was clinician dependent. All units provide access to multidisciplinary meeting for pFT.91% of centres have transplant coordinators.72% reduce immunosuppression as part of failing transplant management. Graft nephrectomy is not routinely done in any of the centres. In those cases where nephrectomy was done, a third of all centres stop immunosuppression. None of the units have protocol for the management of failing transplants.

Conclusion: BTS survey of paediatric renal units has highlighted variable practice in the management of paediatric patients with failed transplants, lack of designated services where these patients are followed up and huge differences in immunosuppression management. There is an urgent need for the guideline/consensus on the management of paediatric renal transplant recipients with failing transplants.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P100: A trusted friend in the middle of the night: A qualitative analysis of Artificial Intelligence as a decision-making aid for patients and clinicians navigating uncertainty in kidney transplant

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Abstract

Introduction: The activities of information-giving, decision-making, and waiting are central to the kidney transplant experience for both clinicians and patients but until now they have rarely been studied. It is known that clinicians may experience doubt around patient information giving, decision-making, and how newer tools using Artificial Intelligence (AI) could help the process. Patients may experience misgivings around transplant information and waiting lists; they may also have questions around technology incorporated into the decision-making process. Qualitative research has the capacity to deepen understanding of these activities by generating detailed insights into clinician and patient experiences. This study aims to use qualitative interviews to explore the clinician and patient experience in kidney transplant processes in the context of the UK.

Methods: Fourteen kidney transplant recipients and 10 clinicians were recruited in an outpatient clinic at a U.K. Transplant centre. Data was collected through audio-recorded semi-structured interviews. Data was analysed using a modified grounded-theory approach, which emphasised the inductive generation of analytic themes.

Results: Four patient themes were generated: 'Transplant information is challenging to understand,' 'Further information would be life-changing,' 'The waiting-game, fears and hopes on the waiting list,' and 'AI-driven tools could help transplant patients.' Clinician themes included: 'Challenges in clearly providing patients with transplant information,' 'The balancing act: whether to accept or decline an organ,' 'Team-approach to decision making,' and 'AI can be a friend to call on.'

Discussion: The results highlight that patients and clinicians find the transfer of information around the transplant process challenging. The uncertainty in transplant can be a long process that encompasses hope but also fear in both the clinician and patient. The delicate balance of staying on the waiting list or accepting an organ involves many complex factors but using newer technology such as AI to help ease this burden would be welcomed by most patients and clinicians.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P101: The burden of skin disease in kidney transplant recipients living with HIV: a single-centre retrospective analysis

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Abstract

Introduction: Kidney transplant recipients (KTRs) are at lifelong risk of immunosuppression-related cutaneous complications, in particular skin cancer. KTRs are up to 65 times more likely to develop non-melanoma skin cancers (NMSCs) when compared to age-matched general populations. Published evidence suggests skin disease occurs in over 90% of patients living with HIV. However, there is a paucity of published data on the prevalence and characteristics of skin disease in KTR living with HIV (KTRLHIV).

Methods: We performed a retrospective analysis of electronic health record data (between 1998-2022) to analyse the prevalence and characteristics of skin diseases in our KTRLHIV cohort (n=29) compared to matched HIV-negative KTRs (n=29) (matched for age, sex, ethnicity, and years since transplant).

Results: In each of our cohorts n=19 (66%) were male and n=21 (72%) were Black with a mean age of 55.5 years [range 43-74 years]. On average patients were 7.4 years post-transplant (range 0.7-23.8 years). The mean GFR in KTRLHIV compared to matched HIV-negative KTRs was 34 vs 43mL/min ($p = 0.045$). Having concomitant HIV increased the risk of skin disease in KTRs 1.6 times ($p = 0.027$). N=27 (93%) KTRLHIV experienced 120 episodes of skin diseases (4.4 episodes/patient). In comparison n=21 (72%) HIV-negative KTRs experienced 76 episodes (2.6 episodes/patient). Skin infections (especially genitourinary) were the most common (43% KTRLHIV vs 39% HIV-negative KTRs), followed by benign lesions (17%vs22%) and inflammatory skin disease (9%vs9%). Interestingly, pre-malignant or malignant skin cancers occurred more frequently in HIV-negative KTRs (4%vs11%). Most of these were actinic keratoses (n=4) and found only in patients with fair (Fitzpatrick Type 1) skin.

Discussion: We have identified statistically significant higher rate of skin disease in KTRLHIV compared to matched HIV-negative KTRs. Further research to evaluate the reasons underpinning this increased burden of skin disease in this cohort is necessary.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P102: Outcomes for waitlisted kidney transplant candidates with a declined kidney donor offer: a retrospective, single-centre analysis

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Abstract

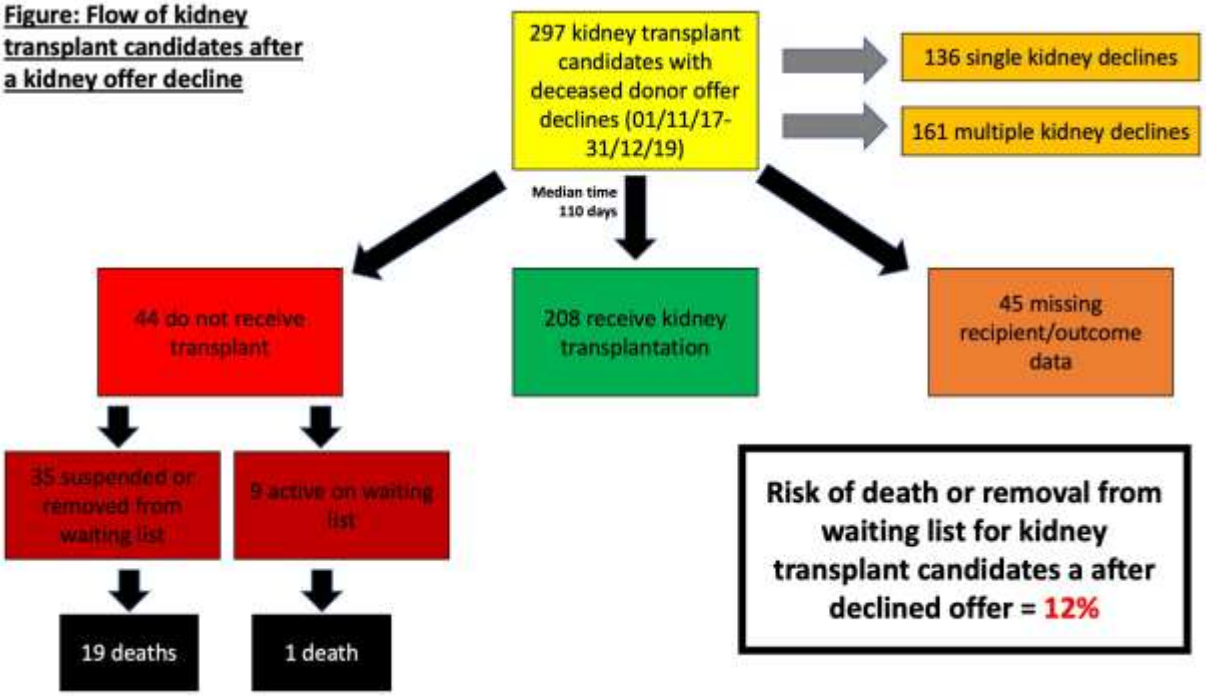
Background: Data from the USA suggests 30% of kidney transplant candidates (KTCs) after a declined offer subsequently die or are removed from the waiting-list (Husain et al. JAMA Netw Open 2019). However, mortality and waiting times for KTCs differ between the UK and the USA, meaning outcomes may not be comparable. The aim of this study was to explore outcomes after a kidney offer decline for our waitlisted KTCs.

Methodology: This was a retrospective, single-centre analysis of waitlisted KTCs with a kidney offer decline between 01/11/2017 and 31/12/2019 and subsequent outcomes (follow up to 01/11/2022). All analyses were done using R statistical software (version 4.2.2).

Results: During the study period, we had 992 kidney offers of which 675 (68.0%) were declined offers (DBD; n=371, DCD; n=369; Altruistic; n=1, DBD that converted to DCD; n=1 and unknown; n=1). These 675 declined offers were made for 297 KTCs (45 declined offers had no identifiable KTC information). Among identifiable KTCs, 136 had single declined offers and 161 had multiple declined offers (maximum number of declined kidney offers for a single KTC, n=18). Post decline, 208 (70.0%) subsequently received a kidney transplant, with median time from declined kidney offer to kidney transplant 110 days, while 44 (14.8%) did not receive a kidney transplant (45 had unknown recipient/outcome status). From the 44 KTCs who did not subsequently get transplanted, 35 (79.5%) were removed from the waiting list while 9 remain active. Overall, we observed 20 deaths in our cohort of KTCs who did not proceed to transplantation; 19 occurred in people who were suspended/removed prior to death and only one death occurred in a KTC active on the waiting-list at the time of death.

Discussion: KTCs with declined kidney offers have a 12% subsequent risk of death or waiting-list removal, compared to higher 30% rate reported in the USA.

Figure: Flow of kidney transplant candidates after a kidney offer decline



Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P103: Outcomes of COVID-19 infection in renal transplant recipients in the Omicron era

Dr Nidhi Agrawal, Dr Rachel Middleton

Salford Royal Hospital, Salford, United Kingdom

Abstract

Introduction: The COVID-19 pandemic adversely affected the transplant population across the entire world. Until Dec 2021, COVID-19 related mortality was 18% in our unit and was as high as 30% in some other centres. The omicron variant, which was the major variant since Jan 2022, although highly transmissible was much less lethal. We aimed to review the outcomes of COVID-19 infection in our renal transplant population in the Omicron era.

Method: It was a single centre retrospective cohort study. All renal transplant patients who developed COVID-19 infection between Jan 2022 to Oct 2022 were included in the study. Demographic features, co-morbidities, graft function, immunosuppressive medications, COVID vaccination history, hospitalization indication, treatment given, and outcomes were recorded.

Results: A total of 163 patients were included. 56% were females, mean age was 55 ± 14.5 years, 97.5% patients had received ≥2 COVID vaccines and 72.4% patients had antibodies against the SARS-CoV-2 virus. Immunosuppression was reduced in 71% patients as they were on anti-proliferative agents. 8.6% patients required admission due to symptomatic coronavirus disease. With regards to COVID-19 specific treatment, 13% patients received monoclonal antibodies and 5% received anti-viral treatment. There was only one mortality which was due to advanced malignancy and COVID-19 infection was an incidental finding.

Discussion: In our renal transplant population, Omicron variant is associated with lesser hospitalizations and significantly lower mortality compared to that in the pre-Omicron era.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P104: Outcomes of COVID-19 infection and the effects of immunosuppression strategies in kidney transplant recipients at a single tertiary centre

Dr Anna Marie Price, Dr Kerry Tomlinson

University Hospital North Midlands NHS Trust, Stoke-on-Trent, United Kingdom

Abstract

Introduction: Management of COVID-19 across kidney transplant recipients has been heterogeneous. Whilst standardised protocols have developed during the pandemic the long-term effects of immunosuppression withdrawal has been unclear. We sought to review our management and patient outcomes over the course of the pandemic.

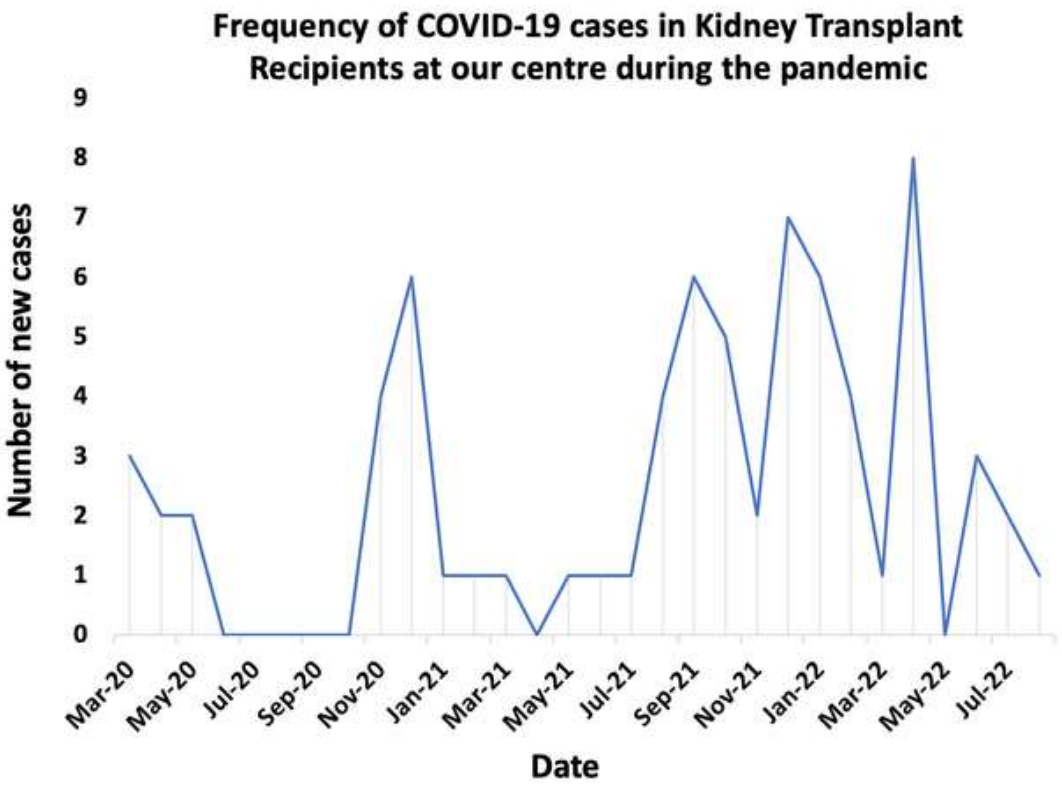
Methods: Retrospective review of all PCR confirmed COVID-19 infections in those with kidney transplants between March 2020 and September 2022. In the first wave, tacrolimus was continued, the anti-proliferative was held and prednisolone was doubled. In subsequent waves the tacrolimus was also paused for inpatients and dexamethasone was alternatively used.

Results: A total of 72 patients with COVID-19 were identified. Of these 57% (n=41) were male with an average age of 57 years. Presentation was comparable to that of the general population with 74% (n=53) developing characteristic symptoms, (14%) n=10 presented with non-specific symptoms and a further (12%) n=9 had gastrointestinal symptoms in isolation.

Peaks and troughs followed national waves but our peaks were more sustained, see Figure 1. Of the 68% (n=49) who were hospitalised, 16% (n=8) of those were admitted to critical care. In total 24% (n=17) died. The majority of deaths were in winter 2020/2021 and summer 2021.

During follow up, 22% (n=16) patients had donor specific antibodies taken more than three months after infection. Two became sensitised; one wasn't sustained on repeat samples (tacrolimus was paused, prednisolone doubled and anti-proliferative paused) the other did not have a change in immunosuppression (did not present). There were no cases of acute rejection. One patient developed de novo IgA nephropathy. Two developed AKI in our unit, one mild and one severe, both recovered to baseline.

Discussion: Our data suggests COVID-19 waves are more prolonged and insidious. Patients had high rates of admission, critical care transfer and death. Despite concerns over withholding immunosuppression, we have not experienced adverse renal outcomes.



Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P105: Turning the ship

Mr Samuel Turner, Miss Anusha Edwards

North Bristol NHS Trust, Bristol, United Kingdom

Abstract

Introduction: From 2014-2017, decline rates for kidney offers at our centre were at 55% (near upper 99.8% CI) for standard criteria donor (SCD) DBDs, 62% (near upper 95% CI) for extended criteria donors (ECD) DBDs and 48% for SCD DCDs (near median). This made us one of the more conservative units in the country.

Methods: To make decisions on organ offers accountable, a monthly turndown meeting was commenced. Where patterns in decline arose, action was taken. The first issue was 17 of 59 (29%) kidneys turned down in the first quarter analysed were due to Acute Kidney Injury in the donor. We presented the published evidence to our transplant steering group and wrote a protocol for use of kidneys from donors with AKI. We have also initiated mandated discussion of all offers with both nephrologist and surgeon, introduced guidance on use of kidneys from donors with previous hepatitis.

Results: Over 20 AKI kidneys have now been safely transplanted. In the 2019-2022 period, our decline rate has fallen to 44% (near lower 99.8% CI) for SCD DBDs, 50% (at lower 95% CI) for ECD DBDs and 53% (near 95% lower CI) for SCD DCD kidney offers.

Discussion: To change the behaviour of a unit requires careful presentation, discussion, consultation and involvement of all stakeholders. The patient must always remain at the centre as the driving force. Despite the improvements described, our waiting time remains longer than other centres with similar decline rates. As we therefore need more kidney offers, the next step is to enter the Fast Track Scheme, which will be subject to appropriate and stable levels of coordinator and surgical staffing.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P106: Screening for latent tuberculosis in renal transplant candidates

Mr Mahmud Saedon, Mr Jonathan Davies, Dr Sarah Whiteley, Dr Matthew Howse, Mr Dan Ridgway

Royal Liverpool Hospital, Liverpool, United Kingdom

Abstract

Introduction: There is no consensus or guidelines on identification of latent tuberculosis (TB) in renal transplant candidates. Treatment of active disease after renal transplant is difficult due to drug interactions, nephrotoxic drugs and inadequate immune response due to immunosuppression. In recent years, we have identified 4 cases of reactivation of latent TB (3 Caucasian patients, one with a travel history) following transplantation.
In July 2021 we introduced a new screening policy using interferon-gamma release assay (IGRA) as part of the renal transplant candidate work-up. The aim of our study is to review the utilisation of this screening for latent TB in renal transplant candidates.

Methods: Since July 2021, all renal transplant candidates have been screened for TB as per our new policy. Those with a positive IGRA were discussed in the TB MDT for treatment and follow-up by the infectious disease team.

Results: Approximately 135 renal transplant candidates have been screened. 4 candidates had a positive IGRA (2 Caucasians without a travel history). 3 have completed TB treatment and the other is awaiting assessment.
A single candidate had an indeterminate IGRA, but latent TB was excluded.
To date, 8 of the screened patients (all IGRA negative) have been transplanted; 7 of these did not receive TB prophylaxis, however one did (HIV positive and from an endemic area).

Discussion: We have shown that patients with latent TB do not always fit the typical demographic profile. As a result of screening, we have identified and treated candidates with latent TB prior to transplantation. This screening policy has altered our practice, with patients who previously would have been given prophylaxis, based on travel history or originating from an endemic area, now avoiding prophylaxis and its potential complications. It has also helped us identify cases in patients who, prior to this policy, would have been deemed low risk.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P107: Photoprotection and skin cancer awareness in kidney transplant recipients living with HIV: a single-centre cross-sectional study

Dr Fatima Ali[1,2], Dr Muhammad Junejo[3], Professor Catherine Harwood[3,4], Dr Antonia Cronin[5,2]

[1]Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. [2]King's College London, London, United Kingdom. [3]Department of Dermatology, Royal London Hospital, Barts Health NHS Trust, London, United Kingdom. [4]Blizard Institute, Barts and the London School of Medicine and Dentistry, London, United Kingdom. [5]Department of Nephrology and Transplantation, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

Abstract

Introduction: Kidney transplant recipients (KTRs) are up to 65 times more likely to develop non-melanoma skin cancers when compared to age-matched general populations. HIV has also been associated with increased skin cancer rates. However, to date, there has been no study evaluating photoprotection and skin cancer awareness in KTRs living with HIV (KTRLHIV).

Methods: Using validated photoprotection and skin cancer awareness questionnaires we evaluated knowledge and practices in KTRLHIV and an HIV-negative KTR cohort, matched for age, sex, ethnicity, and years since transplant.

Results: n=27 KTRLHIV and n=25 matched HIV-negative KTRs completed the questionnaires. Of those n=34 (65%) were male and n=37 (71%) were Black. Average age was 56 years (range 43-74years). On average patients were 7.3 years post-transplant (range 0.7-23.8years). N=22 (81%) KTRLHIV compared with n=15 (60%) matched HIV-negative KTRs had not seen a Dermatologist in the last year. Only n=14 (52%) KTRLHIV had received sun protection advice, compared to n=20 (80%) of the matched KTRs (p=0.033). There were statistically significant lower rates of overall sunscreen use in KTRLHIV compared to matched HIV-negative KTRs (33%vs60%, p=0.054). Only a small proportion used sunscreen daily (22%vs27%), of a factor >25 (78%vs100%). A strongly positive Tetrachoric correlation coefficient of 0.77 indicated that providing photoprotection advice correlates to sunscreen use. Significantly lower rates of photoprotection behaviours were seen in the KTRLHIV compared to HIV-negative KTRs, particularly never avoiding direct sunlight (59%vs16%, p = 0.001), and never dressing to protect from the sun (52%v 12%, p = 0.002).

Discussion: We have identified statistically significant lower knowledge of photoprotection and skin cancer awareness in KTRLHIV compared to matched HIV-negative KTRs. Lower rates of skin cancer protection advice may have resulted in lower rates of sunscreen use, and poorer photoprotection behaviours in KTRLHIV. Dedicated skin cancer awareness education to promote patient-led skin cancer prevention alongside formal Dermatology referral is recommended.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P108: In securing Organ Donation Consent from deceased donor families in Intensive Care, does a paternalistic approach to care in the Intensive Care (ICU) environment help or hinder securing this consent compared to a patient centred approach?

Mr Brian Tierney

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Abstract

Although Organ Donation saves many hundreds of lives every year in the UK (NHSBT,2021) there remains a firm requirement for donor family support and consent of the organ donation process (Opdam and Radford, 2021).

There have been great strives to improve consent rate in the UK however, between 2013 and 2019, the consent rate increased from 61% to 67% which remains well below the consent rates of other European countries with similar organ donation consent legislation (Curtis et al. 2021). Patient choice and autonomy in hospital continues to be a contentious issue (Xyrichis et al. 2019) with an ever-increasing argument for patients and family members to be more involved in healthcare decision making. However, blockers remain against this argument with one being that of a paternalistic approach to care by clinicians (Wong, Redley and Bucknall, 2021).

Paternalistic care is when there is a dominant attitude of the healthcare professional imposed onto the patient (Fernandez-Ballesteros et al (2019). Fateh-Moghadam and Gutmann, (2013) further explores the theories around Paternalism and sub-divides the concept into two sub-groups; 'Hard Paternalism' and 'Soft Paternalism' with the later sub-group most relevant to healthcare where restrictions to patient autonomy are imposed for what is perceived to be for the patient's benefit. It is this 'soft paternalism' which is imposed directly by Critical Care Clinicians that may be introducing a barrier to effectively exploring Organ Donation and its consent with our Donor families.

A proposed qualitative research is therefore proposed for all families approached by SNODs/SRs, including families who did not support Organ Donation Consent to examine if paternalistic approaches to care with Critical Care effected organ donation consent decision.

Categories: Ethics, law and public policy (legislation, changes to legislation)

P108: Impact of a BK viraemia screening programme amongst kidney and kidney/pancreas transplant recipients

Dr Dena Pitrola[1], Ms Sharon Warlow[1], Ms Bethan Travers[1], Dr Sarah Browne[1], Dr Pramod Nagaraja[2]

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Abstract

Introduction: BK virus (BKV) is a significant problem following renal transplantation. KDIGO guidelines suggest screening for BKV. This quality improvement project reports a BKV screening initiative and compares the results to those from a pre-screening era.

Methods: Between 2006-2017 (induction with Basiliximab or ATG), BK viraemia testing was done only following an increase in S. creatinine level. From January 2021, we screened all new recipients' blood for BKV using a PCR test at regular intervals up to 12 months post-transplantation. Viraemia monitoring, immunosuppression reduction and other treatments (Leflunomide, immunoglobulins) were managed according to a new departmental protocol. Induction during the screening period was primarily with ATG or Campath. This analysis includes 127 recipients with at least 6 months follow-up.

Results: Of the 127 recipients, 23 (18%) became viraemic at a median of 2.4 months (range 1.5-9) post-transplantation. Mean S. creatinine level at diagnosis was 116 µmol/l. Immunosuppression was reduced in 16 patients for persistent viraemia level of >10,000 copies/ml (n=12), BKV nephritis on biopsy (n=2) or high tacrolimus level (n=2). No episodes of rejection or graft loss occurred in the screened cohort and viraemia had cleared completely or decreased in all patients until the time of analysis.

In the pre-screening era, there were 67 BK viraemic patients with a crude annual incidence rate of 5.1%, median time to diagnosis of 5.1 months (range 2.3-33.1) and mean S. creatinine level of 179 µmol/l at diagnosis. Graft loss rate due to BKV nephropathy or rejection was 12% with S. creatinine level being a significant factor predicting graft loss.

Discussion: High incidence of BK viraemia recently may be due to regular screening and increased use of lymphocyte depleting agents. Regular screening can identify BK viraemia at an early stage which may translate to better longer-term outcomes, but the high incidence needs close monitoring.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P109: Predictors of Short and Long Term Outcomes of Donor After Cardiac Death (DCD) versus Donor After Brain Death (DBD) Kidney Transplantation from Supra Marginal Donors (D4). A Machine Learning Analysis (MLA) of NHSBT Registry Data Since Year 2000

Dr Kunal Kapoor, Mr Sanjay Mehra, Mr Hemant Sharma

Royal Liverpool University Hospital, Liverpool, United Kingdom

Abstract

Introduction: Marginal Donor 4- D4 (Donor Risk Index ≥1.50) Matching was introduced as a part of new Kidney allocation scheme in the UK in 2018. The focus is primed at recipient matching but the role of types of transplant for these donors is unreported. The aim of our study is to assess predictors associated with survival outcomes for DCD and DBD transplants from D4 Donors.

Methods: We harmonized the NHSBT Data to shortlist the D4 criteon kidneys. The Predictors of Transplant outcomes were evaluated by five classifiers including logistic regression, SVM, random forest, K-Nearest neighbour matching and adaptive boosting . Random Forest Model had the best performance validated by RMSE. Survival outcomes and predictors data mined from MLA were further mined with Cox Regression.

Results: 6254 D4 donors had 3793 (DBD) and 2461 (DCD) Kidney transplantation between 2000 -2018.. The Odds of DGF and PNF in DCD Kidneys was significant (1.7 (1.5-1.44) p <0-001, 1.2(1.1- 1.6) p=0.02 respectively. There were minor but statistically insignificant difference in regional outcomes across the UK. The Model used 70% of data for testing, 15% for validation and 15% for testing. The Validation accuracy was 91% and testing accuracy was 83.%, AUC was 0.714. In regards to survival at 3 & 5 years post transplant, Serum Creatinine >100 mmol/L at 12 months, Donor Creatinine <100 mmol/l at procurement, Serum Creatinine >100 mmol/L at 3 months, no rejection within 12 months and CIT <12 hrs were the variable of importance in order. The 1,3,5 year survival for DBD versus DCD transplants was 90%, 85%, 81%; 89, 84%, 80% respectively.

Conclusions: The MLA accurately predicts variable of importance. There is no statistical difference in DCD verus DBD transplant survival outcomes for D4 kidneys though DCD kidneys with CIT >12 hrs do have a significant risk of DGF and PNF.

Machine learning Algorithms:

Boosting Regression

Trees	Shrinkage	Loss function	n(Train)	n(Validation)	n(Test)	Validation MSE	Test MSE
1	0.100	Gaussian	1348	387	008	0.884	1.137

Decision Tree Regression

Splits	n(Train)	n(Test)	Test MSE
69	2754	1388	0.998

Support Vector Machine Regression

Support Vectors	n(Train)	n(Test)	Test MSE
1131	1141	285	1.041

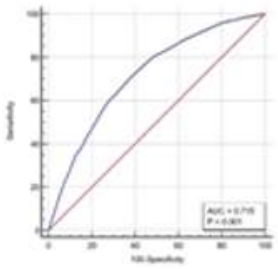
Random Forest Regression

Trees	Predictors per split	n(Train)	n(Validation)	n(Test)	Validation MSE	Test MSE
97	3	2550	638	796	0.386	0.680

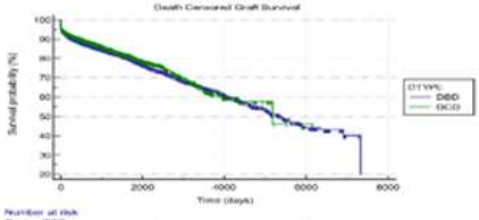
K-Nearest Neighbours Regression

Nearest neighbours	Weights	Distance	n(Train)	n(Validation)	n(Test)	Validation MSE	Test MSE
3	rectangular	Euclidean	603	151	188	1.037	1.320

AUC



Performance metrics	Value
AUC	0.715
Precision	0.905



Graft Survival	1 year	3 year	5 year
DBD	90%	85%	81%
DCD	89%	84%	80%

Variable Importance

	Total increase in node purity
Serum Creatinine12 Mo <100mmol/l	0.080
Donor Creatinine <100 mmol/l	0.011
Serum Creatinine 3 months <100 mmol/l	0.011
Rejection Count – 12 months	0.007
CIT Min <12 Hr	0.006
Donor BMI <30	0.003
Donor Past History Smoking - No	0.002
HLA MM	0.001
Donor Past History DRUG ABUSE -No	0.000
Functional WIT >60 min	-4.978e-4
Donor Past History Diabetes - Yes	-8.076e-4
Rejection Count – 3 months	-0.002
Recipient Age >60 years	-0.005

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P110: Kidney transplantation from Hepatitis C (HCV) Positive donors into Hepatitis C-negative recipients; First single centre experience in the United Kingdom

Dr Sarah Browne[1], Mr Michael Stephens[1], Ms Sharon Warlow[1], Ms Bethan Travers[1], Ms Ceri Walker[1], Mr Robert Bradley[1], Dr Jaisi Sinha[2], Dr Brendan Healy[2], Mr Christopher Chalklin[1]

[1]Cardiff Transplant Unit, Cardiff, United Kingdom. [2]Public Health Wales, Cardiff, United Kingdom

Abstract

Introduction: Multiple international studies have reported the safety of transplanting kidneys from Hepatitis C virus (HCV) positive donors into HCV negative recipients. Sustained virological response (SVR) to treatments have been close to 100%. A UK Position Statement supports the use of organs from Hepatitis C viraemic donors for Hepatitis C negative recipients. We report our extended series of 26 transplants of organs from HCV positive donors into HCV negative recipients. Y

Methods: Cardiff Transplant Unit developed a protocol for considering kidney offers from HCV positive donors in the early half of 2019, in close collaboration with multiple stakeholders. Recipients were tested for evidence of HCV using serum PCR on day 3-7, day 10-14 and 6 weeks post transplant. Pan-genotypic Direct Acting Antiviral (DAA) therapy was initiated as soon as recipients were detected to be viraemic.

Results: Between May 2019 and October 2022, 26 patients received kidney transplants from 17 HCV positive donors. 9 of the donors were subsequently demonstrated to be viraemic at the time of donation using PCR technology. These 9 donors facilitated 14 transplants and all 14 recipients subsequently became viraemic themselves within 14 days of transplant.

A twelve-week course of pan-genotypic therapy was commenced in these 14 patients (7 with Glecaprevir/Pibrentasvir and 7 with Sofosbuvir/Velpatasvir). The DAA were well tolerated and no SAE or side effects reported. None of the patients had a clinically significant increase in aminotransferase levels.
All patients received tacrolimus and mycophenolate mofetil (with or without steroids) as maintenance immunosuppression. Post transplantation kidney function has been good; median latest eGFR 63.5 ml/min (IQR 46.5 ml/min-81.5ml/min). SVR has been achieved in all fully treated patients at 12 and 52 weeks.

Conclusion: The success of this series of HCV positive donors into HCV negative recipients supports the wider utilisation of organs from HCV positive donors in the UK.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P111: Efficacy and safety of cessation and or reduction of MPA in BK viremia post-renal transplant

Dr Ramyangshu Chakraborty, Dr Michelle Allen, Dr Tasnuva Kashem, Dr Kieran McCafferty, Dr Stanley Fan, Dr Terese Cutino-Moguel, Professor Magdi Yaqoob

Royal London Hospital, London, United Kingdom

Abstract

Introduction: Stopping antiproliferative agents is commonly practised in patients with BK viremia with or without biopsy-proven nephropathy. However, the efficacy and safety of this strategy remain unknown in multi-ethnic cohorts of renal transplant patients.

Methods: All incident kidney transplants in the Royal London Hospital, London between 1st January 2017 to 31st December 2020 with subsequent BK viraemia were included in the study. They received standard maintenance IS: tacrolimus, mycophenolate mofetil (MPA) and a weaning dose of prednisolone to 5 mg/d: after induction with basiliximab or ATG. MPA was stopped/reduced in the first instance (70% of patients) at the time of BK viremia. Data were collected retrospectively and analysed using R.

Results: A total of 143 patients (62% male, 51 years +/- 13.7) were included. 32% were South-Asian, 27% Caucasian, 21% Afro-Caribbean and 20% were mixed. Donor types were 24.5% LD, 52.5% DBD, and 23.1% DCD. The mean follow-up was 3.21 years.

In the entire cohort, 70 patients (48.9%) had a resolution of viremia. The persistent viraemic group had a higher cessation rate of MPA (78.1% to 48.6%, $p < 0.01$) and was associated with biopsy-proven BK nephropathy ($p < 0.01$).

113 (79%) of the patients had their anti-proliferative reduced/stopped for BK viraemia; the rest had no alterations. Those who had no changes to their anti-proliferative were younger (p 0.04), had longer follow-up (p 0.04), lower peak BK titres ($p<0.001$), recovered from viraemia more frequently ($p< 0.001$), had lower eGFR loss (p 0.005) and had less incidence of biopsy-proven BKVaN (p 0.04).

Discussion: Our study shows that stopping/reducing anti-proliferative medications as the first option for BK viraemia is a safe, yet ineffective strategy in determining the course of the disease. An RCT is warranted to compare stopping anti-proliferative medications with lowering CNI targets with/without mTOR inhibitors as the first option for BK viraemia.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P112: Overcoming Ageism Among the Transplant Community: A Time-Varying Survival Analysis

Dr Hatem Ali[1,2], Dr Mahmoud Mohammed[3], Mr Pranav Nadig[4], Prof David Briggs[5], Prof Nithya Krishnan[1,4]

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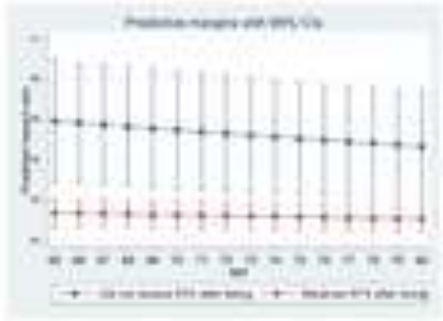
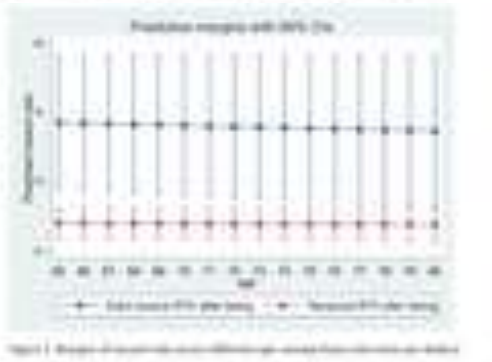
Abstract





Background: Aim was to evaluate the survival advantage of transplantation to being in the waitlist among individuals older than 65 years old.

Methodology: We retrospectively reviewed kidney transplant patients in the OPTN database from 2007 till 2017 and followed up till June 2022. Two cohorts were selected: “Pre-dialysis cohort”: included all patients who were 65 years or older at the time of listing for kidney transplant. “Dialysis cohort”: included all patients who were 65 years or older at the time of start of dialysis and were on the waitlist. Starting point for the “Pre-dialysis cohort” was the date of listing, while for the “Dialysis cohort” was the date of dialysis initiation. Median follow-up was 7 years. Exclusion due to competing risk: patients with graft failure, previous transplants, removal from the waitlist due to unfitness for transplant. We performed a time-varying cox regression model on both cohorts with “receiving a transplant” as the time-varying variable.

Results: Among the “Dialysis” cohort (n=22,460), number of patients who remained in the waitlist and having dialysis =12,930, while number of patients who received transplants=9530. Receiving kidney transplant among

all different age groups were associated with better survival compared to those who remained on the waitlist (HR=0.21 with P<0.01 in age 65-75, HR=0.25 with P<0.01 in age between 70-75, HR=0.29 with P<0.01 in age >75).

Among the “Pre-dialysis” cohort (n=12,083), number of patients who remained in the waitlist without dialysis=5451, while number of patients who received transplants=6632. Receiving kidney transplant among all different age groups were associated with better survival compared to those who remained on the waitlist (HR=0.19 with P<0.01 in age 65-75, HR=0.25 with P<0.01 in age between 70-75, HR=0.30 with P<0.01 in age >75).

Conclusion: Receiving kidney transplantation is associated with improvement in patient survival among the elderly pre-dialysis and dialysis population.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P113: Comparing glycaemic benefits of active versus passive lifestyle intervention in kidney allograft recipients (CAVIAR): Patient experience and satisfaction after study participation

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[1]University Hospitals Birmingham, Birmingham, United Kingdom. [2]University of Birmingham, Birmingham, United Kingdom

Abstract

Background: Patient-reported experience is not routinely reported after completion of clinical trials involving kidney transplant recipients. CAVIAR (Comparing glycaemic benefits of Active Versus passive lifestyle Intervention in kidney Allograft Recipients) was a randomised controlled trial which compared active versus passive lifestyle intervention after kidney transplantation. The aim of this report is to disseminate feedback from CAVIAR study participants after study completion.

Methods: The CAVIAR study recruited kidney transplant recipients between 17th August 2015 and 18th December 2017, with all study visits completed 6-months post recruitment. After study completion, an anonymous feedback questionnaire was sent to study participants that explored seven aspects of the study: 1) basic demographics, 2) study visits, 3) research staff, 4) study completion, 5) top three reasons for participating in the study, 6) things disliked about the study, and 7) free-text comment section. The Likert scale was used in sections 2-4, while sections 5-6 had optional pre-selected answers with free text comment area.

Results: CAVIAR had 130 study participants, but contact details were only available for 119 individuals after study completion. From 119 feedback forms sent, 58 were returned (return rate 48.7%). Participant experience with research staff and relational aspects of study visits received the highest positive response. The main reason for study participation was the wish to help others with similar conditions (77.6%), while the main negative aspect was the length of study visits. Most frequent positive themes that emerged from free-text comments was overall satisfaction with study delivery, with the main negative theme emerging was the impact participation had on employment (see Table below).

Discussion: These results can be used to tailor future clinical trials for kidney transplant recipients to be more patient-centred. This feedback will inform plans for a follow up CAVAR 2 study to optimise study design to maximise study participation, engagement and retention.

Table. Free text comments from study participants	
POSITIVE THEMES (7)	**Frequency of mentioning**
General satisfaction with study delivery	14
Dietitian support	8
For the benefit of future and other patients	6
Gratefulness	4
General health benefits	2
Further support needs	1
Non-invasive tests	1
NEGATIVE THEMES (8)	**Frequency of mentioning**
Financial/employer issues	4
Normal clinic appointments not coinciding with research visits	2
Health related issues	2
Difficulties with questionnaires	2
Set days for research visits	1
Location of study procedures	1
Unsatisfied randomisation arm	1
Too far to travel	1

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P114: Factors associated with post-transplant diabetes in renal transplant

Dr Hatem Ali[1,2], Dr Mahmoud Mohammed[3], Prof David Briggs[4], Prof Nithya Krishnan[1,2]

[1]UHCW, COVENTRY, United Kingdom. [2]University Hospitals of Mississippi, Mississsippi, USA. [3]Centre of Sports, Coventry University, Coventry, United Kingdom. [4]NHSBT, BIRMINGHAM, United Kingdom

Abstract

Introduction: Diabetes mellitus after solid organ transplantation (PTDM) is a common side effect. PTDM has been linked to higher rates of mortality and infections in several transplant groups using various diagnostic standards. The aim of our study was to investigate the risk factors for PTDM in renal transplant

Methodology: All renal transplant patients registered in the OPTN database from 2007 till 2020 were retrospectively reviewed. Patients were followed up till June 2022. Patients with more than one transplant, known diabetic pre-transplant and those who encountered post-transplant rejection were excluded. Data about recipient demographics, transplant factors (HLA mismatches, cold ischemia time, number of previous transplants, type of induction and maintenance immunotherapy), and donor factors (demographics, donor type for living and deceased transplant). PTDM was defined per the guidelines for the American Diabetes Association. Interval time cox regression analysis was used.

Results: 59,091 renal transplant patients were included in the analysis. Factors associated with PTDM were recipient BMI (HR=1.47 and P=0.03 for BMI 25-30, HR=2.04 and P=0.01 for BMI 30-35, HR=2.18 and P=0.01 for BMI >35), black ethnicity (hr=1.61, p<0.001), steroids maintenance therapy (HR=1.31, P<0.001). Antithymocyte globulin (ATG) induction therapy was associated with higher risk of PTDM in comparison to basilximab (HR=1.11,P<=0.002), while Campath induction was not (P>0.05).

Conclusion: Recipient BMI, black ethnicity, ATG induction and steroids maintenance therapy are associated with higher risk of PTDM. Close monitoring for patients with AB positive blood group and black ethnicity are warranted.

Categories

Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P115: The effect of the Covid-19 pandemic on variability in tacrolimus measurements for renal transplant patients

Dr Kerry Tomlinson, Mrs Camille Santos, Dr Kia Langford-Smith

University Hospitals North Midlands, Stoke-on-Trent, United Kingdom

Abstract

Introduction: Monitoring pre-dose tacrolimus levels in renal transplant patients is necessary to balance risks of rejection and toxicity. Restrictions during the Covid-19 pandemic made it more difficult to access phlebotomy appointments at appropriate times for pre-dose sample collection. Walk-in tests were not allowed, and pre-booking specific time slots was difficult. Our nursing team spent over 4 hours a week supporting patients by arranging appointments and advising patients how to alter their tacrolimus dosing to achieve 12 hour trough tests. This study aimed to identify whether this introduced greater variability into tacrolimus measurements obtained for renal transplant patients at our hospital.

Methods: Tacrolimus measurements were extracted from the Laboratory Information Management System for patients who were at least 1-year post-transplant at the start of the study. The date at which disruption to renal transplant clinic activity began was set at 01/03/2020. The coefficient of variance (CV) was calculated for tacrolimus results of each patient for both 12 and 6 months before and after this date, and the results compared.

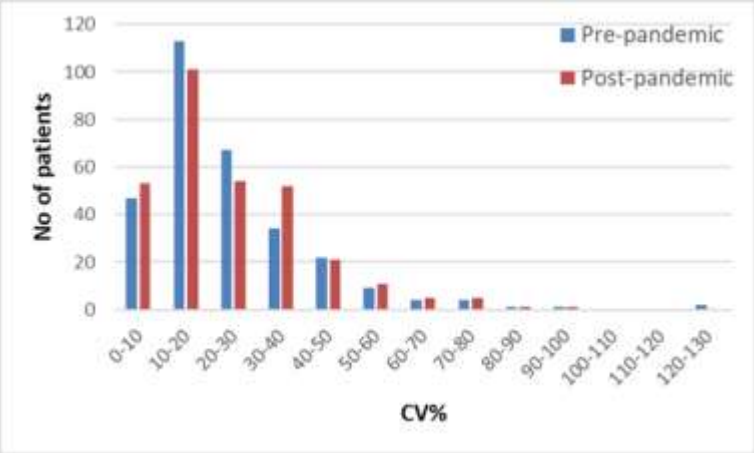
Results: Data for 12 months before and after 01/03/2020 (304 patients) showed a median tacrolimus CV of 19.4% before and 19.6% during the pandemic. Data for 6 months before and after 01/03/2020 (219 patients) showed a median tacrolimus CV of 18.1% before and 19.1% during the pandemic. There was no significant difference in CV before and during the pandemic (see Table 1 and Figure 1).

Discussion: The data does not indicate increased variability in tacrolimus measurements in renal transplant patients following changes to phlebotomy availability at the start of the Covid-19 pandemic. However significant input from the transplant team was required to ensure that sample timing was as accurate as possible.

Table 1

Period of data collection before and after 01/03/2020	N	Median CV (%)			Wilcoxon signed rank test for paired CVs
		Before 01/03/2020	After 01/03/2020	Difference	
12 months	304	19.4	19.6	0.1	p = 0.53
6 months	219	18.1	19.1	1.8	p = 0.23

Figure 1 Histogram showing number of patients in each category when grouped by the CV%, for 1 year before and after the pandemic



Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P116: Covid-19 infection and response to vaccination in renal transplant patients

Mr Jasper Cha

University of Manchester, Manchester, United Kingdom

Abstract

Introduction: Kidney transplant patients are very vulnerable to COVID-19 and its risks of severe disease. This project aims to address vaccination hesitancy in these vulnerable patients and find ways to increase vaccination uptake. It will discover factors affecting the development of antibodies which can allow appropriate measures to be taken to optimise antibody development.

Methods: Data collection is done from the online patient system with a focus on renal transplant patients within the hospital's trust. The total cohort population in this study is 701 kidney transplant patients, of which there are 674 vaccinated patients and 27 unvaccinated patients. They were vaccinated with either Pfizer/BioNTech, Oxford/AstraZeneca or Moderna COVID-19 vaccine. This involves auditing and compilation of data from the hospital's renal department's COVID-19 infection surveillance programme.

Results: The results have shown having previous COVID-19 infection, having antibodies after vaccine and having negative antibodies despite multiple vaccines may contribute to vaccination hesitancy in kidney transplant patients. High prevalence of COVID-19 infections and a change in structure of how these patients obtain the 4th dose of COVID-19 vaccine have contributed to the drop-off for the 4th booster dose. Factors such as kidney transplant patients on longer length of transplant and immunosuppression, a low number of immunosuppressants taken and 3 doses of COVID-19 vaccine are linked to positive SARS COV2 antibodies.

Discussion: Despite vaccination, kidney transplant patients are still at risk of getting COVID-19 infection. Due to their immunosuppression, they are at a much greater risk to developing severe disease and increased risk of mortality. It is crucial for them to have COVID-19 vaccinations and boosters. With shielding measures along with up-to-date vaccination doses and the discovery of new prophylactic drugs in the near future, it will significantly help to reduce the severity of COVID-19 disease in kidney transplant patients in the long-run.

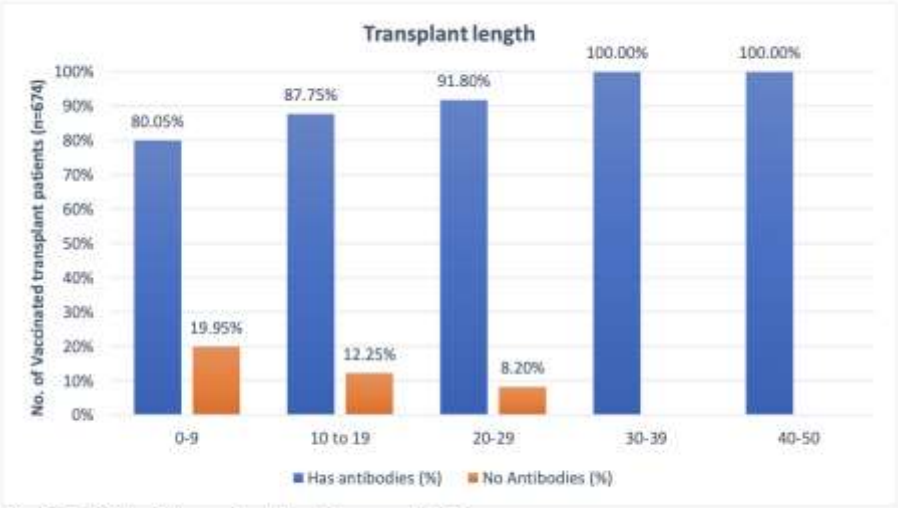


Fig 23. Effect of transplant length on antibodies

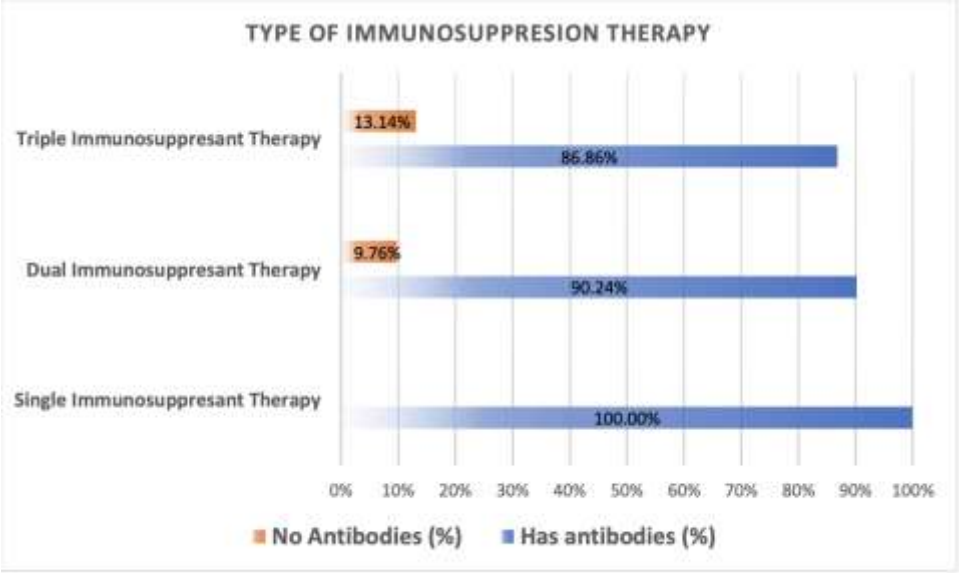


Fig 24. Effect of number of immunosuppressants taken on antibodies

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P117: Introduction of ANP led rapid access service for renal transplant recipients

ANP Georgina Follows

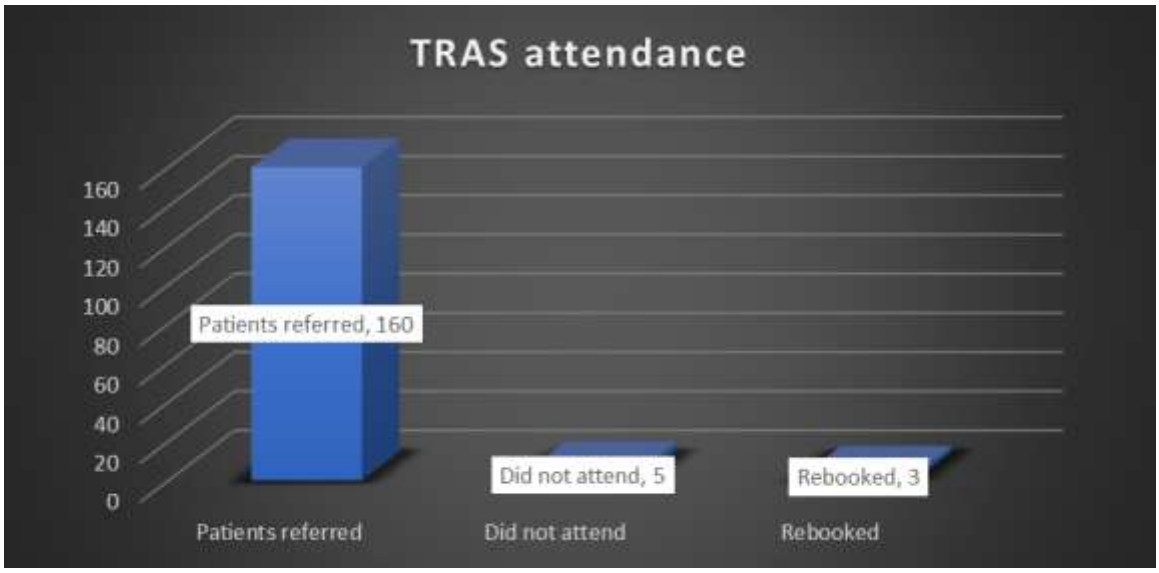
Salford Royal NHS Trust, Manchester, United Kingdom

Abstract

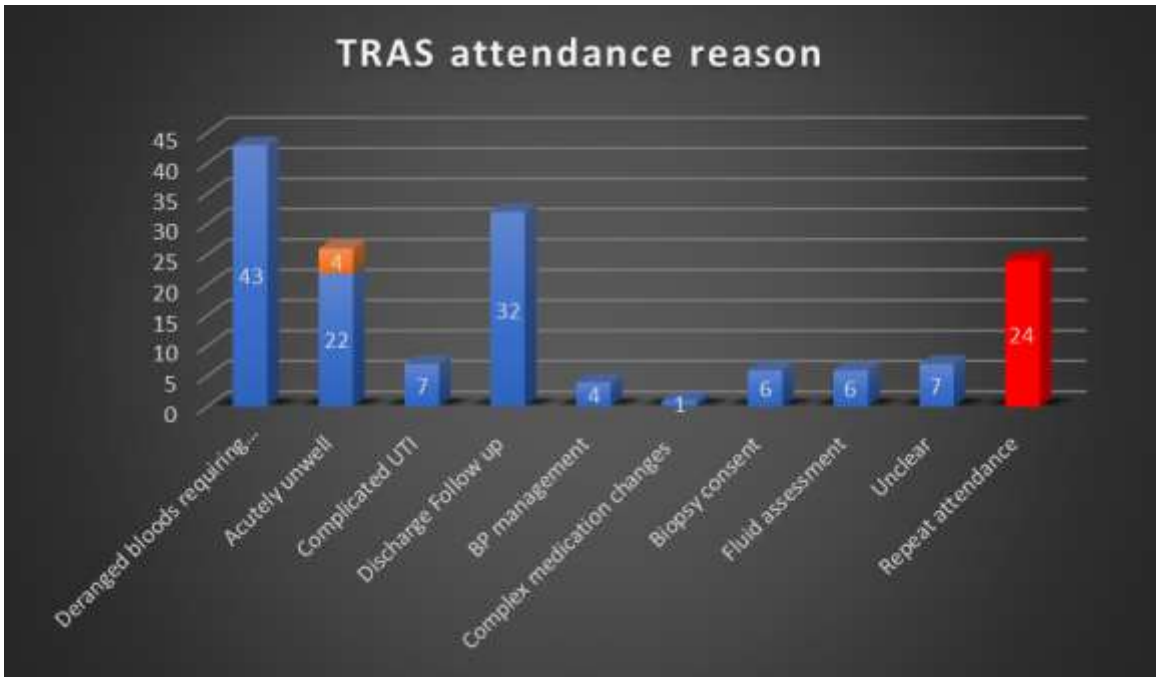
Introduction: Health Education England (HEE) set out a framework for Advanced Clinical practice (2017), within this framework it is suggested that the Advanced Nurse Practitioner (ANP) should, 'Lead new practice and service redesign solutions in response to feedback, evaluation and need, working across boundaries and broadening sphere of influence' (HEE, 2017, pg. 9). To meet this capability, and to improve patient care, the idea of forming an ANP led service to create a rapid service that renal transplant patients can access easily was developed.

Case presentation: Renal transplant patients who are on complicated immunosuppressive regimens, which make them prone to infection, cancer, cardiovascular disease, post-transplant diabetes and rejection require constant monitoring following transplantation. It was highlighted that the TRAS (Transplant Rapid Access Service) clinic would offer urgent access to transplant patients to include follow up patients discharged from hospital, assessment of the acutely unwell transplant patient that does not require escalation, and access to rapid review of transplant patients with an acute decline in kidney function requiring further investigation.

Outcome: Retrospective quantitative data collection was utilised using electronic patient records, whilst ensuring anonymity at all times. This looked at the last 6 months data, identifying patient attendance, reason for attendance and referral response time. Within the 6 months period, 160 patients were referred, the majority of patients were seen within 2 days of referral (48.5%), with 24.6% being seen within 4 days.



There were 43 patients (27.2%) who attended TRAS due to deranged blood results. These results would have picked up when the patient had blood tests prior to their telephone clinic appointment.



Discussion: The results of this evaluation show that the service is widely used, it appears all the referrals are appropriate. The reasons for attendance were varied and some were not visualised at the start. Recommendations for future development are being identified.

Categories: Clinical - renal medical (kidney - transplant nephrology - recipient clinical care and management)

P118: Organ Donation Simulation Course; to provide education and an insight of the organ donation process for junior doctors and nurses. To help improve the confidence of practitioners and improve organ donation outcomes

Mr Laurence Hodierne, Mrs Sophie Bradford, Mrs Skye Irvine- Berry, Miss Sadie Harris, Mrs Jenna Povey, Mrs Claire Eadson, Mrs Ruth Ballington

Nottingham University Hospitals, Nottingham, United Kingdom

Abstract

Organ Donation Simulation Course; to provide education and an insight of the organ donation process for junior doctors and nurses. To help improve the confidence of practitioners and improve organ donation outcomes.
Introduction: The NHSBT Deceased Donation Course is an established route for training of senior Intensive Care Medicine registrars in all aspects of deceased donor care and the organ donation process. A significant proportion of donor optimisation and care is undertaken by less senior doctors, non-intensivists, Acute Critical Care Practitioners, and nurses. Lack of confidence with the organ donation pathway results in significant moral distress in practitioners.

Methods: A one day simulation course, comprised of the crucial elements of the deceased organ donation journey, was delivered to a multidisciplinary group of candidates not eligible for the NHSBT Deceased Donation Course. A candidate questionnaire was used pre- and post- course to measure subjective candidate confidence with aspects of the deceased organ donor care pathway, and to objectively assess knowledge base.
Results: All candidates reported an improvement in confidence with all aspects of the deceased organ donation pathway, with an increase of at least 1 point on a 5 point Likhert scale and 88% of candidates reporting post-course confidence scores of 4 or above. Candidate knowledge question scores showed a significant improvement following the course.

Discussion: There is a need for robust training of all practitioners involved in the deceased organ donation pathway. Outside of NHSBT staff, a formal training course only exists for senior Intensive Care Medicine trainees. Locally run simulation based courses targeted at other professional groups may provide a solution to the training gap, but would benefit from NHSBT oversight to ensure consistent and up to date course outcomes.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P119: Skills Labs

Ms Alison Galloway Turner[1], Mr Gordon Turpie[2], Ms Jo Cox[3], Ms Jennie Wakelin[3]

[1]NHS Blood and Transplant, Cambridge, United Kingdom. [2]NHS Blood and Transplant, South East, United Kingdom. [3]NHS Blood and Transplant, London, United Kingdom

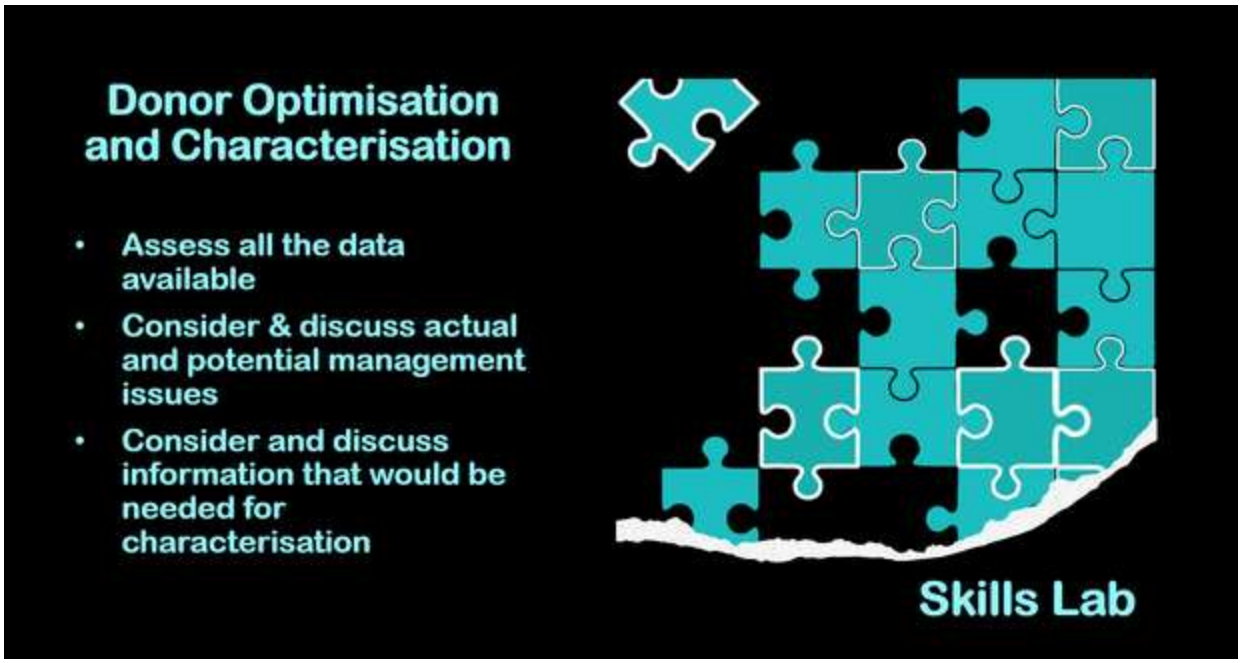
Abstract

Introduction: As a Regional Professional Development Specialist (PDS) I regularly observe SN-ODs on call and observe excellent practice. However, SN-ODs rarely have the opportunity to observe and learn from one another. Simulation training is a very effective way to develop, share and enhance practice skills in this way but access is limited. I developed an accessible in-situ Simulation to share practice at a local level.

Methods: I developed a set of 'desktop donors' - simple patient cases that could be role played between 2-3 SN-ODs in any classroom. I created patient packs with medical notes, utilised the 'Simpl' Patient Monitor App for donor optimisation stations, and a set of scenario cards for the theatre and communication stations. The SN-ODs worked in groups of three to move around all of the stations during the day, spending about an hour at each station. This helped deliver bite-sized high impact education across a broad range of topics. This has been run several times within the team.

Results: Engagement was positive and SN-ODs enjoyed working in mixed groups sharing ideas and practice. They particularly valued stations where there was greater knowledge deficit such as Donor Optimisation and theatres. They rarely get to simulate this at a local level. They found the small groups beneficial as they were non-threatening and encouraged participation. I am currently working with my PDS Cluster colleagues to create a larger bank of desktop scenarios that can be utilised by regional PDS's on an ad hoc basis to facilitate regular Skills Labs in region.

Discussion: As SN-ODs work in isolation with few opportunities to share their skills, this provides valuable opportunities to share good practice and ensure they are constantly challenging and questioning their practices. This will be further developed as a PDS tool for ongoing SN-OD development.



Optimisation and Characterisation Station Card

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P120: POST COVID LOCKDOWN: Improving End Of Life Care (EOLC) provision in critical care

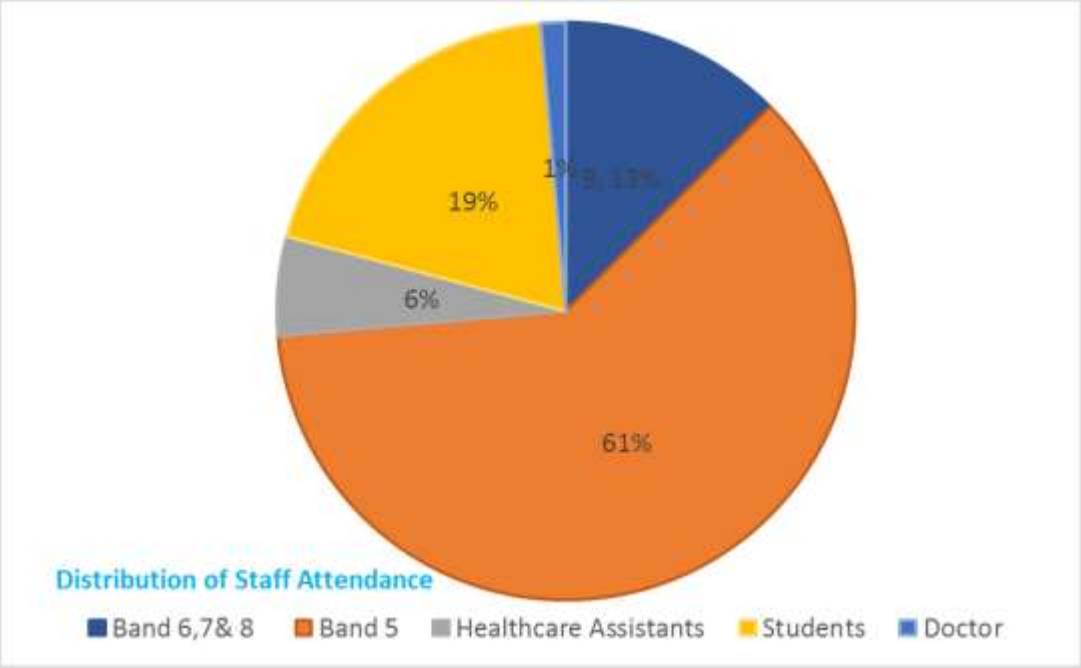
Miss Jennifer Rothwell[1], Miss Nicola Palmer[1], Mr Razdy Igasan[2], Dr Helen Buglass[1]

[1]MidYorkshire NHS Trust, Wakefield, United Kingdom. [2]NHS Blood and Transplant, Barnsley, United Kingdom

Abstract

Introduction: The COVID pandemic lockdown has posed a myriad of unprecedented challenges in critical care. The most prominent of which was the struggle to provide a holistic and quality EOLC. Following the return to face-to-face (F2F) visiting which was entirely restricted during the two lockdown periods, we found our staff were having difficulties in providing EOLC within the "new normal". This warranted a new strategy for service improvement. Multifactorial contributing factors include a large number of new staff including 19 internationally-recruited nurses, the lack of F2F communication, and staff-burnout. We needed to address the international differences in cultural beliefs and practices as well as the laws of home countries in care of the dying.

Method: An informal needs-analysis was facilitated through a small focus group. With collated suggestions, we developed a teaching programme aimed at mitigating concerns raised by the staff around areas of EOLC. The allocation of staff attendance was negotiated between the nursing management team and Organ Donation Committee (ODC). Funding from the ODC reimbursement monies was utilized to recompense staff attendance avoiding impact on staffing levels. X



Results: The programme centered around improving communication skills and increasing confidence using a tailored approach in discussions on legal and ethical aspects of EOLC in the UK, symptom management, care of the relatives, and exploration and support of organ donation decisions. Sign-posts to mental health and well-

being were highlighted and incorporated in interactive discussions. Evaluation forms were completed post-session; feedback was constructive and positive.

Discussion: Time dedicated to end of life care has given an opportunity for learning and discussion in a safe environment. Consequently, we have all gained a greater insight into the experiences of our team and improved nursing care delivery for our ICU patients and organ donors and their families.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P121: Restorative clinical support and supervision for encouraging team morale and reducing staff stress using the NHS England A-QUIP model for the South East OTDT team

Mrs Kirsty Yeong

NHSBT, South East, United Kingdom

Abstract

Introduction: SNODs are exposed daily to acute traumatic grief through the families they support. The increased pressure on staffing levels has reduced time to formally process and recover from often daily exposure of both stress and grief. This frequently leads to an increase in sickness and rention ultimately costing NHSBT and affecting donor families.

Methodology: Using the NHS England A-EQIP Professional Avdocate model in our local team and groups enabled us to identify small simple changes that make a huge difference, creating a happier confident workforce. The longer term goal is to reduce stress levels of staff and to improve care for our donor families experience and supportive care on the ICUs pre-retrieval.

Results: The poster would entail the results of the current audit around staff satisfaction and examples of improvements.

Discussion: In the South East Team, introducing the PNA role and restorative supervision in small groups and to individuals is providing support and decompressing our staff. Our trainees are intensively supported though Cohort training. For the nurses first independent months post sign off, the staff learning embedded roles and gaining confidence when on call this can raise new challenges. Through regular restorative supervision they can progress through their first 18 months knowing they have a safe environment to return to work and develop coping strategies. Early identification of challenges can assist with appropriate sign posting and new action plans being formed. Through open sessions Nurses can raise and address the things specific to them as opposed to the teams ideation of their needs.

Our new staff come with rich experience, through offering RCS and the opportunity to be creative we can utilise their previous experiences to assist with our own quality improvement projects with the ultimate goal of improving our process for donor and families, while retaining and motivating our own team.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P122: National Organ Retrieval Service (NORS) Perioperative Initiatives

Miss Sarah Beale[1], Miss Cecelia McIntyre[2]

[1]NHSBT, Bristol, United Kingdom. [2]NHSBT, Newcastle, United Kingdom

Abstract

The NORS perioperative community were surveyed in 2019 with the aim of capturing sustainability of the 16 NORS teams, and again in 2021 providing a pre and post COVID dataset. The questions included what was most enjoyable and most challenging about their roles, and the length of their service.

The genuine commitment such practitioners make is recognised. In particular, the multiple challenges faced whilst on call in a speciality which requires significant travel, unpredictable hours and often in unfamiliar hospital settings.

The survey results indicated a need for a network of NORS Perioperative Practitioners to share practice, exchange ideas and further discuss challenges. What also became apparent from the results is that some practitioners had a considerable length of service, and reassuringly a commitment to continuing their role.
In March 2022 the first NORS Perioperative Forum was held, with invitations sent to the Lead Perioperative Practitioners in all 16 NORS centres. The forum provided a platform for NORS practitioners to network between teams, share education sessions, actively participate in research, and discuss pertinent agenda items raised at the Retrieval Advisory Group (RAG) meeting with the Associate Medical Director for Retrieval. It was agreed to continue to hold the Perioperative Forum bi-annually.

Following this, the introduction of a Certificate of Recognition for 5 years of service to NORS was launched. All centres were contacted to submit names of colleagues to be recognised. In October 2022, 112 Perioperative colleagues were awarded their certificate of recognition for 5 years of service. This will continue to be reviewed and honoured annually.

Given the current clinical challenges of staffing rotas, we are working with the Perioperative teams to find the most convenient time to hold the Perioperative Forum meetings to allow the maximum number of colleagues an opportunity to attend.

Thank you to all teams for embracing this initiative.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P123: Embedding the 2030 Strategy (Meeting the Need) in to practice in a regional organ donation team

Mrs Susan Duncalf[1], Ms Emma Thirlwall[2], Ms Jane Monks[1], Ms Niki Hargreaves[1], Ms Dawn Lee[2], Mr Peter Morton[2]

[1]NHSBT, Manchester, United Kingdom. [2]NHSBT, Liverpool, United Kingdom

Abstract

Background: The last decade has seen significant progress in organ donation and transplantation in the UK, during which deceased organ donation rates have increased by 56%. Meeting the Need sets the vision and focus for the next 10 years, to build on the successes of the past and deliver further improvements. The North West (NW) established a Regional Organ Donation Committee (RODC) in 2020. Building on this, the NW RODC held a workshop to establish how to implement the strategic regional plan to take forwards the recommendations of the 2030 NHSBT Strategy.

Aims and Objectives:

1. To design our approach in how to deliver the strategy at a local level, producing a "plan on a page" to crystallise outcomes
2. To consult on the proposal with the Regional Collaborative and secure buy- in for the plan

Method: NW key stakeholders engaged in a facilitated workshop to establish how we will move the region from "good to great". Business models and group work were utilised to draw out our vision, our key values, our strengths, weaknesses, threats and opportunities. Key themes were identified and collated, generating a plan on a page which is to be reviewed and discussed by the wider collaborative in order to seek support and ownership of the identified plan.

Results: 8 key working themes were highlighted: Donor optimisation, Organ Donation Committees, Networking, Ambassadors, Training, Innovation, Organisation Development and NHS funding. Identified individuals will be assuming responsibility for leading on delivery of the associated workstreams.
It was agreed that the NW RODC would be rebranded as the NW Leadership Team.

Recommendations: Regional Teams should develop a leadership team and work collaboratively with key stakeholders to identify a plan to use as a road map which will deliver the recommendations of the 2030 strategy.

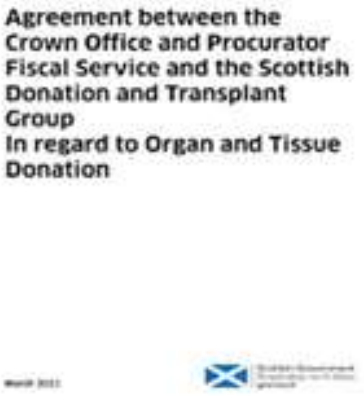
Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P124: Collaboration between the Specialist Nurses and Procurator Fiscal Service (Scotland)

Miss Fiona Nicolson

NHSBT, Glasgow, United Kingdom

Abstract

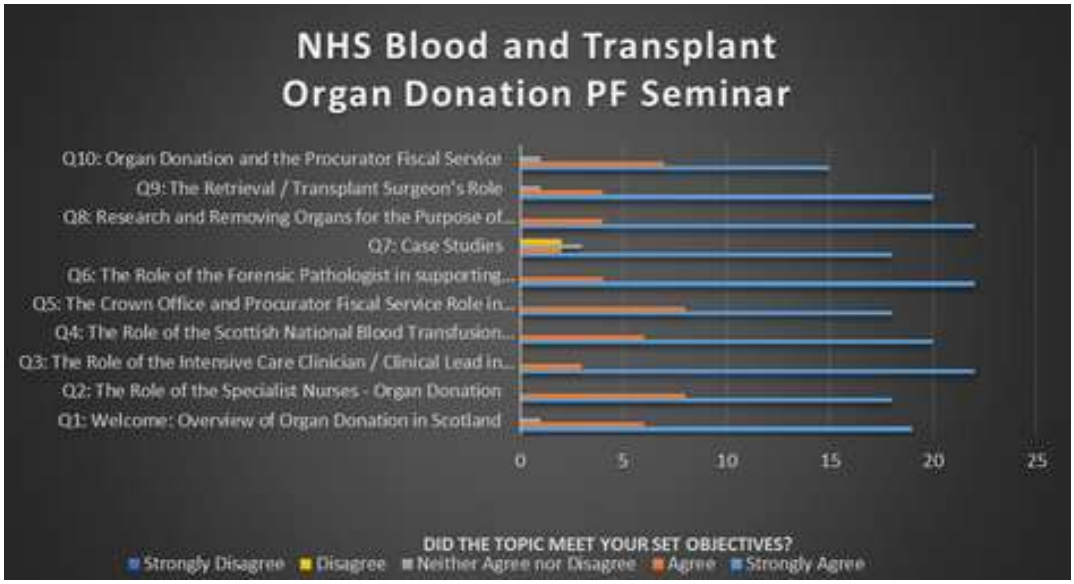

Agreement between the Crown Office and Procurator Fiscal Service and the Scottish Donation and Transplant Group In regard to Organ and Tissue Donation

Introduction: The Procurator Fiscal (PF) seminar day was set up by the Specialist Nurses (SN) with the aim to improve relationships and educate both the PF's and SN's. This would include information from Human Tissue (Scotland) Act 2006. As documented in the HTA (2006), permission is required from the PF for Organ and Tissue Donation to proceed if the death is reportable.

Method: After discussions with NHSBT, the Crown Office and support of Scottish Government it was agreed that an education seminar should take place. Before the pandemic an Education Seminar Day was held Biannually to maintain relationships and identify training and education needs. The PF education day consisted of a range of speakers, including the role of the specialist nurse; the crown office, transplant surgeon, PF service and the forensic pathologist in supporting organ and tissue donation. We undertook In-depth explorative anonymous surveys to understand training and educational needs of delegates who attended.

Results: After the end of the training day each delegate was asked to fill in an anonymous survey to give their feedback. 26 evaluations were returned and formal feedback demonstrated that those who attended have found the day informative, educational and has furthered their knowledge (table 1). In addition, suggestions given to explore and develop a Scotland Organ Retrieval Service surgical note template and A pilot PF template to ensure consistency when documenting key information regarding removal of organs and tissue for donation purposes.

Conclusion: Whilst this education day has not run due to restrictions of the pandemic, evaluations were positive for further collaborative days. Further work will be required regarding the pilot template for the PFs and will be adapted according to evaluations and future requirements of the service.



Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P125: STOP PAUSE CHECK - keeping our practice safe

Mr Gordon Turpie[1], Daniel Clark[1], Mrs Helen Bentley[2], Lisa Francis[3], Charlotte Fitzpatrick[4], Hannah Squibbs[5]

[1]NHSBT, TOOTING, United Kingdom. [2]NHSBT, Newcastle, United Kingdom. [3]NHSBT, LEEDS, United Kingdom. [4]NHSBT, Oxford, United Kingdom. [5]nhsbt, Bristol, United Kingdom

Abstract

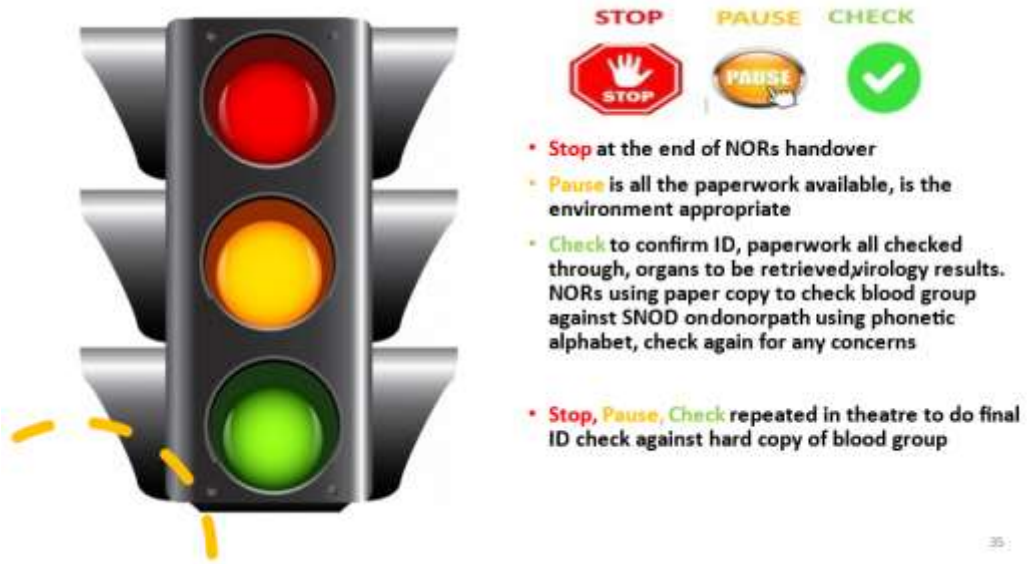
Introduction: Our purpose within NHSBT is to ensure that we make the most of every organ donated. To achieve this safety must remain our priority. Several incidents reported to Governance identified the theme of incorrect blood group documentation which significantly compromises recipient safety. Multiple stakeholders undertook a deep dive to investigate and identify solutions. Following investigation, a training package was delivered nationally which focused on blood group to organ recipient compatibility. The aim was to increase awareness on why errors occur.

Case presentation: It was acknowledged that if Specialist Nurses in Organ Donation (SN's) and staff working in Hub Operations (OAS's) understood more clearly the concepts of clear communication using human factors design and psychological safety at work, they will feel more confident in recognising behavioural patterns that compromise safe practice. This can increase engagement and confidence in reporting near misses within the workplace.

A workshop has been developed to engage all SNs and OASs with these principles. The aim is to encourage positive behavioural change by stopping pausing and checking when handing over key safety critical information This principle encourages all staff to consider relevant touchpoints throughout the donation process to take time and consider the context in the environment they are working. Applying critical thought checking key paperwork against what will be transcribed onto Donor Path, using closed loop communication techniques and use of the phonetic alphabet all help ensure safety is maintained. The messaging is simple, however if followed will lead to decreased occurrence of serious incidents.

Outcome: Both deep dive stakeholders and regional SNs identified areas of good practice which should lead to a reduction in governance incidences.

Discussion: Communication training and engagement through human factor design will help improve the quality of service. Taking time handing over key safety critical information will increase safety and save time.



Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P126: Collaborative approach to organ donation education in Scotland

Mrs Joanne Brooks[1], Dr Pam Dean[2]

[1]NHS Blood and Transplant, Scotland Organ Donation Services Team, Falkirk, United Kingdom. [2]NHS Greater Glasgow and Clyde, Glasgow, United Kingdom

Abstract

Introduction: There is a wide variety of Organ Donation education across healthcare settings in Scotland, from ad hoc sessions in the clinical setting to formal validated sessions. Traditionally educational sessions are mostly delivered to varying disciplines in isolation, with content and material varying from forum to forum.

Methods: An Education Working Group was established in 2021 with the initial aim to streamline resources and share local and nation education. Representation included Specialist Nurses Organ Donation (SNODs), Specialist Requesters (SRs), Practice Development Specialist (PDS) and Regional Team Manager (TM). Over time the Regional Education Clinical Lead Organ Donation (Education CLOD) and Trainees in Organ Donation (TRODs) joined the group. The group also collaborates with the Regional Diversity and Research Clinical Leads Organ Donation and with Scottish Government.

Outcome: The group meets quarterly to discuss, plan and review educational opportunities, in addition the TRODs undertook a questionnaire with all Scottish trainees exploring their exposure to organ donation education. Following analysis of the Trainee questionnaire and educational session evaluations, a multi-disciplinary approach to the delivery of education will be explored. The outcome of having a multi-disciplinary faculty delivering education to a multi-disciplinary cohort is to acknowledge the varying roles each discipline has in the donation process. This had led to a more cohesive collaborative team approach to donation education in Scotland.

			Actions from January 2022		
Jun	14		TRODs to compile report and next steps for recent trainee questionnaire	LB, AD, LM	Oct-22
Oct	15		Discuss development of local education programme/sessions/evaluations at December Regional Collaborative	PD	Jan-22

Discussion: The findings of the trainee questionnaire and evaluation presented at the Regional Collaborative meeting, with the proposal for the Education Working Group to develop a comprehensive multidisciplinary course with a programme that can be utilised in national and local settings. The group has enhanced multi-disciplinary approach to education and optimises local and national resources.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P127: Organ donation training in Scotland

Dr Linzi Moir[1], Dr Amy Dutia[1], Dr Laura Barry[2]

[1]NHS Grampian, Aberdeen, United Kingdom. [2]NHS Greater Glasgow and Clyde, Glasgow, United Kingdom

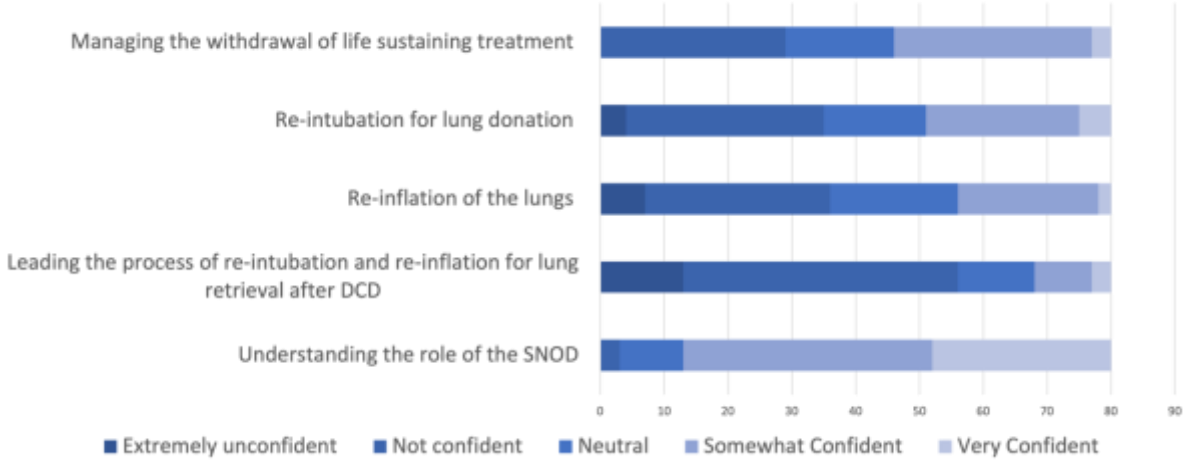
Abstract

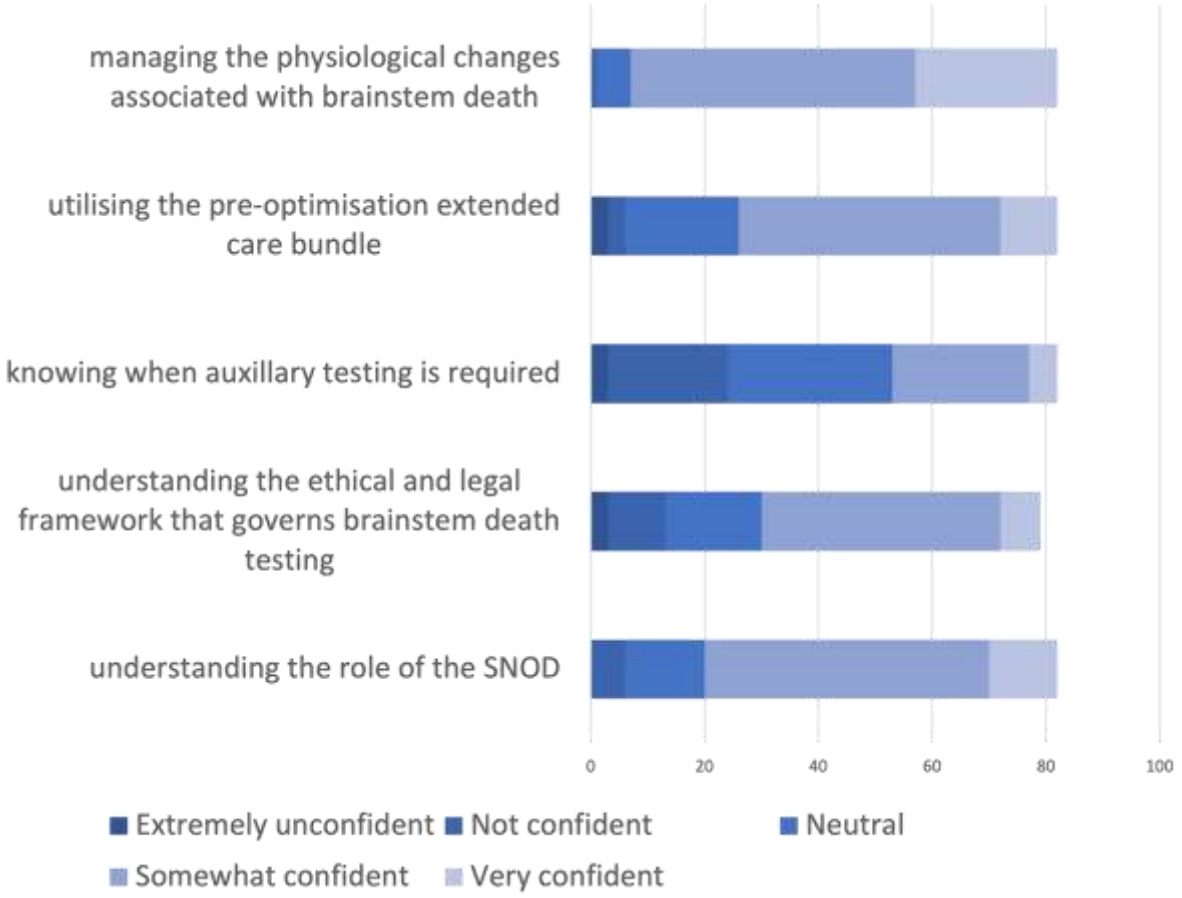
Introduction: As trainee representatives for organ donation (TRODs), we have an interest in the quality of training for medical staff involved in organ donation in Scotland. Our aim was to identify any gaps in training or regional variation in training relating to organ donation and use this to guide our subsequent development of educational resources.

Methods: We designed a survey using Microsoft forms. The three main areas of focus were: donation after cardiac death (DCD), donation after brainstem death (DBD) and teaching and training. The survey was distributed to all ICM and Anaesthesia trainees in Scotland via email.

Results: We received 82 responses from trainees across the 4 Scottish regions. 31% of respondents had never been involved in withdrawal of life-sustaining therapy before DCD. Confidence relating to DCD was low (Figure 1). Amongst ICM trainees, 63% rated themselves as “not confident” or “extremely unconfident” in leading the process of re-intubation and re-inflation for lung retrieval in DCD. 48% of respondents disagreed or strongly disagreed with the statement “I have received sufficient training in relation to WLST for DCD”. Experience in DBD was greater, with only 10 respondents never being involved. Confidence was also better (Figure 2), but there were still areas of concern surrounding the requirement for auxiliary testing and understanding the ethical and legal framework. There were small variations in trainees' experience of training by region. Only 2 respondents had attended the national deceased donation simulation course. 88% felt they would benefit from education and training days in organ donation.

Discussion: This survey highlights important gaps in Scotland's organ donation training, particularly concerning DCD. In response to this, we have collated a list of currently available training resources for distribution to training programme directors (TPDs). We are looking into developing further DCD resources as well as widening Scottish trainees' access to simulation training.





Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P128: Race for Recipients

Dr Catherine Roberts

Royal Preston Hospital, Preston, United Kingdom

Abstract

The Race for Recipients is a team challenge which launched in 2021 in the North-West. It was developed for organ donation week as a way of enabling people to spread awareness of organ donation without mixing in large groups, due to hospital COVID restrictions.

The challenge was open to everyone with teams representing NHS trusts, donor families, transplant recipients and the wider public. Teams were challenged to travel a collective 7000miles over the course of the 9 days of organ donation week (Saturday – Sunday). Each mile representing one of the nearly 7000 people in the UK waiting for a transplant. Activities were logged on a challenge platform, with any distance activity counting (as long as it was human powered!). Every mile counted from short walks to marathons, making it an inclusive challenge that everyone could take part in, no matter their fitness levels.

The aim of the challenge was to raise awareness of organ donation, whilst getting active and having fun. Participants were encouraged to share their activities on social media along with messages about the importance of organ donation and sharing your organ donation decision with loved ones.

Over 1000 people participated with three teams reaching the 7000mile target amidst some friendly team rivalry. Collectively a huge 41,254 miles were travelled and the Race4Recipients hashtag was shared 4000 times, reaching as far away as the USA and Australia.

In 2022, Race for Recipients ran again expanding outside the North-West, with all organ donation regions represented. The targets were changed to a team target of 7000km for each team and 50,000km for each region. The latter representing the number of people alive today due to an organ transplant. This year participation was more than doubled with 180 teams in total and over 11,000 activities logged. Challenge related social media posts reached nearly 2million people.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P129: Perceptions on the current barriers towards gender diversity in liver transplant surgery

Dr Agimol Pradeep[1], Mrs Miriam Cortes[2], Ms Hermien Hartog[3], Ms Rebecca Mateos[3], Ms Anya Adair[4], Ms Jessica Jones[1], Ms Barbara Fiore[5], Ms Helen McManus[1], Prof Lorna Marson[6], Ms Claire Williment[1]

[1]NHS Blood and Transplant, London, United Kingdom. [2]Kings College Hospital, London, United Kingdom. [3]Birmingham Women and Children's and University Hospital, Birmingham, United Kingdom. [4]Edinburgh Royal Infirmary, Edinburgh, United Kingdom. [5]Leeds Teaching Hospital, Leeds, United Kingdom. [6]The University of Edinburgh, Edinburgh, United Kingdom

Abstract

Introduction: Women are underrepresented in the Consultant Liver Transplant Surgeon (CLTS) role. Whilst liver transplant is a challenging role for all, only 15% of CLTSs across the seven United Kingdom (UK) centres are females. The UK CLST gender balance is poor when compared to some other countries – Example: in Netherlands 40-50% of trainees and 30-40% of consultants in surgery are females.

Method: Questionnaires were completed by five female CLTS's in the UK.

Results: The respondents identified the following potential issues regarding advancing a surgical career:

1. Incontrollable lifestyle-on calls and out of hours working pattern; assumptions that competing demands of family and job responsibilities may not be compatible for women.
2. Females more likely to be impacted by lifestyle demands when making career choices, as pregnancy/parenting hinder career development.
3. Ambitious female young professionals can be seen as a threat, perceived as "over-ambitious" which can lead into patronizing/bullying behaviours.
4. Typical female professional behaviours can be perceived as less capable – practical thinking/likely to discuss an opinion/look for collaboration/ask for help/less likely to overemphasize their own achievements.
5. Cultural differences and spending more time on unpaid domestic responsibilities.
6. Female role models - emphasis on 'harsh' sacrifices in personal/family life for the job; lack of role models with effective work/life balance.
7. Unconscious biases to female professionals, leading to undervaluation.
8. Negative Attitudes resulting in lower reward/appreciation for female trainees and offering less surgical career opportunities, or explicit or implicit 'punishment' for having family life.
9. Historically men were dominant in leadership roles.

Discussion: We need opportunities to empower women in UK CLTS roles, by raising awareness/commitment from transplant officials/leaders to increase, representation of women in leadership roles. It is important to address this gender bias, as it translates into real-world disadvantages for women.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P130: Forum Theatre, a teaching method to enhance nurse education learner experience (Scotland)

Diane Bowler, Stephanie Thomson, Tracy Ross, Fiona Nicolson

NHSBT, Falkirk, United Kingdom

Abstract

Introduction: Each year a group of Specialist Nurses (SNs) organise a national study day for nurses working within ICU, theatres and ED. Due to restrictions in the previous two years due to Covid 19 the study day had taken place online. This year our aim was to have inclusion of forum theatre to provide a stimulating and interesting learning environment for those attending.

Method: We wanted to offer a comprehensive overview of organ donation engaging several outside speakers and to focus on what happens during the approach conversation. Whilst some ICU nurses may have been involved in this, but many of the attendees were from other clinical areas and would not have had the opportunity to witness this vital part of the process. Drawing on our own learning experiences from Cohort training, we decided to engage attendees in a version of Forum Theatre, with us playing the part of family members, Specialist Requester and included a CLOD taking part as the ICU consultant. We had a loose script with pauses at certain points so we could engage the audience and answer questions.

Results: The session generated lots of discussion within the group and prompted good debate with questions answered as we went along. It was very well evaluated with many positive comments and how valuable the reality of forum theatre gave to the facilitation with learning outcomes.

Discussion: Forum theatre is an experiential method which can overcome some of the draw backs from role play. It has been widely used in clinical settings and nurse education. From our experience this proved an excellent interactive tool which allowed the attendees active participation in learning, thus stimulating interest and keeping the learner engaged.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P131: Use of virtual reality to enhance education in donor family approach conversations

Duncan Thomas

University Hospital Wales, Cardiff, United Kingdom

Abstract

Introduction: Education and training for healthcare workers involved in donor family approach conversations often relies on 'face to face' interactive sessions. The benefits and limitations of this teaching modality are well known. We explored the use of virtual reality (VR) to augment this teaching. Through the use of VR, candidates were immersively placed within the approach conversation to either witness an approach, or uniquely, to 'become' the family member being approached with regards organ donation. The use of non-scripted actors allows for truly honest and representative reactions allowing candidates to observe and reflect on body language and nonverbal communication. The technology itself has been adapted to use with a candidates own mobile phone and so is truly accessible to all.

It is hoped this modality of teaching may alleviate some of the barriers of face-to-face interactive sessions and place the candidates in truly unique perspectives to better inform and educate their clinical practice and represents only the beginning of what could be achieved.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P132: ACCPs: Tapping an untapped resource in donation after circulatory death

Dr Zain Karim[1], Dr Beth Whetton[2]

[1]Manchester Foundation Trust, Manchester, United Kingdom. [2]Salford Royal Foundation Trust, Salford, United Kingdom

Abstract

Introduction: In the last 10 years donor numbers have increased 100% with many DCD donations occurring out of hours with the diagnosis of death often delegated to less familiar junior medical personnel. ACCPs are growing in number; recognised as experienced, educated team members vital to addressing the critical care workforce gap. Providing these clinicians with the competence to withdraw treatment then diagnose death for DCD donation supports service provision, builds local expertise, and potentially increases donation process quality thus minimising warm ischaemic time. This poster describes a UK region's progress in training ACCPs to nationally agreed standards set by NHSBT and FICM, aiming to provide a tested blueprint for other trusts to follow.

Methods: To deliver this course we considered course length, number of candidates, faculty requirements, size of venue, location, equipment, and pre-course reading.

Results: Seven (of ten registered) candidates attended for a half day course using a dedicated education centre, high fidelity mannequin, three simulation suite staff, four CLODs, two SNODs and two TRODs. A dedicated slide set and simulation were delivered before a 14 question MCQ and individual simulated assessment. All candidates passed the course and gave universally positive feedback for the opportunity to acquire this skill. Opportunities for course improvement and efficiencies were obtained.

Outcome: To deliver the education and assessment portion of this ACCP competency is achievable in a half-day session, using a dedicated education centre with a simulation suite and three rooms in total. Candidates praised the overall opportunity as well as some background to organ donation and the diagnosis of death. On the next iteration we will invite 16 candidates in two linked sessions, revise the MCQ for quality, and use only two CLODs, two SNODs and one course director to reduce faculty requirements. Our aim is to accredit every ACCP in the region.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P133: Improving access to education on organ donation: Establishing a regional training course for intensive care doctors

Dr Laura Pocock[1], Dr Mark Burgess[2], Dr Claire Phillips[2]

[1]East Surrey Hospital, Redhill, United Kingdom. [2]University Hospitals Sussex, Brighton, United Kingdom

Abstract

Introduction: The Guidelines for the provision of intensive care services (GPICS) highlight the unique skillset Intensive care consultants possess to effectively facilitate organ donation. Some of these skills come from clinical exposure, however education is also a vital component in ensuring that knowledge and skills are maintained to current standards.

The role of trainee representative for organ donation (TROD) has been introduced nationwide to support regional development and establish effective working relationships locally. In our region there has been consistent feedback requesting formal teaching on organ donation. Many trainees cite difficulty in accessing the national deceased donation course as a factor in this request. As newly appointed TRODs, the need for regional training on organ donation for critical care doctors has been identified as a key priority.

Methods: A pilot hybrid study day of lectures and simulation training has been developed for registrars and non-training grade doctors working in intensive care and allied specialities in our region. The content is inspired by the deceased donation course and has been overseen by the regional consultant leads for organ donation but reflects regional practice and regional staff to encourage collaboration and networking.

Outcome: A collaborative approach to regional training for trainees and clinical fellows has been achieved with the establishment of a formalised regional training day. Post course questionnaire results will be compared with pre-course ones once this data is available. The feedback gathered from the programme permits ongoing development and expansion to include affiliated staff groups to make the training experience truly multi-disciplinary.

Discussion: Having an established regional training day for organ donation has multiple benefits. It reinforces relationships gained in the workplace and promotes the local multidisciplinary organ donation network. It also ensures that consistent up to date processes are being taught and engenders confidence in decision making in clinical practice.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P134: Go big and go pink!

Mrs Natalie Ashley

Eastern ODST, Norwich, United Kingdom

Abstract

Background: As a SN-OD Team in Norfolk, we work collaboratively with our Organ Donation Committees (ODCs) to raise awareness and create as broad a coverage of the county as possible, all year round. We have always aimed to “Go pink and go big!”.

Method: Over several years we have promoted organ donation widely in our community, increasing public support for Organ Donation. We developed close working relationships with several areas of our Trusts, achieving excellent hospital engagement with promotional activities, including Communications, Estates, Catering, Patient Experience, Hospital Arts, Medical Illustrations and Chaplaincy. We have also engaged the Dean of the Cathedral and the City Mayor to help raise awareness of organ donation and encourage conversations.

Results: We lit and animated landmark buildings including the Castle, City Hall, Cathedral, a ski slope, the hospitals and wrapped a bus which circulated the city for 2 years. We sponsored bike rides, held promotional walks, a park run along the seafront, hiring a drone to film the event. We’ve arranged dancers, performers and choirs at our events, donor families, transplant recipients and hospital staff too. We had “Pride Organ Donation” flags designed and joined Norwich Pride. Local donation stories have been shared in several hundreds of thousands of free magazines delivered around the city, with QR codes for the ODR. Our flag flies above one of our hospitals and an art display sharing donor, recipient and staff stories ran the length of the hospital. We have recorded films featuring donor families, transplant recipients and staff sharing personal stories of donation – these have been shared widely on social media.

Discussion: Early planning at ODCs has ensured we always aim high and achieve fantastic results. Our message has reached hundreds of thousands of people and will have sparked those all-important conversations across Norfolk.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P135: Purchase of simulation manikin from organ donation committee funds for insitu education

Mr Daniel Clark

NHSBT, London, United Kingdom

Abstract

Introduction: From the donor recognition funding the Organ Donation Committee (ODC) decided to spend the funds was to purchase a simulation manikin for the ITU. This allowed for insitu simulation sessions on the unit so more doctors and nurses would have exposure to this important way of learning.

Case Presentation: At Epsom and St Helier NHS Trust there is a positive attitude towards organ donation, however opportunities do not arise often. The CLOD and SNOD in the intensive care unit have run, over several years' a simulation programme for the unit. This provides high impact education to a multi professional audience focusing on the organ donation process. The key element has allowed doctors to engage and practice their skills with neurological death testing process. Multi-disciplinary team working is key, and nurses are able to assist with equipment whilst explaining the tests to a family member. These sessions were well attended by all.

It was decided by the ODC that purchasing a simulation manikin would allow this to happen more regularly. The embedded SNOD researched and spoke to several companies to find a manikin. A manikin was purchased that could provide a more immersive simulation experience for participants, which could be stored on the unit.

Outcome: Positive feedback and engagement from the sessions reflects that the use of insitu simulation was of benefit and well received by staff.
'Great revision of brain stem reflexes'
'Practice on SIM was useful'
'Focus on key sticking points and logistics. Also, great to have a practical for everyone to participate'

Discussion: Having the ODC purchase a simulation manikin has given the unit opportunities to provide insitu simulation in a real clinical environment when it is needed and when the capacity of the unit allows.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P136: A framework for a future forward

Jill Featherstone

NHSBT, Newcastle, United Kingdom

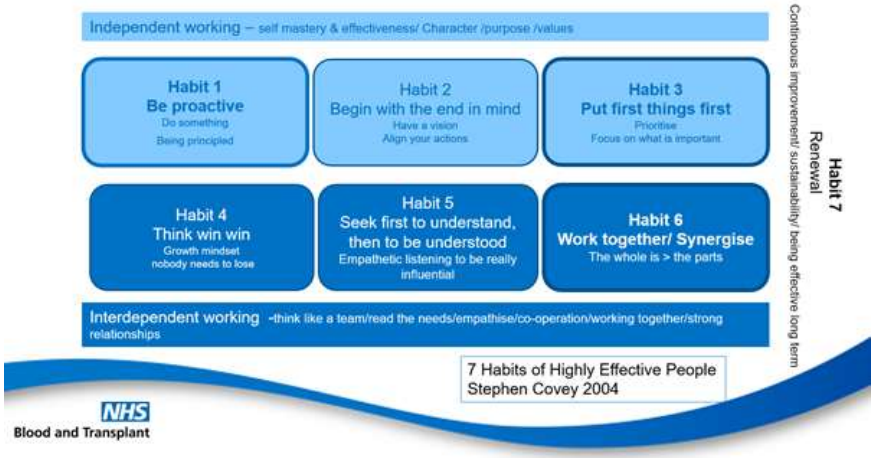
Abstract

Introduction: Donation and transplantation working is becoming ever closer with an emerging culture of shared educational opportunities where leadership is a continuous theme for all disciplines in the pursuit of excellence in practice. Leadership is individual and there are many models of leadership which offer a bespoke direction for any one practitioner, Covey's model of leadership emerges as a strong framework on which common working and learning can be built across disciplines and organisations.

Case presentation: Already established in NHSBT's Child and Infant Deceased Donation (CIDD) Course serving a diverse range of disciplines, it has been welcomed as a positive, proactive common platform of approach to the challenges faced by individuals. Covey outlines 7 habits of leadership. Three habits of independent working, focussed on self-leadership, on which individuals within their own discipline can focus on, developing strong, principled, proactive intentions to their work. The three habits of interdependent leadership focussing on collaborative, interactive work with others, with deep listening and team working central to these. The 7th habit of renewal focusses on those aspects that support continuous improvement and is linked to the health and wellbeing, a focus of progressive organisations.

Outcome: Engagement with each habit has highlighted that, beyond the habit that Covey details, the model provides a language with which to communicate needs and objectives positively, focussed on achievements and can facilitate engagement when working together with civility.

Discussion: Further exploration of the model shows that far from competing with any contemporary educational focus such performance reviews or NHSBT's Compassionate Leadership training, the model provides a framework and language that complements these additional initiatives providing a common parlance for understanding. When considering existing and future working across donation and transplantation this framework could prove to be beneficial across both disciplines and organisations both in education and practice.



Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P137: Organ Donation (OD) experiences in NHS Greater Glasgow and Clyde (GGC) Intensive Care Units (ICU)

Dr Cristina Niciu, Dr Mhairi Macdonald, Mairi Mackenzie

Institute of Neurological Sciences, Queen Elizabeth University Hospital, Glasgow, United Kingdom

Abstract

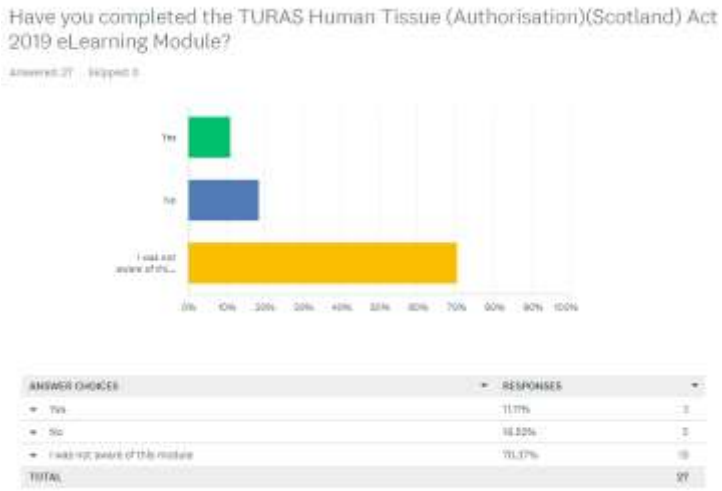
Introduction: As a recently appointed CLOD, to meet educational needs, a 7 question Survey was designed to explore ICU doctors 1) Experience of DBD/DCD in last year 2) Challenges of OD process 3) SNOD involvement in initial End of Life (EoL) Discussion 4) Completion of TURAS module and 5) Further Educational needs.

Methods: SurveyMonkey designed by ICU trainee and me, with input from Neuro ICU Consultants, and SNOD. Survey sent to all consultants in Neuro Institute, Glasgow and to 4 CLODs to distribute to NHS GGC ICU medical staff 09/2022-11/2022.

Results: 27 responses (15 Neuro Institute/ 12 NHS GCC). Not all questions answered. Majority Consultants (15) and Trainee (1).

	DBD Experience in Last 12 months	DCD Experience in last 12 months
Mean	1.4	0.7
Mode	1	0
No experience	15% (4/27)	56% (15/27)
Maximum number	4	3

Challenges of OD included 1) Time taken for process has increased and effect on families 2) Procurator fiscal involvement 3) Communication challenges. 58% (15/26) did not prefer to have SNOD present at initial EoL discussion. Reasons included 1) EoL/futility discussion should be kept separate from OD discussion 2) Additional unknown person 3) “Extra hassle” 4) Too early introduction could be viewed as “Subtle coercion”. Challenges of introducing SNOD at EoL discussion were highlighted as family may ask exactly who specialist nurse is. SNOD support has also been reported as excellent in 2 responses.



ANSWER CHOICES	RESPONSES	
Yes	11.11%	3
No	18.52%	5
I was not aware of this module	70.37%	19
TOTAL		27

88% (22/25) felt received appropriate training on OD.

Conclusion: Poor response rate so conclusions limited. More than half of respondents have had no experience in DCD in last 12 months, for which reasons are likely multifactorial. Almost 60% of respondents did not want SNOD present at initial EoL despite national recommendations. Overall poor awareness of TURAS module. Aims for our department 1) Clinical Governance OD Update 2) Integration of SNOD in Quarterly Education Days and teaching for ICU nurses 3) OD Tutorial for Anaesthetic Trainees 4) Development of department-specific DCD Heart Pathway 5) Update OD ICU folder with DCD pathway.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P138: Exploring barriers to referral, an educational quality improvement project in a single centre DGH intensive care unit

Dr Chelsea Adam, Dr Laura Pocock

East Surrey Hospital, Redhill, United Kingdom

Abstract

Introduction: Following a missed opportunity to donate in our Intensive care unit, it was proposed that nursing and medical staff's knowledge and confidence in managing organ donation should be established. By identifying perceived barriers to referral locally, and also investigating attitudes and experiences of organ donation, we hope to develop an education programme to improve staff skills in relation to organ donation.

Methods: An anonymous questionnaire was sent to every trained nurse and doctor on the unit using a Google forms survey in November 2022. The questions explored knowledge, experience and perceived barriers to organ donation. A combination of multiple choice, linear score rated questions and free text answers were employed. The results were evaluated using the Google form document and themes from the free text answers collated and analysed.

Results: Approximately half of respondents reported receiving less than two hours of formal training in organ donation. However almost 90% of respondents had been involved in some way in the organ donation process with patients in intensive care. Whilst generally it was felt that appropriate patients were identified and promptly discussed with relatives, a quarter felt some barriers remained in referring patients to the Specialist Nurse for Organ Donation (SNOD). Although perceived barriers were multifactorial, lack of education was the highest recorded presumed barrier to referral for organ donation within the unit.

Discussion: The results clearly identify education as a focus for ongoing work. It is hypothesised that the COVID pandemic negatively impacted the delivery and structure of staff teaching and simulation training which had previously been well established within the unit. As a direct result of the project, formal education sessions, including simulation, with a focus on organ donation have been planned.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P139: Collaborative OTDT approach to the creation of a targeted education programme for Organ and Tissue donation within Gloucestershire Hospitals NHSFT

Ms Katherine Hurley, Mrs Elisabeth Partridge, Mrs Caroline Cooke, Mrs Rebecca Hall

NHSBT, Gloucester, United Kingdom

Abstract

Introduction: Gloucestershire Hospitals are unique in having Specialist Nurses for Organ Donation (SNOD) and Regional Tissue Donation Nurse Specialists (RTDNS) based within the Trust. Through close collaboration we are seen as one team supporting the differing referral pathways for organ and tissue donation.

The last couple of years have dramatically changed the areas we support within our hospitals. Staff retention levels and the skill mix has changed, visiting restrictions are often in place and all areas are working at full capacity. In previously high performing areas of referral for organ and tissue donation there have been notable missed opportunities.

In reviewing the cases where donation opportunities have not been maximised, we have recognised a need to go back to basics in the utilisation of embedded time and the importance of education in supporting our local practices. We have to think carefully how we target our resources to get the greatest effect while also being mindful of the considerable pressure on staff.

Methods and results: Using a gap analysis tool with all critical care and emergency department staff in Gloucestershire Hospitals we aim to identify areas where there are gaps in knowledge along with an understanding of what education resources are beneficial. With this starting point we will develop a targeted education programme for both different referral pathways for organ and tissue donation.

Discussion: Formulation of a targeted rolling education programme that's achievable for the Gloucestershire OTDT team to implement within the trust, utilising the use of online resources, videos, face to face sessions and an element of self-sufficiency by empowering link nurse teams. The success of this will be measured by showing an improvement in adherence of referral pathways. we also hope that the gap analysis tool can be shared and replicated across the region and beyond.

Categories: Education and promotion (education: patient - public - healthcare professional; promotion: public - donation).

P140: Principles of Donor Management and Optimisation Virtual Simulation; Evaluation of the course

Miss Sarah Mason[1], Miss Megan Reid[2]

[1]NHS Blood and Transplant, London, United Kingdom. [2]NHS Blood and Transplant, Glasgow, United Kingdom

Abstract

Introduction: The NHSBT 2030 Meeting the Need Strategy has two main aims, increasing donation and transplantation. The course: Principles of Donor Management and Optimisation, consisted of a day of virtual simulation, a principles handbook and self-assessment quizzes. The course, developed for Specialist Nurses-Organ Donation, delivered within their Foundation Training Programme, aims to meet the needs of the strategy.

Methods: All delegates were sent an anonymous pre and post course questionnaire. Exposure to deceased donation prior to SN role was captured. Confidence in skills and knowledge in different elements of donor management and optimisation were captured using a 5-point Likert scale pre and post course. Confidence rating in the use of the DBD Extended Care Bundle was captured pre and post course. Both qualitative and quantitative data was captured for the principles handbook and the virtual simulation day.

Results: 50 SNs have received this course over the last year. 82% of nurses were critical care trained, of which 85% had cared for a donor as a bedside nurse. A Likert scale was used to measure confidence, with a positive shift to an increase in confidence overall as well as in the different elements of donor management and optimisation. Confidence in using the DBD extended care bundle showed an increase in 3.25 to 4.40 out of 5. 27/50 SNs state that they require further exposure. The principles handbook has been evaluated as a great resource and reference guide. The virtual course being an engaging and positive learning environment.

Discussion: Education of donor management and optimisation has been expanded and elevated with the use of virtual simulation. The course has received overwhelming feedback of increase in confidence, a feeling of empowerment and decreased stress and anxiety. Measuring the impact of this education package on the number of organs donated has not been studied.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P141: Managing expectations – the prolonged length of process caused by overnight retrievals. Creating a culture where overnight retrieval becomes the norm

Miss Kathryn Somers, Mrs Kirsty Yeong, Miss Louise Davey

NHSBT, London, United Kingdom

Abstract

Introduction: St George's University Hospital Foundation Trust is one of three level 1 Trusts in the ODT South East Team. One of the challenges the Specialist Nurses face in a level 1 Trust, is that overnight retrieval becoming normal practice has a notable impact on the length of process (LOP).

St George's policy for retrieval dictates that we are required to be in theatre ready to "go knife to skin" by 3am; missing this allocated time frame restricts us and will mean that retrieval is delayed until the end of the consecutive working day. The reasoning behind the implementation of this policy is multi factorial; primarily the restrictions centre around being a major trauma centre with both elective and emergency lists which are triaged above retrieval.

Method: When it comes to consenting our families, we are transparent with these factors and time frames. We avoid being apologetic and find families accept a lengthy process time when it is explained that this is our norm. This practice is engrained in the culture of staff at St George's. All of the staff across critical care know that historically we have always taken donors to theatre overnight. Therefore, there are no misconceptions, no queries, no lack of clarity and we all echo the same explanation of length of process.

Results: During our busiest year to date, St George's facilitated 55 donors. This year to date we have approached 41 families for donation, with 13 declines. Only 1 of these 13 gave LOP as rationale for declining and none of our consenting donor families withdrew consent when met with significant delays due to theatre timings.

Conclusion: This success is earning us a national reputation and we have discussed the dialogue and communication strategies we use at point of consent, with senior members of NHSBT.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P142: Time to change the Time Zero Biopsy? A retrospective analysis of kidney graft outcomes

Miss Lucy Wicks, Dr Knishka Vora, Mr Asim Syed, Dr Gareth Jones, Dr Lauren Heptinstall, Mr Mohammed Ayaz Hossain

Royal Free Hospital, London, United Kingdom

Abstract

Introduction: We conducted a retrospective analysis of deceased donor kidney transplants (DDKT) between March 2018 and March 2020, to determine whether chronic donor histological changes in transplant kidney biopsies taken immediately after reperfusion (time zero 16G core biopsies [TZB]) were predictive of DDKT outcomes at our centre.

Methods: TZB were allocated a Karpinski (K) score of 0-12, by a histopathologist, based on chronic changes seen in the tubular, interstitial, glomerular and vascular components of each kidney.
Patients were grouped into three K score thresholds (KST): low (0-2), medium (3-4) and high (≥5). Outcomes were compared at 1-year-post-transplant.

Results: Only single implanted DDKT with a TZB were included in our analysis (n=105).
Median K score of the kidneys transplanted at our centre was 3, with a range from 0 to 8. 13.33% of kidneys had scores ≥5.

No statistically significant difference was demonstrated at 1 (p= 0.0883), 6 (p=0.44) and 12 (p=0.44) months, for eGFR in the three KST groups using a one-way ANOVA (Table 1).

A K score ≥5 was associated with a significantly higher rate of delayed graft function (DGF) (56.25% vs 16.28% and 34.78%, for K=1-2 and K=3-4, respectively) [X^2 ($p < 0.0001$)].

Higher K scores were also associated with increased rejection (1%, 7% and 25%) for the 0-2, 3-4 and ≥5 groups, respectively.

Kaplan–Meier survival curves (Figure 1) and Log-rank did not reveal any difference in graft or patient survival between each KST (p = 0.687).

Table 1 - Changes in Graft Function (eGFR) over time

Outcome	eGFR 1-month post-transplant	eGFR 6-months post-transplant	eGFR 12-months post-transplant
K Score 0-2	44.837	42.130	33.125
K Score 3-4	49.229	43.561	46.063
K Score ≥5	51.000	45.568	42.875
p-value	0.0883	0.4491	0.4434

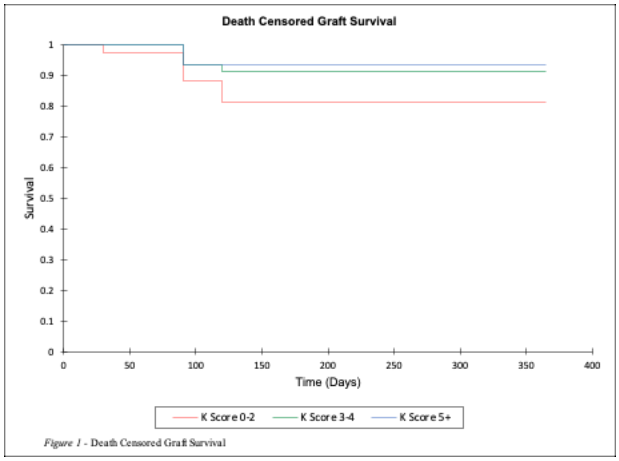


Figure 1 - Death Censored Graft Survival

Discussion: Our study has not demonstrated a predictive effect of implant biopsy K score on renal graft function or survival over a 12 month follow up, although there was an association with DGF and rejection. Discard of higher K score kidneys may deny patients access to potentially good outcome transplants.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

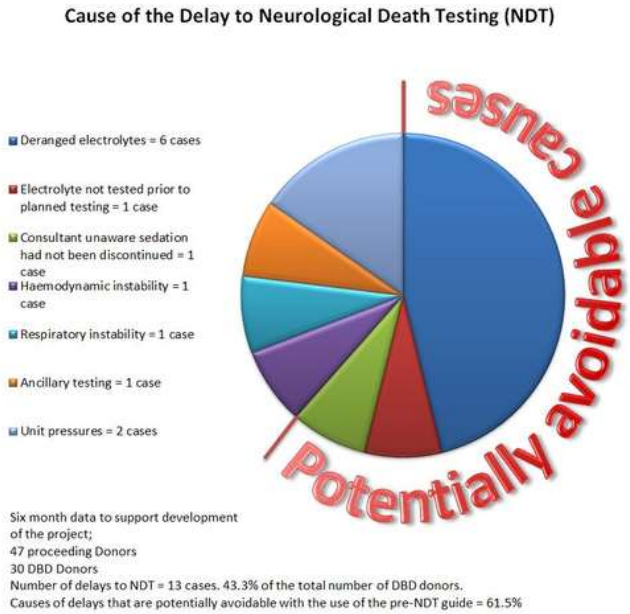
P143: The identification and implementation of a pre-neurological death testing reference guide to reduce the risk of delays when diagnosing neurological death

Mr Shaun Miller-Jones, Mrs Victoria Delacruz

Cardiff University, Cardiff, United Kingdom

Abstract

In the UK, confirmation of death by neurological death testing (NDT) criteria is an important practice and fundamental for the purpose of donation after brain death (DBD) (Manara and Thomas 2020). On discussion with Specialist Nurses within the South West Organ Donation team, it has become apparent that there is an upward trend in the cohort of patients where NDT testing has been delayed due to potentially avoidable rationale. On examination of DBD cases in a six month period in the South West region, 43.3% of cases had a delay to NDT. Of the delays examined, 61.5% were due to potentially avoidable causes where early identification of an issue could have influenced the timing of NDT. Whilst the Faculty of Intensive Care Medicine (FICM 2021) NDT form clearly states red flags and electrolyte parameters for NDT to occur, Specialist Nurses identified that these were not being noticed until shortly prior to the planned testing time and often resulted in extended delays. Consequently, the decision to develop a specific pre-NDT guide which could be utilised in the twenty-four hours prior to planned NDT was put into action. The aim of the guide is to provide early identification of what red-flags would prohibit NDT from taking place, how to best manage instances of polyuria, and highlight what electrolyte and ventilation parameters are required for NDT to occur. It is hoped that having a guide such as this would enable the early identification of parameter variance and encourage time sensitive intervention, thus minimising potential risk of delays to NDT. This is an ongoing evaluation that will be appraised at six and twelve months to establish if this has had a benefit in minimising delays to NDT.



Abstract References

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Manara, A.R. and Thomas, I. 2020. Current status of organ donation after brain death in the UK. *Anaesthesia* 75(9), 1205-1214. doi: 10.1111/anae.15038

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P144: Reassessment of Previous Kidney Non-Utilizations from a Single Large Organ Procurement Organization in Southern California, U.S.A.

Dr. Gabriel Danovitch[1], Tom Seto[2], Aaron Cohen[2], Emma Kitchel[1], Dr. J. Thomas Rosenthal[1], Dr. Suphamai Bunnapradist[1]

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Abstract

Introduction: In the United States, deceased donor kidneys are recovered according to UNOS policy and are not utilized if no centres would use them. Kidney Care Act mandates to increase the utilization of these kidneys. Our study examined what factors led to non-utilization and whether there were unused kidneys in the One Legacy Organ Procurement Organization (OPO) service area that could be transplanted.

Methods: In 2019 there were 1,019 kidneys recovered from 552 deceased donors with 740 transplanted and 279 unused after offers were declined by all local and national centres. Our study cohort - all non-utilizations - were subsequently and independently reviewed by three local experienced transplant physicians and one surgeon, to identify which kidneys they would have transplanted, assuming they could transplant into any recipient on their list.

Results: Characteristics of non-utilized kidneys and associated odds for non-use are shown in table 1. '%non-utilized' is the number of non-utilizations with that risk factor divided by the total non-utilizations. 'Risk of non-utilization' is the number of non-utilized kidneys from donors with that risk factor divided by the total number of kidneys with that risk factor. 33 kidneys from 22 donors were identified by one or more reviewers as potentially transplantable (12%). No reviewer identified more than 15 kidneys as transplantable; 5 kidneys were identified by all 4 reviewers as transplantable. Characteristics of the 33 potentially transplantable kidneys are shown in table 2.

Discussion: A small percentage of previously unused kidneys were considered transplantable in retrospect by our local transplant community. Increasing utilization from "non-utilized pools" is unlikely to increase kidney transplants by large numbers. Glomerulosclerosis and interstitial fibrosis remained a relative contraindication for all evaluators. A systematic approach to setting acceptable donor characteristics, identifying suitable recipients, and providing extensive informed consent, will be required if fewer kidneys are to go unused.

Table 1. Characteristics of 279 kidney non-utilizations

Donor characteristics	Percent non-utilized	Risk of non-utilization
Age over 55	61	61
Diabetes	37	62
Terminal creatinine >1.5	62	36
KDPI 95-100	39	83
Glomerulosclerosis >20	51	97
Moderate to severe IFTA	53	95
Both biopsy findings	41	100

Table 2. Characteristics of 33 kidneys considered transplantable retrospectively	
Characteristics	**Percent**
Age >55	27
Hypertension	36
Terminal creatinine >1.5	21
KDPI 95-100	0
Glomerulosclerosis >20	12
Moderate to severe IFTA	3
Both biopsy findings	0

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P145: Organ Donation Bereavement Follow Up Group

Mrs Jenny Hedingham[1], Mrs Emma Thirlwall[1], North West Organ Donation Service[1], Yorkshire Organ Donation Service[2]

[1]NHS Blood and Transplant, Liverpool, United Kingdom. [2]NHS Blood and Transplant, Barnsley, United Kingdom

Abstract

In 2021, a group of Specialist Nurses Organ Donation (SNODs)/Specialist Requesters (SRs) from the North West and Yorkshire Organ Donation Services Teams, began a six-month Organ Donation Bereavement Follow Up pilot, completing follow up calls to all families/NOK who had consented to donation in both regions, regardless of the outcome. These calls allowed the SNODs and SRs the opportunity of ensuring that families had all the information they required post donation, whilst exploring any feedback or questions they may have had. The calls also allowed for sign-posting the family/NOK on to further support services if necessary and giving them opportunity to address any complaints and compliments, ensuring direction of these to the correct channels.

At the time of consent, the family/NOK were informed that they would receive a follow up call at 6-8 weeks post donation; the outcome of this discussion was documented on Donor Path.

A Management Process Document was developed to maintain consistency in the service provided and to ensure that the correct processes were in place to address potential safeguarding concerns. A robust documentation, rota and record system were created to maintain accuracy and easy use for all involved.

During the pilot period, 123 families/NOK agreed to receive a follow up call and anecdotal feedback from these families has been positive; they describe feeling that they have not been forgotten and having the opportunity to raise questions has been helpful. All the families/NOK have been grateful to have had further support from the Organ Donation Service. The SNODs/SRs making the calls have also had the opportunity to further develop and enhance their communication skills.

Following the success of the pilot, the North West and Yorkshire teams have continued successfully to follow up with all families/NOK who have agreed to a follow up call.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P146: Hepatitis E Virus infection in deceased organ donors – The first 5 years of universal screening in the UK

Dr Ines Ushiro-Lumb, Prof Douglas Thorburn, Prof Derek Manas

NHSBT, Bristol, United Kingdom

Abstract

Introduction: Universal HEV RNA screening of deceased organ donors was implemented by NHS Blood and Transplant in 2017, in line with recommendations from the UK Advisory Committee on the Safety of Blood, Tissues and Organs.

Methods: Donor testing result is communicated to transplant centres within days from transplantation, allowing appropriate recipient management. The outcome of donor screening and impact on recipients of organs from donors with detectable viraemia is hereby briefly summarised.

Results: Circa 9500 deceased organ donors were screened between October 2017 and October 2022. Eight viraemic donors were identified, who had donated 14 kidneys and 6 livers to 20 recipients. All liver recipients became infected regardless of the donor's plasma viral load level, which ranged from 100 to 270,000 IU/ml. Eight kidney recipients also became infected and three did not develop virological evidence of infection; no follow up information was provided on the remainder three. Where applied, modification of immunosuppression did not lead to viral clearance and all infected recipients received Ribavirin; time to achieve sustained viral clearance in plasma and stool ranged from less than 3 and up to 24 months. More rapid clearance was observed in two liver recipients who were commenced on Ribavirin immediately upon detection of viraemia.

Conclusion: Detection of donor HEV viraemia triggers notification to transplant centres and prompt testing and monitoring of recipients. Transmission to susceptible recipients through solid organs is very efficient, with 100% observed rate through liver grafts; donor viral load influenced transmission efficiency through renal grafts. Recipient infection was identified due to the ascertainment of the donor's HEV status. Complete follow up is essential, as chronic infection, with risk of accelerated inflammatory liver changes, can be avoided with appropriate recipient management.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P147: Does donor-recipient ethnicity and gender matching have short and long term implications in allograft survival? – A UK National cohort study

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The Royal London Hospital, London, United Kingdom

Abstract

Introduction: Previous studies have found kidney allografts from non-White donors have poorer outcomes in recipients of any ethnicity. There is conflicting evidence of the survival benefit from donor-recipient ethnicity matching in the United Kingdom and United States. Therefore, the aim of this study was to investigate donor-recipient matching on graft outcomes.

Methods: A retrospective, population cohort study was undertaken using UK Transplant Registry data of 42107 adult, kidney-only transplant recipients between 1st January 2000 and 31st December 2018. These were stratified into Black (*n*=2458), White (*n*= 33370), South Asian (*n*=4678), East Asian (*n*=364), Mixed (*n*=126), and Other (*n*=630). Paired donor information was correlated with these recipients, including ethnicity, gender, and age.

Unadjusted and adjusted survival analyses and Cox regression were performed to assess the impact of 3 matching types (donor-recipient ethnicity, gender, and combined ethnicity and gender), on risk for graft loss, delayed graft function (DGF), rejection, and serum creatinine and rejection at 3, 12, and 60 months.

Results: Unadjusted analysis demonstrated that ethnicity matching improved graft survival from deceased donors (mean 409.7 days). Matched ethnicity and ethnicity-gender had favourable outcomes for DGF, and serum creatinine at 3 and 60 months. Matched ethnicity alone resulted in a decreased risk of rejection at 3 months (HR 0.89, p=0.009).

Multivariate analysis demonstrated statistical significance in serum creatinine at 12 months in all 3 matching types, and DGF in both gender and ethnicity-gender matching. Matching had no effect on rejection at any stage. There was no correlation between graft survival and unmatched gender and unmatched ethnicity in a Cox regression model. However, there was a correlation between graft survival and matched ethnicity-gender.

Discussion: Our results suggest that ethnicity-matching is favourable in terms of graft survival, DGF and serum creatinine at different time intervals. However, any benefits of matched ethnicity-gender are outweighed by practicalities in donor-recipient allocation.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P148: Supporting children to say goodbye

Mrs Natalie Ashley

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Abstract

Background: Historically children were not permitted to visit our ICU, the visiting policy stated that no children under 12 could visit. Initially there was considerable resistance to allowing children to visit a dying relative. There were no resources and no structured support for families with children.

Method: We challenged myths and misconceptions around children visiting an ICU, providing evidence of the benefits this can bring. Having successfully supported several children visiting their loved ones, it soon became apparent that referring to SN-ODs to help support children was mutually beneficial.

We have helped create an SOP on children's visiting, leaflets for parents/guardians and resources for bereaved young people, and we fund all bereavement resources. Additionally, we have initiated the referral of children to a local organisation for ongoing bereavement support. We participate in regular teaching on the paediatric study day covering bereavement in children and how as nurses we can support them on the unit, as well as organising teaching sessions for unit the unit from Nelsons Journey and Child Bereavement UK.

Results: We're now regularly asked to support children when visiting relatives on ICU. The ethos on ICU has completely reversed. There has been an enormous amount of positive feedback from relatives and staff. An ICU Sister apologised for her previous negative attitude and refusal to having children visit, now she has seen the positive effect this has in practice.

Discussion: This practice has allowed the SN-ODs to further embed themselves as valuable members of the ICU team, not only in the provision of end-of-life care to donors and families, but also supporting staff to champion the involvement of children in end-of-life care. Consistent referral for the support of children has resulted in early SN-OD engagement with donor families, promoting a more supportive end-of-life journey for the whole family.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P149: Role of focused echocardiography in donor heart utilisation in the United Kingdom

Dr Waqas Akhtar[1], Dr Lenster Marshall[2], Ms Rachel Rowson[3], Dr Tariq Husain[3], Mr Ashok Padukone[1], Dr Helen Buglass[4], Dr Thomas Billyard[5], Dr Charlotte Goedvolk[6], Dr Reniout Mildner[7], Dr Marcus Peck[8], Dr Ashley Miller[9], Ms Hannah Conway[10], Dr Hatem Soliman[11], Ms Marian Ryan[12], Dr Fernando Riesgo Gil[13], Mr Marius Berman[14], Dr Antonio Rubino[14]

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Abstract

Introduction: We looked to establish the role of focused echocardiography in the donation process to improve heart utilisation through a national working group.

Methods: Three reviews were performed to establish baseline activity in the UK. A national survey of all ICU units was performed to determine level of echo provision, accreditation of scanners,

A retrospective London region audit of donor offers over three months were reviewed to see whether echo was performed, by type of staff and level of accreditation.

A prospective analysis of all offers received to a transplant centre over one month were reviewed for presence of echo, quality of report and availability of images.

We established a national working group to look at the role of focused echocardiography in the donation process and develop guidelines through a modified delphi process.

Results: The national survey demonstrated per ICU unit there were 3.61 consultants and 1.44 registrars with level 1 accreditation. Time taken to acquire an echo within 6 hours was 60% for level 1 and 48% for level 2 in hours, falling to 20% for level 1 and 10% for level 2 out of hours.

The retrospective analysis found 19 suitable donors out of 49 offers. Scans were performed by sonographers in 47%, intensivists in 37% and cardiologists in 16% of cases. 37% of scanners were found to have Level 2 accreditation, 5% Level 1 accreditation and 58% were unknown.

The prospective analysis assessed 40 offers. In these cases, 65% had good quality interpretation, 33% poor quality and 3% had no echo. 70% of cases had no imaging for review of which 30% imaging availability may have altered the donation outcome.

The working group developed a donor echo proforma (Figure 1).

Discussion: We demonstrate the role of focused echocardiography in heart donor assessment and a proforma to assist in the process.

PROVISIONAL NOT APPROVED FOR USE v1.7 October 2022

Donor Heart Transthoracic Echo Assessment

If you are Level 2 accredited please scan & report the echo as per BSE standards.

If you are Level 1 accredited (i.e. Pusic Heart or Level 1 BSE), please scan and report as per your accreditation standards, consider recording the following 18 views and transfer images to transplant centre.

Remote Image review is essential in all cases.

Parasternal long axis

1) 2D
2) Colour over aortic valve*
3) Colour over mitral valve*
4) Measure*: Intraventricular septum thickness
Posterior wall thickness.
End diastolic LV diameter

Parasternal short axis

5) 2D Aortic level
6) Colour over tricuspid*
7) Colour over pulmonary valve*
8) 2D Mitral level
9) 2D Papillary muscle level
10) 2D Apical level

Apical 4 Chamber

11) 2D
12) Colour over mitral valve*
13) Colour over tricuspid valve*
14) Measure*: RV basal diameter

Apical 5 Chamber

15) 2D
16) Colour over aortic valve*

Subcostal

17) 2D
18) Colour over inter-atrial septum*

Reporting

If you feel able please comment on following:

Inotrope/vasopressor level:
PEEP on ventilator:

LV function: normal/impaired/severely impaired/NA
RV function: normal/impaired/severely impaired/NA
Aortic valve: normal/stenotic/regurgitant/NA
Mitral valve: normal/stenotic/regurgitant/NA
Tricuspid valve: normal/stenotic/regurgitant/NA
Pulmonary valve: normal/stenotic/regurgitant/NA
Other (eg VSD/effusions):

LV diameter (cm):
LV septal wall thickness (cm):
LV posterior wall thickness (cm):
RV basal diameter (cm):

Please transfer images to transplant center

Advanced

If you are able to perform a complete BSE Level 2 Echo this would be ideal.

Please record LVEF, regional wall abormalities, RV function and any valvular abnormalities with quantification.

Many changes occur at end of life and do not necessarily preclude transplantation e.g RWMA

* See overleaf for how to make measurements

NHS Blood and Transplant

Parasternal long axis measurements

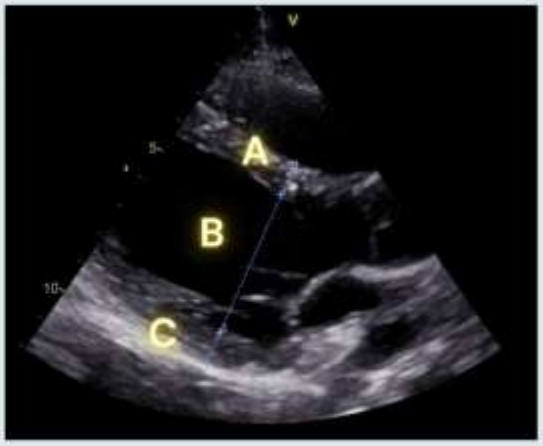
Measure these parameters in diastole (when the LV is the largest)

A Intraventricular septum thickness

B End diastolic LV diameter

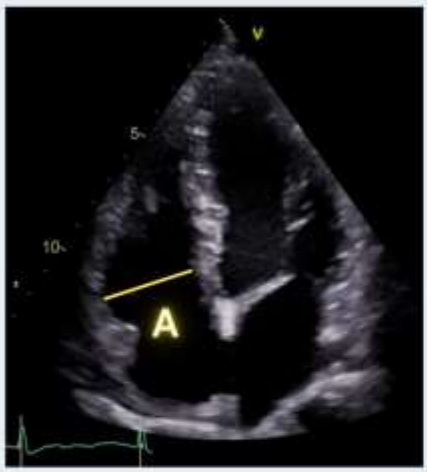
C Posterior wall thickness

(Consider end systolic LV diameter)



Apical 4 Chamber measurement

A RV basal diameter in diastole (when RV is biggest)



Colour Nyquist Limit

When taking colour images ensure the colour scale Nyquist limit is set between 50-60cm/s.

A wide box to capture any valvular lesion is useful but too wide & the image frame rate will reduce

NHS Blood and Transplant

NHSBT National Focused Echocardiography for Donor Hearts Working Group
Authors: W Akhtar, M Peck, A Miller, T Billyard, C Goedvolk, M Ryan, H Soliman-Aboumarie, F Riesgo Gil, M Berman, A Rubino
Contact: a.rubino@nhs.neth

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P150: Interleukin-16 in flush effluent fluid as a biomarker for kidney viability prior to transplantation

Mr Joseph Dobbins[1,2], Miss Gemisha Cheemungtoo[1,2], Mr Samuel Tingle[1,2], Mr Balaji Mahendran[1,2], Miss Lucy Bates[1,2], Mr Aimen Amer[1,2,3], Mr Gourab Sen[1,2,3], Mr John Hammond[1,2,3], Mr Rodrigo Figueiredo[1,2,3], Prof David Talbot[1,2,3], Prof Derek Manas[1,2,3], Prof Steven White[1,2,3], Prof Neil Sheerin[1,2,3], Prof Simi Ali[1,2], Mr Colin Wilson[1,2,3]

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Abstract

Background: Kidney transplantation is the optimal treatment for end stage renal failure but is limited by the number of transplantable organs. Biomarkers that can predict organ viability will reduce the number of organs currently discarded (13% UK, 2021-22, NHSBT). The kidney microcirculation can be flushed, prior to transplantation, with preservation solution, as part of the back-table preparation. The effluent fluid is usually discarded, but we propose this as a source of potential biomarkers. Interleukin-16 (IL-16) is a pro-inflammatory cytokine previously shown to predict viability in liver grafts. Here we examine IL-16 in the context of kidney viability.

Methods: IL-16 concentration was measured, in the flush effluent, using an electrochemiluminescent multiplex assay. The total protein content of each sample was concurrently measured to normalise the concentration. IL-16 concentrations were then compared to donor characteristics and early transplant outcomes.

Results: Samples were collected from 30 transplanted kidneys (10 DCD, 10 DBD, 10 live donor) and 5 declined kidneys (4 DCD, 1 DBD). IL-16 concentration was significantly higher in DCD kidneys (Figure 1, mean 81.8+/-38 (SD)) compared to live donor kidneys (17.7+/-18 pg/ml) (p=0.0001). CIT did not affect IL-16 concentration (β=-0.014, p=0.4), nor was IL-16 able to predict delayed graft function. However, IL-16 was significantly higher in kidneys declined for transplantation (Figure 2, transplanted: 54.7+/-30 vs non-transplanted: 98.1+/-43, p=0.03).

Conclusion: Flush effluent is a rich source of potential biomarkers. IL-16 concentration in flush effluent fluid correlates with organ quality. With real-time assessment, it will be possible to identify kidneys currently discarded; that are either transplantable directly or would benefit from advanced therapy prior to transplantation.

Figure 1. Il-16 levels for different donor types

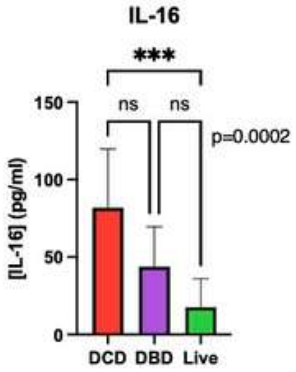
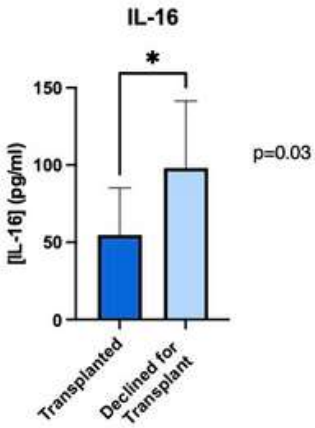


Figure 2. Il-16 levels in transplanted kidneys and kidneys declined for transplant



Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P151: Beating Heart keepsakes for donor families

Mrs Elizabeth Oldfield, Miss Helen Lawson

NHSBT, Sheffield, United Kingdom

Abstract

Introduction: Specialist Nurses routinely offer keepsakes to donor families in the form of handprints, hair locks or memory boxes. Recently we have been increasingly approached by families to see if they can have a heartbeat recording of their loved one. Although this is simple to do, it requires access to a handheld Doppler machine. In larger teaching hospitals these are readily available, however within the smaller district general hospitals access can be more challenging.

Families who requested heartbeat recordings usually had young children, or where the donor themselves were young. Discussions with the families indicated they usually wanted to record the heartbeat as an MP3.

Methods: One donor family who gained great comfort from a heartbeat recording donated 7 handheld Doppler machines at a cost of nearly £400.

Results: All Specialist Requestors (SRs) most commonly offer keepsakes to families during the consent conversation so all SRs within the Yorkshire team were provided with a Doppler machine so all families could be offered a heartbeat recording as a keepsake.

Discussion: The feedback from families has been overwhelmingly positive. When offered to the partner of one donor she cried as she didn't think we would be able to do this, but she was so happy we could. Other families have given children the recording in a teddy bear so the child can press it and hear their parent's heartbeat when they feel sad. One child is especially comforted by this and takes the bear to bed every night.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P152: Timing of ancillary imaging in relation to neurological death testing

Dr Laurence HODIERNE, Dr Simon-Peter Hosein, Dr Dale Gardiner

Nottingham University Hospital, Nottingham, United Kingdom

Abstract

Introduction: Ancillary investigation is utilised to support a diagnosis of death using neurological criteria (DNC) in situations where clinical testing cannot be fully completed, or confounders cannot be excluded. The World Brain Death Project recommends that 'the clinical examination be completed to the fullest extent possible prior to conducting an ancillary test.' A new multi-professional consensus guidance for the use of cerebral CT Angiography (CTA) has been endorsed in the UK. In our trust we have had an established protocol for CTA since 2010 and we wished to explore the timing of our use of ancillary investigations.

Methods: Local NHSBT Potential Donor Audit data between 31/3/16 and 31/3/22 was retrospectively examined. This identified 257 patient records as potentially meeting criteria for neurological death testing (NDT). Corresponding local electronic patient records were reviewed.

Results: NDT proceeded in 89% (n=231) of the sample group, in which ancillary imaging was performed in 9.5% (n=22). Of the patients who had NDT and ancillary imaging, 95% (n=21; 20 CTA, 1 MRA) underwent imaging prior to NDT, which was supportive of DNC in 18 patients. In the 11% (n=26) of patients who did not have NDT, ancillary imaging was performed in 3 patients and was consistent with neurological death in one.

Discussion: Our experience demonstrates a preference to perform ancillary imaging prior to NDT. One safety advantage is that information about brain blood flow is obtained prior to the potential hypercapnoeic increase in intracranial pressure during apnoea testing. Having all diagnostic information to confirm death at the time of NDT aids communication with families and loved ones. A disadvantage suggested in the literature is reduced sensitivity. DNC remains a clinical diagnosis based upon NDT, supported but not superseded by ancillary testing.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P153: Barriers and facilitators toward the making of deceased organ donation from two diverse regions in India: A study among transplant coordinators

Mr. Britzer Paul Vincent Paul Raj, Prof. Gurch Randhawa, Dr. Erica Cook

University of Bedfordshire, Luton, United Kingdom

Abstract

Introduction: The deceased organ donation rate in India is less than one per million population. However, certain regions within this country have higher consent rates than others. One of the aims of my Ph.D. study is to identify the barriers and facilitators in the process of making deceased organ donation and also identify what could explain this difference in performance within India.

Methods: Qualitative approach was adopted with social constructivism worldview. Eighteen in-depth interviews were undertaken with experienced transplant coordinators working in two regions of India differing by deceased organ donation performance.

Results: There was a mixture of institutional-level practices identified from the experience of transplant coordinators which could explain the difference in deceased organ donation performances within India. The institutional level practices that were identified which could explain the difference in performances are as follows: involvement of transplant coordinators as key personnel in the making of deceased organ donation; higher cooperation between doctors, transplant co-ordinators, police officers, and other staff; enabling identification processes; creating a bond, trust, and support with the bereaved families; accountability within the stakeholders; and supportive management policies and infrastructures.

Discussion: Several supportive institutional-level practices have been identified to show higher consent rates in India. The identified enabling factors at the institutional level could be adopted by deceased organ donation hospitals within the same country to improve consent. While creating an enabling environment for the public is very important, creating an enabling environment for the stakeholders within the institutional level can increase the consent rate across India even within the available number of deceased donors.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P154: NHSBT Tissue and Eye Donor family care

Mrs Joanne Galloway

NHS Blood & Transplant, Liverpool, United Kingdom

Abstract

Introduction: NHS Blood and Transplant (NHSBT) Tissue and Eye Services (TES) save and improve the lives of thousands of patients every year by supplying lifesaving and enhancing human tissue grafts for the NHS.

Case Presentation: The Clinical Administration Team is a team of Administrators dealing with complex clinical case files. Tissue donor families are asked if they would like to have their loved one's name placed on the 'Tree of Thanks' which is an metal art installation situated in NHSBT's Liverpool Centre. A heart with the name of the donor is placed on the tree and a card is sent to the donor family. They are also offered gold heart pin badges and the Order of St John Certificate. The Order of St John is an order of chivalry of the British Crown and an international humanitarian charity, most known for their St John Ambulance Service. Preserving human life is the fundamental purpose of The Order of St John. The family receive a certificate with their loved one's name printed on it. These items are sent out to the families alongside a letter detailing the outcome of the donation. Historically organ donor families have been invited to Order of St John ceremonies to recognise the selfless gift of donation. In 2018 NHS Blood and Transplant worked with The Order of St John to provide tissue donors recognition in the form of a certificate.

Outcome: Donor families regularly contact the team to thank them for the items they receive. Knowing that their loved one's donation has been used in transplant brings them great comfort which is evidenced by the letters, thank you cards, and telephone calls the team regularly receive. The team recognise their unique and valuable role in providing this service to tissue and eye donor families.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P155: Does the NSHBT donor optimisation care bundle ventilation guidance match current research?

Dr Alexander Twist[1], Dr Simon Raby[2]

[1]University of Oxford, Oxford, United Kingdom. [2]Oxford University Hospitals, Oxford, United Kingdom

Abstract

Introduction: Positive pressure ventilation is a core part of the management of the brain-dead donor (DBD). The development of improved ventilation strategies has been a key advance in the management of critically ill patients in the past 20-30 years and is likely to be a key factor in improving outcomes in those undergoing organ donation following brainstem death.

Reduced tidal volumes (VT), optimal positive end expiratory pressure (PEEP), and lung recruitment manoeuvres (LRM) are proposed methods to improve retrieval rate and outcomes for transplanted solid organs.
The donor optimisation extended care bundle (DOECB) provides NHSBT's advice for management of donors after neurological death. This bundle recommends ventilator settings of 4-8ml/kg VT and 5-10 cm H2O PEEP.

NHS Blood and Transplant

Donation after Brainstem Death (DBD)

Donor Optimisation Extended Care Bundle

Trust / Board logo – retain or remove NHSBT logo as required

Patient Name_____ Date of Birth_____

Unit Number_____ Date and Time_____

Priorities to address are

1. Assess fluid status and correct hypovolaemia with fluid boluses
2. Introduce vasopressin infusion where required introduce flow monitoring
3. Perform lung recruitment manoeuvres (e.g. following apnoea tests, disconnections, deterioration in oxygenation or suctioning)
4. Identify, arrest and reverse effects of diabetes insipidus
5. Administer methylprednisolone (all donors)

	Y	N/A
Cardiovascular (primary target MAP 60 – 80 mm Hg)		
1. **Review intravascular fluid status and correct hypovolaemia with fluid boluses**	☐	☐
2. Commence cardiac output / flow monitoring	☐	☐
3. **Commence vasopressin (0.5 – 4 units/hour) where vasopressor required, wean or stop catecholamine pressors as able**	☐	☐
4. Introduce dopamine (preferred inotrope) or dobutamine if required	☐	☐
Respiratory (primary target PaO_2 ≥ 10 kPa, pH > 7.28)		
1. Perform lung recruitment manoeuvres	☐	■
2. Review ventilation, ensure lung protective strategy (Tidal volumes 4 – 8ml/kg ideal body weight and optimum PEEP (5 – 10 cm H_2O))	☐	■
3. Maintain regular chest physio incl. suctioning as per unit protocol	☐	■
4. Maintain 30 – 45 degrees head of bed elevation	☐	■
5. Ensure cuff of endotracheal tube is appropriately inflated	☐	■
6. Patient positioning (side, back, side) as per unit protocol	☐	■
7. Where available, and in the context of lung donation, perform bronchoscopy, bronchial lavage and - toilet for therapeutic purposes	☐	☐

	Y	N/A
Fluids and metabolic management		
1. **Administer methylprednisolone** (dose 15 mg/kg, max 1 g)	☐	■
2. Review fluid administration. IV crystalloid maintenance fluid (or NG water where appropriate) to maintain Na^+ < 150 mmol/l	☐	☐
3. **Maintain urine output between 0.5 – 2.0 ml/kg/hour** (If > 4ml/kg/hr, consider Diabetes insipidus and treat promptly with vasopressin and/or DDAVP. Dose of DDAVP 1 – 4 mcg iv titrated to effect)	☐	■
4. Start insulin infusion to keep blood sugar at 4 –10 mmol/l (maximum 1 unit/h; add a glucose containing fluid if required to maintain lower sugar)	☐	■
5. Continue NG feeding (unless SN-OD advises otherwise)	☐	☐
Thrombo-embolic prevention		
1. Ensure anti-embolic stockings are in place (as applicable)	☐	☐
2. Ensure sequential compression devices are in place (as applicable)	☐	☐
3. Continue, or prescribe low molecular weight heparin	☐	☐
Lines, Monitoring and Investigations (if not already done)		
1. Insert arterial line: left side preferable (radial or brachial)	☐	■
2. Insert CVC: right side preferable (int jugular or subclavian)	☐	■
3. Continue hourly observations as per critical care policy	☐	■
4. Maintain normothermia using active warming where required	☐	■
5. Perform a 12-lead ECG (to exclude Q-waves)	☐	■
6. Perform CXR (post recruitment procedure where possible)	☐	■
7. Send Troponin level in all cardiac arrest cases (and follow-up sample where patient in ICU > 24 hours)	☐	☐
8. Where available, perform an Echocardiogram	☐	☐
9. Review and stop all unnecessary medications	☐	■

Signature _____ **Print Name** _____

Date _____ **Time** _____

Donor Optimisation Extended Care Bundle Version 20000213

Methods: A systematic review of literature identified the current evidence surrounding ventilation of the donor after neurological death. This was limited to publications since the year 2000, following publication of the ARDSnet trial advocating use of lung protective ventilation.

Results: Two randomised control trials were identified. We identified multiple published cohort studies and individual departmental/organisational guidelines.
NHSBT guidance has some variance from published research. DOECB's recommended tidal volumes and PEEP ranges are wider and have lower minima, than values seen in both RCTs and other studies (4-8 vs 6-8 ml/kg and 5-10 vs 8-10 cmH2O).

Discussion: NHSBT's guidance for DBD ventilation does endorse some aspects of the published literature, however both the recommended VT and PEEP values are lower in the DOECB. The breadth of evidence in the field of DBD ventilation is limited to small RCTs and cohort studies with a range of confounding factors. Further research in the field with a UK based study would be valuable.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P156: Biopsy characteristics of kidneys from a single large organ procurement organization

Dr. Gabriel Danovitch[1], Tom Seto[2], Aaron Cohen[2], Emma Kitchel[1], Dr. J. Thomas Rosenthal[1], Dr. Suphamai Bunnapradist[1]

[1]David Geffen School of Medicine, Los Angeles, USA. [2]OneLegacy, Los Angeles, USA

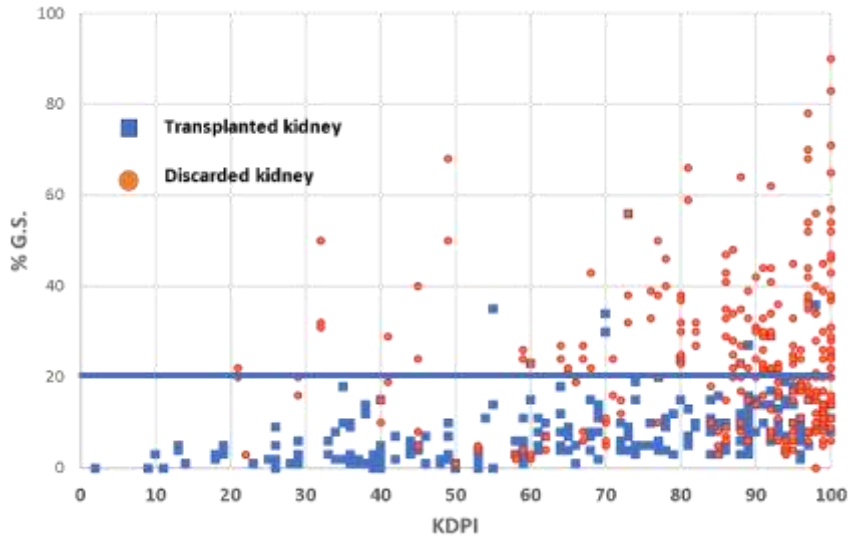
Abstract

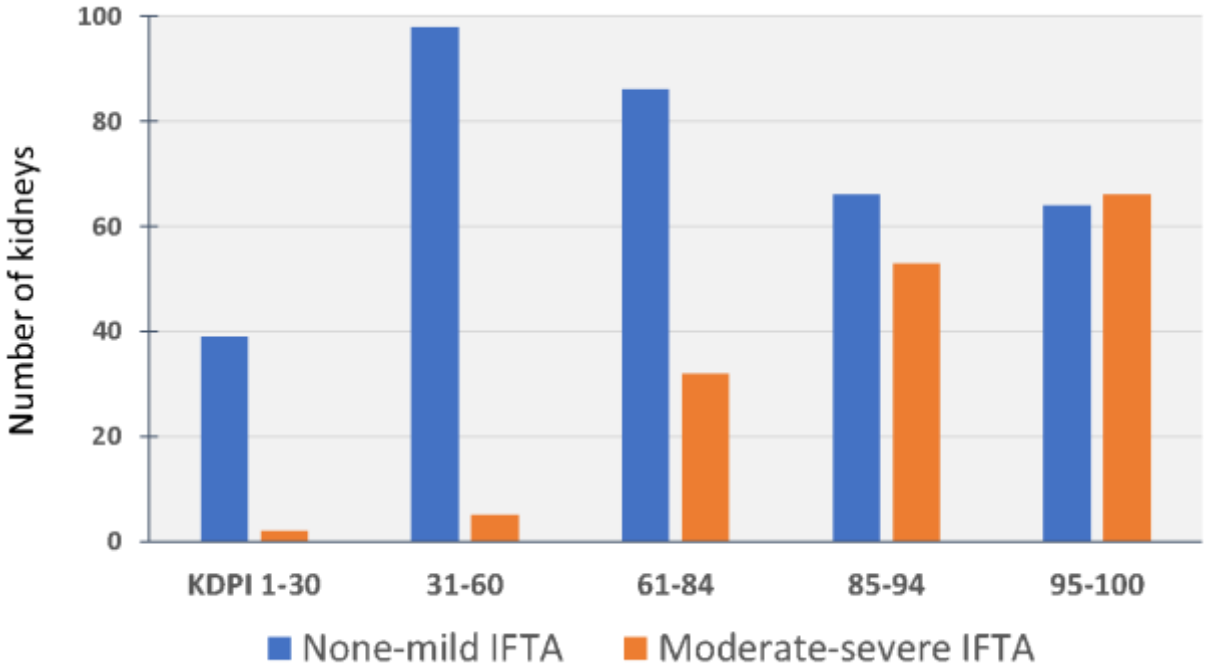
Purpose: Kidney biopsy has been increasingly used to help determine organ suitability for transplant. There are concerns that biopsy is overused, does not accurately predict outcomes, and causes excessive kidney nonuse. We reviewed biopsies performed in our Organ Procurement Organization to assess their role in decisions on kidney use, whether biopsies are being overused, and, if so, if overuse is a factor in increasing nonuse.

Methods: Kidney biopsies were performed on 531 kidneys in 2019, 52% of the 1,019 kidneys procured in OneLegacy's service area in Los Angeles, California, U.S.A. To determine whether clinical parameters alone could predict which kidneys would have unfavorable biopsies, biopsy results were compared with KDPI.

Results: Of 740 kidneys transplanted, 265 underwent biopsy; of 279 kidneys not used, 266 underwent biopsy. In biopsied kidneys with GS < 20 and IFTA less than moderate, only 29% were non-utilized. In biopsied kidneys with GS >20 or IFTA moderate to severe, 97% and 95% were non-utilized, respectively. In kidneys with both GS >20 and IFTA moderate to severe, 100% were non-utilized. Only 12 kidneys were transplanted with either GS > 20 or moderate to greater IFTA. Figures 1 & 2 show relationship between KDPI, GS & IFTA.

Conclusions: Biopsy findings were a determinant in 2/3 of kidney non-utilizations. GS > 20 and moderate to severe IFTA are the de facto standard of care to not transplant. It is not possible to predict which kidneys will have significant sclerosis and fibrosis with KDPI >30. KDPI 30-90 have a significant chance of having severe sclerosis and fibrosis, while KDPI 90-100 have a significant chance of having little sclerosis or fibrosis. Both kidneys were biopsied in 2/3 of donors. 92% of these had concordant findings between kidneys. With the donor pool in Southern California, kidney biopsy is a necessary tool for evaluating kidney usability.





Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P157: Infection of donor origin in deceased organ donation – Learning and improving practice

Dr Ines Ushiro-Lumb, Ms Olive McGowan, Dr Richard Baker

NHSBT, Bristol, United Kingdom

Abstract

Introduction: Post-transplant events that may have an impact on allograft recipients must be centrally reported to the NHS Blood and Transplant Organ Donation and Transplantation directorate (OTDT); this should be done as soon as transmission of infection becomes a possibility. OTDT co-ordinates prompt dissemination of information and initiates a systematic investigation; co-operation from all stake holders and a multi-disciplinary approach are essential.

Methods: The outcome of extensive investigations, where donor-derived transmission of infection was deemed to be possible, probable, or proven is hereby summarised. The methods used may vary depending on the pathogen involved, and good knowledge of the specific disease process is required.

Results: The agents most commonly implicated were Human Herpes Virus 8, Hepatitis E Virus, and Herpes Simplex Virus (table 1); cases where the donor was excluded as possible source of infection in the recipient, or where imputability could not be ascertained, are not included in this summary.

Discussion: Although infrequent, unintended transmission of infection of donor origin may be associated with significant recipient morbidity and mortality. It is essential that all those involved in organ donation and transplantation remain attentive to potential occurrences, so that they can be detected, notified, and appropriately managed. Critical analysis of these events is important in the identification of deficiencies and need for change, as well as informing best practice guidance.

Table 1: Number of events investigated by NHSBT (OTDT 2012-2022), where recipient infection of donor origin was classed as proven, probable, or possible:

Implicated Organism	**Imputability grade**		
	Proven	**Probable**	**Possible**
Candida albicans	1		
Cytomegalovirus		2	
Halicephalobus gengivalis	1		
Hepatitis B virus		1	2
Hepatitis C virus	2		
Hepatitis E virus	8		
Herpes simplex virus type 1 or 2	2	5	
Herpes virus type 6			1
Herpes virus type 8	10		
Leishmania donovani	1		
Mycobacterium tuberculosis		1	
Parvovirus B19		1	1
Strongyloides stercoralis		1	

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P158: Length of process thematic analysis

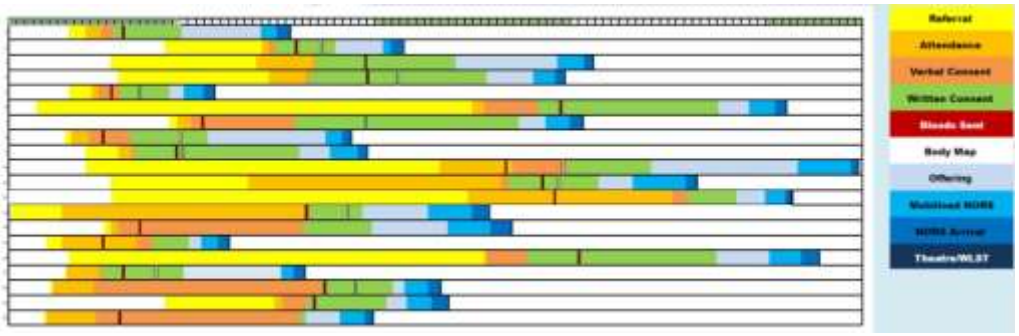
Ms Alison Galloway Turner, Ms Natalie Ashley, Mr David Melhado, Ms Debbie Walford

NHS Blood & Transplant, Eastern Team, United Kingdom

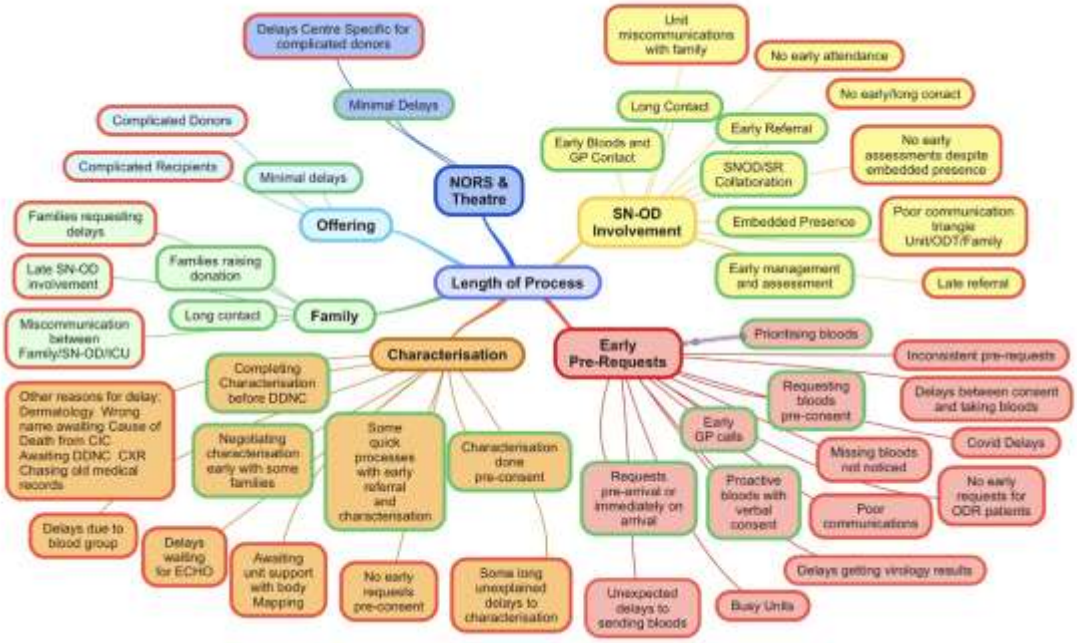
Abstract

Introduction: The average length of the donation process has increased over the last decade. Extended length of process can lead to withdrawn consents, deteriorating organ function and increased pressure on ICUs. Many of these delays are outside a SN-ODs control but it is important to review those factors that are within their control. We carried out a thematic analysis of DonorPath to identify themes around process times.

Methods: A chronological selection of 20 proceeding donors within the Eastern Team ware reviewed. All elements of the DonorPath record were read in detail, by experienced SN-ODs, to identify any practices that reduced time frames or reasons for delay. Relevant timepoint data was also collected to compare with any themes that arose.



Results: The thematic analysis highlighted superordinate themes which correlate with the stages of the donor process, and subordinate themes which demonstrated areas of good practice and areas that could be developed. SN-ODs were able to impact on SN-OD involvement, Early Pre-requests and characterisation. Proactive behaviours around these often led to shortened length of process. The characterisation phase highlights a variety of elements where delays can occur. Often waiting for a single investigations result, such as ECHO's, X-rays, Blood Groups could lead to a significant delay.



Discussion: Due to the complexity of the process, there were far too many variables to be able to identify single factors that could be improved. It showed there are some great practices with SN-ODs often taking the initiative to approach the process as a Jigsaw rather than a linear process. Often extended processes result from minor delays snowballing and creating bigger delays. We suggest that a focus is placed on greater practice sharing of innovative ways to shorten the length of process.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P159: What is the lived experience of Specialist Nurses in Organ Donation working in the Intensive Care Unit to recruit, facilitate and support the donation process?

Mrs Sharon Johnson

NHSBT, South West Team, United Kingdom

Abstract

Introduction: Currently approx. 6500 UK residents await an organ transplant (NHSBT, 2022). With demand far-outweighing supply and one donor potentially saving nine lives, the advocate routine consideration of organ donation as part of end-of-life care planning within Intensive Care Unit's (ICU's) with a SNOD leading the donor family conversation (NICE, 2016). SNOD's plan, organise and engineer the patients' donation journey from ICU through to the mortuary, while supporting the family and wider MDT. This review investigates the lived experience of SNODs working on the ICU to recruit, facilitate and support the donation process.

Methods: CINALH, PubMed, MEDLINE, EBSCO-Host electronic databases were used to source relevant literature. Using the PRISMA flow chart 6 studies were eligible for inclusion.

Results: While no UK studies meeting criteria were found, countries included are Canada (n=2), Spain (n=1), Norway (n=1), Israel (n=1) and Chile (n=1). All selected studies adopted a qualitative research methodology, identifying phenomenon's influencing participants, seeking to understand what causes the influence and what is significant to the sample population.

Discussion: Despite thorough examination of systematically searched literature there was a noticeable absence in empirical research exploring the lived experience of SNODs in the ICU. From the literature examined common themes were identified and synthesised highlighting the impact on SNOD's health and wellbeing and contributing institutional influences. Noticeably, SNOD's susceptibility to burnout and compassion fatigue with little organisational support, a limited role lifespan consequently potentially impacting donation rates. This review has illustrated a clear lack of empirical data, highlighting a strong requirement for UK research. Therefore, a UK based research study will be undertaken to explore SNOD's experience recruiting for organ donation, is their mental health affected and are there influencing factors?

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P160: Donor Family Care: Experiences of donor families

Mrs Kay Sybenga

NHS Blood and Transplant, Newcastle, United Kingdom

Abstract

Introduction: Feedback is important in healthcare because it supports an evidence-based approach to the care we provide. The Specialist Nurses and Donor Family Care Service are committed to providing every family with the best care possible throughout the donation journey; both during and after. We offer donor families the opportunity to share with us what went well, what we could have done differently, and any thoughts they might have about ways we can improve to help families.

Methods: Process evaluation – feedback was reviewed from 2016 – 2022 to gauge the response rates and quality of the data. Advice from bereavement specialists was obtained on the timing and length of the questionnaire and a review of donor family feedback questionnaires in other countries was carried out to understand different cultures and explore what improvements were required to ensure inclusivity.
Family engagement – feedback was obtained from donor family members to gain their invaluable input in design and the optimum time to send the family questionnaire. The questionnaire was further reviewed by a wider cohort of donor families for increased validation and to gain their insights.

Results: The results identified a reduced national response rate:

Year	Feedback received
2016/17	34%
2017/18	25%
2018/19	22%
2019/20	17%
2020/21	19%
2021/22	2%

The findings below highlighted key areas for development and informed changes to the new proposed process:

Discussion: The shared experience of donor families provides vital ideas for improving our service which healthcare professionals may not have considered. Overall findings show that family engagement is fundamental in enhancing services and by using human factors principles we can strengthen practice and family experience. By enabling families to provide feedback, we can ensure that we can continually improve the care we provide. Listening to families to help drive improvements to ensure our service is achieving standards we expect to achieve, for every family, every time.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P161: Pacing management protocol during the donation process

Dr Waqas Akhtar[1], Dr Jennifer Lewis[1], Dr Katarzyna Malaczynska-Rajpold[2], Ms Rachel Rowson[1], Dr Andre Vercueil[1], Dr Tariq Husain[1]

[1]NHSBT London, London, United Kingdom. [2]Royal Brompton Hospital, London, United Kingdom

Abstract

Introduction: Increasing numbers of patients are receiving devices for pacing, defibrillation and cardiac resynchronisation therapy. Organ donation can often occur out of hours where expert help may not be readily available to aid decision making in the management of these devices during the donation process.

Methods: We established a working group consisting of medical and nursing teams from organ donation teams, intensive care and electrophysiology. Through a modified delphi process we looked to develop a standardised operating procedure for the management of pacing devices during donation.

Results: We present (Figure 1) an infographic to assist teams managing organ donation. The graphic explains the types of devices implanted and their purpose, the risks to staff and patient of inappropriate management of the device, the effect of a magnet on these devices and what to do in the case of donation after brainstem or circulatory death.

Conclusion: We hope this guideline will empower donation teams in the management of pacing devices during the donation process and reduce delays and uncertainty in patient care.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P162: Commonwealth Tribute to Life – shared learning

Mrs Sabina Hardman

NHSBT, Birmingham, United Kingdom

Abstract

Introduction: Thanks to the Commonwealth Tribute to Life project and memorandum of understanding between Commonwealth countries we have new opportunities for shared learning. During a sabbatical in India this project provided a first-hand opportunity to learn about the deceased donation programme in India. The purpose was to engage in shared learning with Mohan Foundation and gain understanding of consent for deceased donation in India. In the UK, the number of deceased donations and transplants from the Asian population is disproportionate whilst India is one of the highest countries world-wide for the number of transplants carried out annually.

Ai**m:** Gain understanding of deceased donation practice in India. Identify commonalities and differences between UK and India pertaining to approach and consent. Identify barriers to donation relevant to both countries.

Discussion: Over a 2-year period a SNOD visited the Mohan Foundation in Chennai and Jaipur and engaged in a variety of shared learning activities: coordinator training course, public awareness campaigns and celebrations of deceased donors, and also learning about the many Indian cultures and religions, the variance in public versus private healthcare and the disparity between individual states and deceased donation programmes. India practices DBD deceased donation programme modelled upon UK, but a DCD programme could offer self-sufficiency and reduce the total of live donations. A number of societal barriers, hospital related organ donation issues and cultural differences were identified, that could offer deeper understanding and support consent for BAME groups in UK.

Outcome: This learning experience identified many areas where UK and India can learn from each other by ongoing sharing of best practice thanks to the MOU. The project provides the ability for global engagement and improve the health of commonwealth citizens by developing deceased organ donation programmes and delivering transplant for all who needs it.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P163: An All-Wales approach: A deep dive review of consent for organ donation

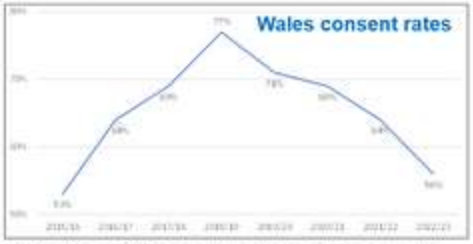
Regional Manager Joanna Chalker[1], Team Manager Charlotte Goodwin[2], Regional Clinical Lead Alison Ingham[3,4], Regional Clinical Lead David Jones[2,5], Team Manager Dawn Lee[3], Performance Analysist Judit Matone Sandor[6], Team Manager Bethan Moss[2]

[1]NHSBT, Exeter, United Kingdom. [2]NHSBT, Cardiff, United Kingdom. [3]NHSBT, Liverpool, United Kingdom. [4]Betsi Cadwaladr University Health Board, Wrexham, United Kingdom. [5]Cwm Taf Morgannwg University Health Board, Merthyr Tydfil, United Kingdom. [6]NHSBT, Bristol, United Kingdom

Abstract

Introduction: Consent rates in Wales have been monitored closely following the implementation of the deemed consent legislation in 2015 (The Human Transplantation Wales Act 2013).

- Following the impressive 77% consent rate achieved in Wales in 2018/19, which has since reduced to 56% (DBD: 61%, DCD: 52%)
- We have seen a decrease in the consent/authorisation across the UK, but Wales is currently the lowest:
  - Scotland 65%
  - England 62%
  - Northern Ireland 62%
  - Wales 56%
  - UK overall 62%



- The original remit set by WTAG was to look at the fall in DCD consent, but these slides cover the whole donation pathway for DBD and DCD.

Activity data is presented at the Wales Transplantation Advisory Group (WTAG). The Donation and Transplantation Plan for Wales: 2022-2026, priority 1, highlights the importance of ensuring all eligible donors have an opportunity to donate and improving consent rates.

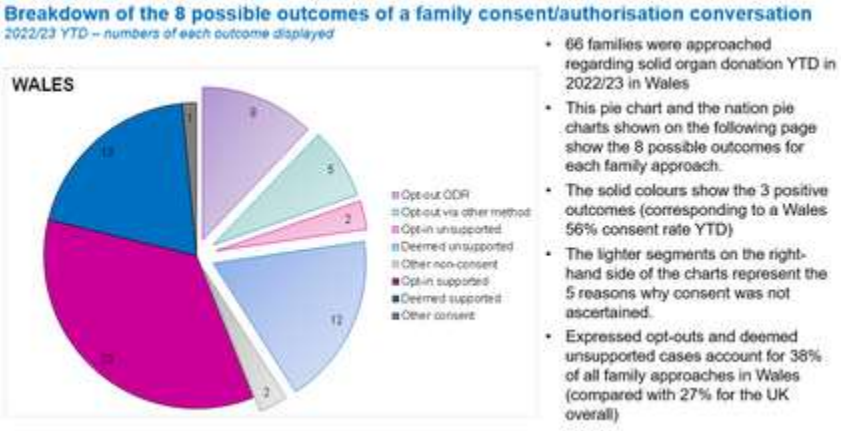
Understanding the detail behind reductions in consent rates and trends is key if they are to be addressed and positively impact organs for transplantation.

Method: Wales is covered by 2 regional Organ Donation Teams (South Wales and North West). This presented a unique opportunity for collaboration and shared practice.

A face-to-face meeting was facilitated in the format of a structured deep dive.

Data sets were provided by NHSBT. Information accessed included a detail break down of the workforce, geography, legislation, donation activity metrics and reasons for decline. In addition, an overview of public attitude and impact of regional marketing was provided.

Results/outcome:



Wales has a higher proportion of opt outs. Similarly, a high rate of verbal decisions has been recorded within the dataset.

Adjusted consent rates were provided, removing the ODR opt out registrations from the dataset.
Individual cases were reviewed to identify learning in relation to missed opportunities and best practice.
The attitudinal survey indicated positive responses to regional media campaigns.
The area of regional priority and most significant opportunity for gain is focus on the deemed cases and public engagement.

Outputs from the event have been captured in a SWOT and action plan.

Discussion: The deep dive provided an opportunity to network with colleagues and stakeholders from across Wales to undertake a detailed review and identify clear actions to improve practice and ultimately consent rates.

Submitted on behalf of all Specialist Nurses across North & South Wales.

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P164: Supporting children when organ donation doesn't proceed

Miss Claire Burbridge

NHS Blood and Transplant, Eastern, United Kingdom

Abstract

Introduction: During the organ donation process a family highlighted it was important to them that if donation didn't proceed, the children understood why it had been explored as part of their relative's end of life care. I pre planned I would write them a letter for their memory boxes if donation didn't take place.

Method: I used the pre-made DFCS children's letter for proceeding donors, and adapted it to explain the donation process, why it was important we explored the possibility of donation, how important it had been to the patient and why donation couldn't proceed.

Results: Letter written and structured to meet the family's needs, and ensure the children knew we had done all we could to explore their relative's decision to donate during their lifetime.

Discussion: Could we do more to support the next of kin of those who do not donate? Is there a gulf between what we do for those who proceed and those who don't through no fault of their own?

Categories: Deceased donation (donor selection and optimisation - donor care - donor family care)

P165: 'You have to see it to be it' The impact of living donor kidney transplantation publicity

Dr Jen Lumsdaine[1], Mrs Julie Glen[2], Mrs Linda White[3]

[1]Living Donation Scotland, Edinburgh, United Kingdom. [2]Queen Elizabeth University Hospital, Glasgow, United Kingdom. [3]3Organ and Tissue Donation and Transplantation, Scottish Government, Edinburgh, United Kingdom

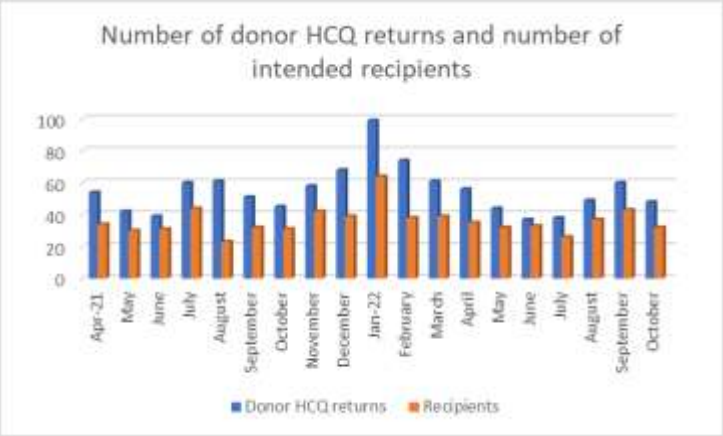
Abstract

Introduction: Living donor kidney transplantation (LDKT) publicity aims to increase knowledge and awareness in the general population – often with a focus on non-directed donors, but also to inform about the benefits of LDKT for recipients, their families and social networks. All our living kidney donors require to submit a healthcheck questionnaire (HCQ) to commence the assessment process. The HCQ is available on the national website or by request from individual teams.

Methods: We collected HCQ return data from April 2021 – October 2022 (ongoing) from 7 renal units and 2 transplant units to measure the response to national publicity campaigns, evidence workload and compare the number of potential donors to intended recipients. Web statistics were obtained for information pack and healthcheck questionnaire downloads.

Results: A total of 963 donor HCQs were returned in the 18-month period for 685 named recipients. The total number of living donor transplants performed was 134 in the same time period (211 deceased donor transplants). There was a significant increase during and following a national publicity campaign in January 2022 to web visits, pack downloads and HCQ returns.

Discussion: Transforming potential donors to actual donors is multi-factorial, but the first step is to facilitate donors and recipients into a programme. Our data highlights the importance of local and national media campaigns to continually keep living donation in the public eye. We also reflect the workload for the living donor teams with the number of recipients who have a potential donor who do not reach living donor transplantation. Early referral for LDKT before listing for deceased donor transplant may help facilitate the aim of making LDKT the default first treatment option.



Categories: Living donation (living donor and recipient selection (all organs) options for donation - donor care - outcomes)

P166: The impact of social media appeals in living kidney donation

Mrs Anita Copley[1,2], Mrs Elham Asgari[1]

[1]Guy's and St. Thomas' NHS Foundation Trust, London, United Kingdom. [2]Great Ormond Street Hospital, London, United Kingdom

Abstract

Introduction: There is a mounting interest in the utilization of social media appeals to facilitate successful living kidney donor transplantation. Social media platforms offer swift access to voice opinions, share life stories and facilitate instant gratification of society's needs. Our patients therefore have a heightened awareness of the ability to share their need for kidney transplantation on this huge platform.
Here we describe our experience and learning from 5 social media appeals taken place at our centre for paediatric recipients between 2018 and 2022.

Methods/Current practice:

- Patients and families seen in a supportive environment
- Appeals are discussed when all options for transplantation have been explored
- Families are educated on appeal content/criteria/contact information (email address only)
- Co-ordinator and paediatric team then review and approve appeal
- A date for the appeal launch is agreed
- The donor team then has the dedicated time to manage the volume of communication an appeal can generate
- Donor's health questionnaire content triaged

Results

Appeal number	Social media platform	Number of responses	Healthcare consultation	Number of donors assessed	Outcome
1	Police Forum	25	3	1	1 successful renal transplant
2	Facebook	60	8	2	1 successful transplant; 1 non-directed altruistic donation
3	Instagram	5	2	2	1 successful transplant
4	Linked-In	10	5	1	1 deceased donor renal transplant
5	Facebook Local newspaper	16	2	1	0 donors going forward 1 scheduled renal transplant 2023 (from appeal no. 4)

Table 1 Summary of the social media appeals and patient outcomes

Discussion/Learning points:

- Health questionnaire inclusion has streamlined the volume of responses allowing early identification of suitability
- The exclusion of co-ordinator telephone numbers allows the donor time to process the information before making further contact
- Assessing a “back-up” donor may lead to successful non-directed altruistic donation.
- Manage donor expectations by informing them that the intended recipient may be offered a deceased donor transplant during their assessment process
- Consider that the donor may not wish to meet the recipient at HTA interview
- Careful consideration when utilizing social media appeals is a viable option if all other options for transplantation are exhausted

Categories: Living donation (living donor and recipient selection (all organs) options for donation - donor care - outcomes)

P167: Improving access to living donor kidney transplantation for black kidney patients

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Abstract

Introduction: Living donor (LD) kidney transplants performed annually are not only significantly less among Black kidney patients, but also have proportionally decreased from 2014/5 – 2020/1. Evidence demonstrates an over-representation of Black patients on the transplant list who wait longer (typically 4-5yrs) for a deceased donor kidney transplant compared to white kidney patients.

As transplantation is the most desirable renal replacement therapy, the above represents a health inequity for Black patients that urgently needs to be addressed. Gift Of Living Donation (GOLD) a community organisation working to raise awareness of living kidney donation in the Black community seeks to address this and improve access to living donation.

Methods: GOLD introduced a Peer Buddy Scheme (PBS) as an intervention designed to support the cultural needs of Black patients. This involved trained Black Peer Buddies providing Black patients with culturally tailored information about living donation, the process, talking to relatives regarding LD and comprehensive support for decision-making. To test the effectiveness of this new intervention, GOLD partnered with a team of clinicians at a single London centre who are now signposting Black kidney patients to the PBS. Following a 3-month initial test phase, 10 patients (60% pre-emptive, 40%dialysis) referred to the PBS by clinicians were surveyed to gain early insights as to the value of the intervention.

Results: 8/10 patients referred to PBS responded, 75% reported the intervention had helped them re-consider LD transplantation. 100% were very positive of information provided by their Black peers; speaking to a buddy was a helpful experience, and the clinician referral made them feel valued. Clinicians reported that the availability of the scheme made it infinitely easier to broach the subject of LD transplantation with Black kidney patients.

Discussion: The next stage is to formalise the study using a quality improvement framework whilst expanding and evaluating replicability across 3 centres.

Categories: Living donation (living donor and recipient selection (all organs) options for donation - donor care - outcomes)

P168: Does the difference in isotope uptake on the pre-donation renogram predict recovery of GFR at 1 year after living kidney donation?

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Abstract

Background: The assessment of living kidney donors includes measurement of glomerular filtration rate by clearance of isotope (iGFR) in all UK centres. Some centres estimate the contribution from each kidney using the differential isotope uptake on renogram. This study aimed to explore whether the pre-donation percentage isotope uptake of the remaining kidney on renogram influences the percentage recovery of GFR at 1-year post-donation (GFR_{1y}).

Method: A retrospective analysis was undertaken of living kidney donors at our centre between 2011 and 2021. GFR_{1y} was estimated from the deduction that the ratio of GFR_{1y} to iGFR pre-donation ($iGFR_{PD}$) is equal to the ratio of reciprocal serum creatinine at 1 year ($1/SCr_{1y}$) to reciprocal creatinine pre-donation ($1/SCr_{PD}$):

$$\frac{GFR_{1y}}{iGFR_{PD}} = \frac{1/SCr_{1y}}{1/SCr_{PD}} \qquad \text{Thus} \quad GFR_{1y} = \frac{1/SCr_{1y} \times iGFR_{PD}}{1/SCr_{PD}}$$

The primary outcome was the correlation between the pre-donation isotope uptake of the remaining kidney and the recovery of GFR1y. A sub-analysis of donor outcomes was undertaken with donors grouped by pre-donation differential isotope uptake of their remaining kidney.

Results: 292 donors were included of which 11 donated a kidney with ≥55% uptake (55-58%) and 53 donated a kidney with ≤45% uptake (31%-45%). The remaining 228 donated a kidney with isotope uptake between 46-54%.

There was no correlation between the pre-donation isotope uptake of the remaining kidney and the recovery of GFR_{1y} ($R_2 = 0.08$, $p=0.47$), nor any significant difference in recovery of GFR_{1y} between donors grouped by the pre-donation isotope uptake of their remaining kidney.

These results were confirmed on repeat analysis using pre-donation and 1-year post-donation eGFR calculated by CKD-EPI formula.

Discussion: This study demonstrated no predictive relationship between recovery of GFR_{1y} after living kidney donation and the pre-donation isotope uptake of the donor's remaining kidney. Further study is warranted to determine if 'split function' measurement adds value to living donor assessment.

Categories: Living donation (living donor and recipient selection (all organs) options for donation - donor care - outcomes)

P169: Robotic (RALDN) versus laparoscopic living donor nephrectomy in perioperative and renal transplant outcomes, single centre study

Dr Savvas Antoniadis, Mr Nicos Kessaris, Mr Georgios Papadakis, Mr Azarudeen Jalaludeen, Mr Usman Haroon, Mr Jonathon Olsburgh, Mr Benjamin Challacombe, Ms Rhana Zakri, Mr Ioannis Loukopoulos

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Abstract

Introduction: Hand Assisted Laparoscopic Donor Nephrectomy (HALDN) has been performed over two decades, associated with minor peri- and post-operative complications. As living donors are healthy individuals, who intentionally wish to undergo a major operation to improve the wellbeing of another patient, efforts to provide a shorter recovery time and better clinical outcomes might be feasible by the introduction of the robotic approach. Guy's Hospital introduced the RALDN in December 2018 and this study aims to compare the two surgical methods.

Methods: All the procedures performed from December 2018 till December 2019 and May 2021 till October 2022 were taken into consideration. We totally included 248 patients. 211 of them underwent HALDN and 37 RALDN. Laterality or anatomy of the kidney were not exclusive criteria. We analysed and compared the intraoperative characteristics and postoperative outcomes.

Results: We totally analysed 248 donor nephrectomies. There was not difference in the demographic data of the two groups.

Intra-operatively the RALDN group had an average longer time in theatre almost 29 minutes(p=0.005). Of interest the WIT in the first robotic operations was longer by 2 minutes, however the average WIT of both approaches were similar over the end of the study, which almost 3.6 minutes (p=0.0002).
Post operatively, 26 over 211 who underwent HALDN developed post-operative complications (mainly wound related), representing the 12%, whereas only 2 over 37 patients in the robotic group 5% (p=0.025).

The was no other significant difference between the two groups regarding the post-operative pain,recovery, quality of life after donation and post-operative creatinine.

Discussion: The outcomes of the present study represent the potentiality of RALDN to improve the post operative periods by minimising the complications. Also, the fact that the WIT was initially longer and then similar with the HALDN, highlights the importance of education and training to the robotic technique.

Categories: Living donation (living donor and recipient selection (all organs) options for donation - donor care - outcomes)

P170: Living Donor Transplant Coordinator – an evolving role

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Abstract

Introduction: Living donor kidney transplantation (LDKT) remains the Gold Standard treatment for end stage renal failure and has never been so important with the demands on dialysis spaces. Prior to COVID, donors and recipients were admitted the day before surgery and were pre op assessed on admission. During the pandemic an Enhanced Recovery After Surgery (ERAS) protocol was adopted with donors being admitted on the day of surgery, requiring pre op prior to admission. Due to capacity pressures outpatient pre op clinics were unable to accommodate donors. The living donor (LD) coordinator team delivered the pre op requirements, providing holistic care and better job satisfaction.

Methods: Both donor and recipient were pre op'ed when attending for final crossmatch, 2 weeks prior to surgery. LD coordinators carried out a medical clerk in, documented in the electronic patient record, carried out a medicine reconciliation and completed the electronic pre op assessment form for anaesthetist review.

Results: Since January 2022, 44 donors and 42 recipients have had full pre-operative clerk ins by the LD coordinator team. Issues identified have included new systolic murmurs, skin lesions, anaesthetic concerns, etc all of which have been highlighted / referred to appropriate teams and addressed prior to admission, avoiding cancellation of the scheduled transplant.

Discussion: The LD transplant coordinators have evolved in their role by delivering medical clerk ins for both donors and recipients prior to admission for LDKT. As they are pivotal in planning and scheduling LDKT's, they have quickly segued into this role, utilising their advanced clinical skills and specialist knowledge.

This has been hugely beneficial to the West of Scotland Transplant Unit to be able to smoothly deliver their LDKT programme without experiencing further delays by having to rely on other departments.
Despite the increase in workload, this has created greater job satisfaction.

Categories: Living donation (living donor and recipient selection (all organs) options for donation - donor care - outcomes)

P171: First in Man

Mr. Joao Pedro Nunes[1], Mr. Simon Messer[2], Mr. Aravinda Page[1], Mr. John Louca[3], Dr. Stephen Pettit[1], Mr. Paul Lincoln[1], Mr. Marius Berman[1], Dr. Magnus Althage[4], Mr. Stephen Large[1]

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Abstract

Introduction: We report the first ex-situ perfused human heart for corporate pharmaceutical study (AstraZeneca). This four human heart study will describe the novel molecule's action on human myocardium.

Methods: The explanted human heart was placed onto the m0rgan, an ex-situ, warm, Langendorff perfusion device. The red cell based perfusate electrolytes were normalised after 2 cycles of warm, oxygenated m0rgan perfusion. Calcium was given to ensure concentration of 1.7mmole/L. The cold arrested (4oC) heart was a CCS 4/4 failing, dilated cardiomyopathic heart. Its short residual aorta after explant, required a 26mm synthetic tube graft to permit secure mounting onto the m0rgan.

Results: This vital perfused heart (34oC) resumed sinus rhythm (55 beats/min) after 45 seconds following 13minutes cold ischaemia. The empty beating left ventricle was injected in prescribed fashion with control, low and high dose concentrations of the molecule of interest. The injection sites were marked, and full thickness biopsy made after 6hours of perfusion. The heart gained weight (650gram at perfusion start by 280grams [43%] at completion). The cardiomyopathic heart, was sent for histology review to guide genetic counselling if required.

Discussion: This new approach offers industry a safe preparation for testing new molecules of interest, first in man. The potential drugs of tomorrow can be safely studied in the vital ex-situ human heart. If promising, subsequent clinical studies will assess the molecule's action on heart function in-vivo with particular attention to systemic impact. Problems of this model include the unpredictable availability of recipient human hearts and the current, relatively short safe duration of reasonable perfusion. Nonetheless, we believe this model will precipitate a faster passage to clinical delivery of tomorrows drugs with reduced need for animal studies.

Categories: Organ preservation and retrieval (novel technologies - NORS - donor surgery)

P172: Subnormothermic acellular perfusion of human kidneys

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Abstract

Introduction: The optimum conditions for normothermic machine perfusion (NMP) in kidney transplantation have yet to be determined. Traditionally, kidneys are perfused with a red blood cell (RBC) based solution at 37°C. NMP at a subnormothermic temperature without RBCs could reduce the harmful effects of haemolysis but still preserve kidney function. This study examines the effect of subnormothermic acellular machine perfusion (SNAP) in human kidneys.

Methods: Five pairs of human kidneys offered for research were included in the study. One of each pair was perfused with an oxygenated albumin-based solution with red cells (RBC) and the other without red blood cells (SNAP) at 32°C for 6h. After perfusion, kidneys were reperfused for 4h with a red cell-based solution at 37°C for assessment. Perfusion parameters and renal function were compared between groups.

Results: The mean age of the donors was 66 ± 12y. Three kidney pairs were from donation after brain death (DBD) and 2 from donation after circulatory death (DCD) donors. Perfusion parameters were stable throughout perfusion. The mean renal blood flow (RBF) was numerically higher in the SNAP group (156.5 ± 57.1 vs 115.3 ± 41.21ml/min/100g; P = 0.063). RBC kidneys produced more urine but this did not reach statistical significance (154 ± 159 vs 64 ± 73ml; P = 0.217). During reperfusion levels of RBF, urine output and percentage creatinine fall were similar between the groups (Creatinine fall; SNAP 66 ± 18 vs RBC 74 ± 16%; P = 0.382).

Conclusion: This study suggests that SNAP is equivalent to perfusion with RBCs with no adverse effects on perfusion parameters. The removal of RBCs negates any detrimental effects of haemolysis and provides a simpler method of kidney perfusion.

Categories: Organ preservation and retrieval (novel technologies - NORS - donor surgery)

P173: What time should we avoid organ retrieval surgery in the UK?

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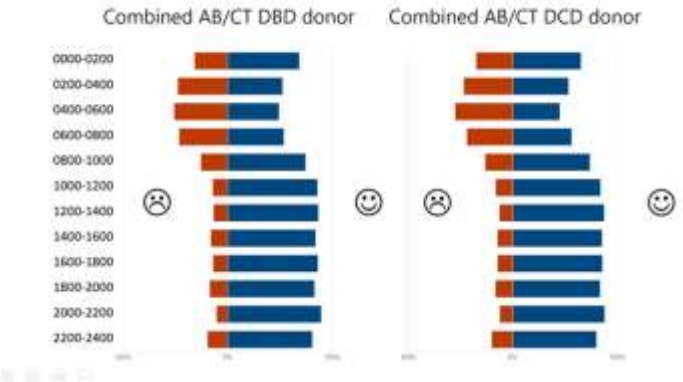
Abstract

Introduction: A significant volume of deceased donor transplantation now occurs overnight. In contrast to most other surgery, transplant timings are fixed by the time of the preceding organ retrieval. To determine acceptability of different retrieval timings, a UK-wide survey of all surgeons and theatre staff providing the National Organ Retrieval Service (NORS) was carried out.

Methods: All NORS surgical leads (Abdominal (AB)/Cardiothoracic (CT)) and corresponding perioperative leads were emailed a survey link to be shared with all NORS surgeons able to lead a NORS team (consultants/registrars/fellows) and senior perioperative staff. Respondents indicated time frames when 'knife to skin' should be generally accepted or very much avoided in combined AB/CT donors and in AB-only donors, stratified according to donation after neurological or circulatory determination of death (DBD and DCD respectively).

Results: 157 responses were obtained, including 72 surgical and 85 perioperative respondents representing all 6 CT centres (n=41) and all 10 AB centres (n=116). For the DBD scenario, 152 responses were obtained for combined CT/AB and 115 for AB-only. In the DCD scenario, 153 responses were received for combined CT/AB and 114 for AB-only. Averaged across all staff types (Figure below), NORS teams were supportive of commencing AB/CT retrieval surgery, for both DBD and DCD donors, at most times except between 0400-0600 hours. Data for AB-only retrievals revealed the same (not shown).

Conclusions: This is the first survey of all UK NORS teams regarding acceptability of commencing retrieval surgery across the 24 hour day. The data show that NORS teams are generally supportive of starting surgery at most times in the 24 hour cycle, except between 0400 and 0600. These data suggest that changing retrieval times to improve transplant timings may be acceptable to retrieval teams, especially if a surgical start time of 0400-0600 can be avoided.



Categories: Organ preservation and retrieval (novel technologies - NORS - donor surgery)

P174: Safe establishment of abdominal normothermic regional perfusion in donors after circulatory death with previous sternotomy – Video demonstration

Mr Ahmed Sherif, Mr Aki Uutela, Ms Lynsey Farwell, Ms Rachel Thomas, Mr Avinash Sewpaul, Ms Lesley Coutts, Ms Kirsty Ritchie, Ms He Haung, Ms Fiona Hunt, Mr Benoy Babu, Mr Ben Stuchfield, Mr Gabriel Oniscu, Mr Ian Currie, Mr Chris Johnston

Edinburgh Transplant Centre, Edinburgh, United Kingdom

Abstract

Introduction: Abdominal normothermic regional perfusion (A-NRP) was shown to improve organ utilisation and outcomes compared to standard donation after circulatory death (DCD) retrieval. [UA1] As the current UK A-NRP guidelines require proximal aortic arch venting superior to the aortic cross-clamp prior to NRP perfusion start, previous donor sternotomy had posed significant challenges in gaining rapid access to the chest due to risks of exsanguinating bleeding.

Methods: We describe our experience of a small case series of A-NRP in donors with previous sternotomy when the chest was kept closed, abdominal supra-celiac aortic cross-clamping was utilised, and the proximal aorta was safely vented in the abdomen, in keeping with the UK guidelines. Donor family consent for video photography was prospectively acquired in the first retrieval through a pre-approved process allowing the specific use for education and training (currently restricted to our local NHS Trust).

Results: Three A-NRPs were attempted in donors with previous sternotomy for open heart surgery. The surgical technique of A-NRP cannulation and safe application of supa-celiac aortic venting cannula will be demonstrated in a video presentation. NRP ran successfully for 2 hours as per NRP protocol in the three donors. The first donor was 74 years, BMI 29 and the cause of death was hypoxic brain injury. The liver and two kidneys were successfully retrieved and transplanted. The other two donors were 50 and 30 years old with of 35.5 and 36.2, respectively. The cause of death for both was hypoxic brain injury. The liver was declined in both donors based on poor functions with NRP viability testing and gross steatosis. Kidneys were retrieved from both donors and successfully transplanted.

Discussion: Previous sternotomy in DCD does not preclude the safe use of A-NRP. Our approach supra-celiac aortic clamping and proximal venting approach proved to be feasible, safe, and consistent with UK NRP guidelines.

Categories: Organ preservation and retrieval (novel technologies - NORS - donor surgery)

P175: Proposal to Improve Eye Donation Scotland: OTDT & SNBTS

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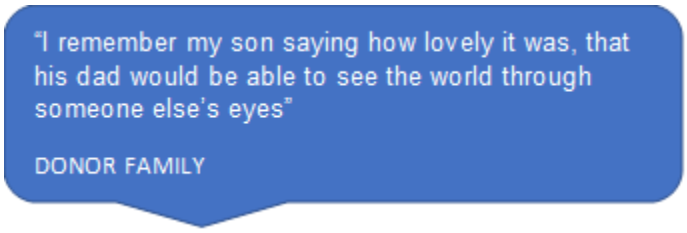
Abstract

Introduction: Eye donation across the UK has seen significant decline leading to a reduction in the availability of eye products for transplantation. This has increased the waiting time for many potential recipients and has led to the importing of corneas from overseas to meet the demand. In Scotland there are three identified eye donation pathways between Organ Tissue Donation Transplantation (OTDT) and Scottish National Blood Transfusion Service (SNBTS). This increases complexity around roles and responsibilities and how best to make improvements with limited resources and capacity.

Method: A proposal was put forward to increase eye donation at one of the busiest hospitals in Scotland. A snapshot audit indicated there is the potential to provide over 150 eye donors a year which would be a 200% increase from last year. The specialist nurse (SN) organ donation review the deaths in the hospital overnight and identify potential eye donors both those who have registered a decision to donate (expressed) or meet deemed criteria. The SN will source bloods from the lab, refer to the National Referral Centre, contact SNBTS to seek retriever availability before any approach to the family.

Results: The proposal was accepted and in collaboration with OTDT and SNBTS progressed with quality documents and information governance with a start date on 14 Nov 2022 This proposal does not require busy healthcare staff in acute settings to refer which has been increasing difficult during and after the pandemic. The number of cases associated with non-retrieval should be minimal, limited impact with On Call activity and provides more of the SN team with exposure to family approach conversations.

Discussion: The OTDT Strategy 2030 and Scotland Plan 2021-2026 strives to maximise eye donation potential which is the overarching aim of this proposal and can readily be adapted for consideration within UK and wider with international donation communities.



Categories: Tissue donation & transplantation (tissue donors, recipients & retrieval, e.g: corneas, skin, heart valves)

P176: Initiatives to increase ocular donation

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Abstract

Introduction: Ocular donation rates have been at an all-time low whilst we recover from the Covid-19 pandemic.

The Organ Donation (Deemed Consent) Act (2019) was enacted mid -pandemic and the embedding and understanding of the legislation is ongoing with the general public with whom we deal.

The team in the National Tissue Referral Centre (NRC) within NHS Blood and Transplant (NHSBT) has been recruited to throughout 2022 to pre-pandemic staffing levels.

Case presentation: Ocular donors can be considered from those who have died who do not have medical history of haematological malignancies or neurodegenerative conditions. The potential for donation is significant and requires exploration in every case.

Referrals are received into NHSBT NRC from hospitals, the community/general public, hospices and from organ donors who could also be considered for ocular donation. The timing of the referral is significant as donation would need to be undertaken within 24 hours of the death for the tissue to be viable for donation and subsequent transplantation.

The newly established team in the NRC are keen to embrace and explore all pathways for referral and ensure donation is explored where there are no medical contraindications.

Results/outcome: The NRC team have been involved in new initiatives to increase referral of potential donors, streamline pathways and explore donation potential. The team have taken on lead roles to enable representation on stakeholder groups to raise the profile of ocular donation across NHSBT and other agencies.
There is more potential to increase networking and collaboration with stakeholders.
The specialist nurses have been supported and trained in shift lead responsibilities.
Referral conversion rates to consent have improved.

Conclusion: Transparent discussions, a shared vision and trust within the newly established team has enabled us to explore donation potential and work with the team to utilise their ideas, enthusiasm, strengths, and expertise.

Categories: Tissue donation & transplantation (tissue donors, recipients & retrieval, e.g: corneas, skin, heart valves)