Abstracts of the 2025 CST Annual Scientific Meeting

The CST's annual scientific meeting provides a forum for the transplantation community to share ideas, leading practices, innovative science, and educational content in transplant care. The 2025 CST Annual Scientific Meeting was held at the Westin Bayshore, Vancouver, BC, October 6-10, 2025. With over 450 Canadian and International delegates attending, the 2025 CST ASM received outstanding educational programming, but also rare opportunities to connect with Transplantation professionals from all over the world.

ID#1

Caitlin Chew, BC Children's Hospital

Treatment of cytomegalovirus in pediatric solid organ transplant recipients: a retrospective cohort study

Background: Pediatric solid organ transplant recipients are at increased risk for developing cytomegalovirus (CMV) infection and disease due to increased prevalence of recipient CMV seronegativity (R-). There is a lack of evidence to guide clinical practice for pediatric solid organ transplant recipients who develop CMV infection or disease. The objective of this study is to evaluate the efficacy and safety of valganciclovir and ganciclovir for the treatment of CMV infection and disease in pediatric solid organ transplant recipients.

Methods: A retrospective cohort study was conducted. Pediatric solid organ transplant recipients who received CMV prophylaxis with valganciclovir and/or treatment of CMV infection or disease, in the first-year post-transplantation, with valganciclovir or ganciclovir from January 2014 to September 2023 were included.

Results: Sixty-three transplant recipients were included. Eighteen recipients (29%) developed at least one episode of CMV in the first-year post-transplantation and a total of 20 episodes of CMV were captured. There was no difference in CMV-free survival in the first-year post-transplantation between moderate or high risk CMV donor-recipient serology matches ($p = 0.097$). There was no difference in viral load (VL) initiation thresholds between CMV infection and disease ($p = 0.37$). The majority of CMV episodes (95%) were treated until CMV VL was 0 cp/mL. Eleven recipients (55%) experienced neutropenia, three of whom developed severe neutropenia requiring granulocyte colony-stimulating factor treatment.

Conclusions: All patients were effectively treated for CMV infection and/or disease in this cohort, though CMV VL thresholds for treatment initiation and discontinuation varied. The majority of patients developed neutropenia associated with valganciclovir exposure.

ID#3

Seychelle Yohanna, McMaster University

Consensus Conference to Define a High-Quality Living Kidney Donor Evaluation

Living donor kidney transplantation is the best treatment option for patients with kidney failure; however, the donor evaluation process has been described by donors as the worst part of donating. In collaboration with Canadian Blood Services, a consensus conference was held in September 2024 to define a high-quality living kidney donor (LKD) evaluation based on the perspectives of living kidney donors, clinicians, and administrators, and to select and define measures of a high-quality LKD evaluation that could be used across Canadian living donor programs for quality improvement. The conference brought together over 100 patients, nurses, nephrologists, surgeons, researchers, and representatives from provincial transplant bodies through a series of virtual working groups and a 1-day virtual consensus conference. A total of 35 recommendations reached consensus, including recommendations to improve the LKD evaluation process (including the option for a condensed donor evaluation) and recommended quality indicators (e.g., duration of the LKD evaluation). Last year at the CST Annual Meeting, we presented our objectives and methodology. This year, we will summarize the consensus conference and final recommendations, and propose a future work plan to implement the recommendations.

ID#4

Mimi Deng, University of Toronto

Evaluating the impact of extended warm ischemic time using ex vivo heart perfusion in juvenile porcine models of circulatory death

Background/Hypothesis: Ex vivo heart perfusion (EVHP) can rehabilitate and assess donor hearts procured after circulatory death (DCD) and inform whether the 30min functional warm ischemic time (WIT) threshold can be exceeded in the pediatric population where time to arrest is longer than in adults.

Methods: A flow-targeted pediatric EVHP protocol was applied to DCD hearts of juvenile Yorkshire pigs subjected to WIT of 30, 45 (n=6 each), and 60min (n=1 successful). After 2h reperfusion at 10ml/kg/min, hearts were loaded in working mode (WM) up to left atrial pressure of 10 mmHg for functional assessment by pressure-volume catheterization and epicardial echocardiography. Groups were compared using analysis of variance.

Results: Lactate and myocardial oxygen consumption were similar between WIT groups, with higher cardiac troponin I in 45WIT. During WM, the 30WIT had greater median cardiac index (2.26 vs 1.45 mL/min/m2, p = 0.01), with significant variability in 45WIT (IQR 0.96–2.29 mL/min/m2, Figure 1) . Left ventricular ejection fraction (LVEF) was reduced from baseline for all groups, with lower LVEF in the 45min group (31.8±4.4 vs 23.0±5.6 %, p = 0.02). Although maximum and minimum rate of change in isovolumetric pressure (dP/dT) both improved with reperfusion, higher WM minimum dP/dT (-2246±250 vs -1612±558, p = 0.001) demonstrated greater diastolic dysfunction in 45WIT (Figure 2). The percentage of heart weight gained as an estimate of myocardial edema was not significantly higher in the 45min group (18.9±15.0 vs 22.2±16.1 %, p = 0.35) but did correlate with WM cardiac index (rs = -0.62, p = 0.03, Figure 3). Metabolomics of plasma samples showed similar differential metabolic shifts and TUNEL (Terminal Uridine Deoxynucleotidyl Transferase-mediated nick end labeling) stain demonstrated equivalent myocardial apoptosis.

Conclusions: 45WIT hearts exhibit poorer cardiac function, primarily due to severe myocardial edema and associated diastolic dysfunction. However, 1/3 45WIT hearts achieved comparable cardiac function and present a borderline setting for further refinement of EVHP.

ID#6

Darren Yuen, St. Michael's Hospital

Kidney H-scan - a new way to non-invasively assess donor kidney fibrosis burden

Background: Renal fibrosis is a key determinant of transplant kidney function, yet current assessment methods, such as procurement biopsies, are invasive, prone to sampling bias, require renal pathology expertise, and have limited predictive value for post-transplant outcomes. We developed ultrasound-based image analysis software, called renal H-scan, to non-invasively estimate fibrotic burden using standard ultrasound imaging data.

Methods: We conducted a first-in-human study of renal H-scan in 61 transplant kidneys (28 deceased & 33 living donors). Kidneys were imaged using standard ultrasound probes by transplant surgeons (with minimal training required), at the biopsy site and also through the long axis of the kidney. Scanning time was ~5 mins per kidney, but since the imaging was done on the back table while the recipient was being prepared, cold ischemia time was not prolonged. H-scan software was applied to estimate fibrosis burden. Biopsy site and long axis H-scan-derived fibrosis estimates were compared with histologic assessments of biopsies and correlated with eGFR at 9–12 months post-transplant.

Results: Biopsy site renal H-scan fibrosis estimates correlated with biopsy-derived histologic fibrosis measures ($r > 0.8$, p whole kidney H-scan fibrosis estimate predicted post-transplant renal function ($r = -0.53$, p Conclusions:

Renal H-scan is a rapid, non-invasive, and operator-independent method to assess kidney fibrosis. As it associates with post-transplant allograft function, it may be useful for donor kidney evaluation and allocation, potentially improving transplant outcomes

ID#7

Mariam Bakshi, Canadian Institute of Health Information

User-Centered Design of a New Pan-Canadian Organ Donation and Transplantation Secure Reporting Tool

Background: As part of Health Canada's 2018 Organ Donation and Transplantation (ODT) Collaborative, the Canadian Institute for Health Information (CIHI) was tasked with developing a pan-Canadian secure reporting tool for ODT. Extensive user consultation was conducted to address user needs and current data challenges to ensure the tool supports performance improvement in Canada.

Methods: Between August 2024 to December 2025 CIHI conducted the following activities:

- Interviews with 16 participants from British Columbia, Alberta, Manitoba, Ontario and Nova Scotia to capture user needs
- An in-person structured workshop with organ donation organization (ODO) managers from across Canada on use cases
- Participants were from potential target users including transplant centres, hospitals, ODOs, provincial/territorial ministries of health or regional health authorities.
- A thematic analysis was conducted on the information to capture themes on the user needs. Survey questions that involved ranking of items were assessed.

Results: The thematic analysis of interview data identified seven key user needs: improved timeliness of data, benchmarking, viewing data by subgroups, more granular data, reduce inefficient and manual work, out-of-province data and trending of data (Figure 1). Workshop participants then developed and ranked use cases by value and priority (Figure 2), which revealed provincial variation in the ranking. For example, ODOs from larger provinces (e.g., BC, AB, QC, and ON) ranked benchmarking, trending, and more granular data as the most important. ODOs from smaller provinces (e.g., NL, NB, and PE) ranked viewing data by subgroups as the most important. ODOs from Nova Scotia, Saskatchewan and Manitoba ranked trending of data as the most important.

Conclusion: These analyses will ensure that the secure reporting tool scope and priorities best aligns to user needs to increase the value of the tool and support ODT performance reporting for improvement in Canada's ODT system.

ID#8

Rahnuma Sara, University of British Columbia - Faculty of Medicine

Identifying Barriers to Accessing Liver Transplantation in British Columbia - a Retrospective Review

Background: The purpose of our study is to identify socioeconomic and geographical barriers to timely access to liver transplant evaluation and listing in British Columbia (BC). Our secondary objective is to determine whether certain ethnic or socioeconomic groups are at higher risk for post-transplant complications and mortality.

Methods: Retrospective chart review of all adult patients listed for and receiving liver transplants in BC, Canada from 2010-2023. Multivariable regression analysis (using negative binomial regression) was done to determine the effect of gender, ethnicity, primary diagnosis, distance from transplant centre and socioeconomic status (estimated by VANDEX score) on time from referral to first clinic visit, time from referral to transplant listing, and post-operative complications.

Results: In terms of ethnicity, 72% of included patients were Caucasian, 16% were Asian/Asian Indian, 6.5% were Indigenous and 4.1% were Black and other ethnicities. A higher VANDEX score, which indicates a lower average socioeconomic ranking, is significantly associated with longer time from referral to first clinic visit (p Patients with Autoimmune Chronic Active Hepatitis, Hepatitis Type B and C, Cystic disorders, Polycystic Liver Disease, Primary Biliary Cirrhosis, and Sclerosing Cholangitis all had significantly longer times from referral date to listing date (p Ethnicity and primary diagnosis of patients do have significant impact on time from referral to transplant listing and post-operative complications in BC, Canada. Surprisingly, no association between distance to transplant centre and time to transplant listing was seen.

ID#9

Caroline Carruthers, Multiorgan Transplant Program, University Health Network

The relationship between physical function and social participation among liver transplant recipients (LTRs)

Liver transplantation (LT) is life-saving for patients with liver failure. Physical function (PF) improves after LT, contributing to improved quality of life (QoL). However, some liver transplant recipients (LTRs) still experience impaired PF. Social participation (SP), which refers to engagement in activities with other people, is a highly patient valued aspect of QoL that may be limited post-transplant. The relationship between PF and SP has yet to be explored in LTRs. Our objective was to explore the association between PF and SP among LTRs.

A secondary analysis of a cross-sectional convenience sample of adult LTRs. PF and SP were assessed using the Patient-Reported Outcome Measurement System (PROMIS) item banks. We defined moderate/severe PF impairment as a T-score The mean (SD) age of the sample (n=208) was 57 (15) years, with 73% male. The mean (SD) PF and SP scores were 46 (9) and 50 (9), respectively. A strong positive correlation existed between PF and SP (r = 0.72, P LTRs with impaired PF were more limited in their SP than those with normal PF, which is consistent with previous literature in other clinical populations. Future studies should assess whether rehabilitation for LTRs improves SP.

ID#10

Qinfeng Zhou, Zhangjiagang TCM Hospital Affiliated to Nanjing University of Chinese Medicine

Immune Modulation by Maimendong Decoction via DC-T Cell Crosstalk: Mechanistic Insights with Potential Transplant Applications

Background: Precision immunomodulation remains a central challenge in both cancer therapy and transplantation medicine. The increased tumor susceptibility resulting from long-term use of immunosuppressive agents post-transplantation, as well as the imbalance between immune rejection and tolerance at the donor-recipient interface, are closely linked to dysregulation of the dendritic cell (DC)-T cell interactive network. DC-T cell interactions not only drive antitumor immunity but also orchestrate the delicate equilibrium between graft rejection and tolerance, underscoring the dual significance of these mechanisms across different therapeutic contexts.

Methods: Lewis lung carcinoma models were employed to assess systemic immune effects, integrating multiple approaches combining network pharmacology and molecular docking to identify the SIRT1/acetyl-p65 signaling axis targeted by Maimendong Decoction (MMDD), while a DC-$CD8^+$ T cell co-culture system was developed to mimic lymphocyte cross-talk, with flow cytometry utilized to quantify DC maturation markers (CD40/80/83/MHC-II) and T cell IFN-γ production for mechanistic validation.

Results: MMDD demonstrated dose-responsive immune modulation by enhancing DC maturation markers and increasing tumor-infiltrating $CD8^+$ T cells, with mechanistic specificity confirmed through SIRT1 overexpression abolishing these effects, while acetylated p65 upregulated IL-12 and IFN-γ—cytokines pivotal in alloimmunity—and dynamic balance was observed as MMDD-treated DCs increased T cell migration without inducing hyperactivation, with methodological transferability evidenced by the applicability of the co-culture model to donor-recipient immune interaction studies.

Conclusion:This study reveals a novel mechanism by which MMDD modulates SIRT1-mediated DC-T cell interactions in a tumor model, providing conceptual insights for the transplantation field. By coordinating the equilibrium between immune surveillance and tolerance, it offers a fresh perspective for exploring balanced strategies that maintain graft function while reducing tumor risk.

ID#11

Francisco Reyna-Sepulveda, MOTP Atlantic Canada

A Continuous Flow Cooling Sleeve (Cool Sleeve) for Kidney Transplantation to Minimize Warm Ischemia Time and Its Consequences – A Pilot Study in a Porcine Model

Background: Donor shortages and the use of high-risk grafts for kidney transplantation require preservation strategies to mitigate ischemia-reperfusion injury. Prolonged warm ischemia increases graft failure risk. Hypothermia during organ preservation reduces cellular metabolism and necrosis. This study presents a novel continuous flow cooling sleeve for kidney transplantation, enabling real-time surface temperature monitoring to minimize warm ischemia, preserve histology, and assess usability in an in vivo porcine model.

Methods: Each pig's kidneys were randomly assigned to one of two groups, simulating a donation after circulatory death. The experimental group corresponds to autotransplant surgery with the kidney cool sleeve. The control group corresponds to autotransplant surgery without it. Grafts were monitored for surface temperature changes and anastomosis time from the start to the end of the anastomosis. Blinded histopathological analysis was conducted to analyze the ischemia-reperfusion injury.

Results: After 45 minutes of warm ischemia, the cooling sleeve maintained a final temperature of 6.44 °C versus 31.90 °C in the control. Surface temperature increased by 1.25 °C with the sleeve, compared to 26.37 °C in the control. Anastomosis time was 29 minutes in the cooling group versus 36.5 minutes in the control group. Histopathology revealed minimal renal structural disruption with the sleeve, while controls showed significant tubular necrosis, epithelial loss, and hemorrhagic areas. According to Goujon's lesion severity grade, the cooling sleeve was rated 2 in comparison to 5 in the control group.

Conclusion: The novel kidney cooling sleeve effectively maintained hypothermic conditions during transplantation and preserved renal structural integrity. Additionally, it didn't increase the anastomosis time. The device shows promise as a practical solution to improve graft outcomes, especially in minimally invasive techniques.

ID#12

Victor Ferreira, CHU Montréal

Planning Intermittent CalciNeurin Inhibitor Controls - The piCNIc Retrospective Cohort Study

Background: Calcineurin inhibitors (CNIs) are essential in immunosuppressive therapy after solid organ transplantation (SOT). Their narrow therapeutic index and inter- and intra-individual variability require therapeutic drug monitoring (TDM), but optimal monitoring frequency remains unclear. This retrospective observational cohort study evaluated the impact of a pharmacist-implemented protocol to standardize and reduce CNI monitoring frequency on the number of CNI measurements, the achievement of CNI TDM target, and resource utilization.

Methods: Data was collected retrospectively from adult liver, kidney, and lung transplant patients hospitalized between February 1 and July 31 of 2023 and 2024 at the Centre hospitalier de l'Université de Montréal (CHUM). CNI measurements per patient per week, prescription quality and patient safety were compared before and after the protocol's implementation. Results: 520 hospitalizations were included (254 pre- and 266 post-intervention hospitalizations). Primary analysis showed an adjusted mean reduction of 0.9950 CNI measurements per patient per week (95% CI, 0.6398 to 1.3502; $p < 0.0001$), corresponding to a 14.0% decrease. Secondary analysis revealed no significant differences in achieving CNI TDM target or dose adjustments between groups. CNI-related adverse effects were similar in both groups.

Results varied by type of organ transplanted and factors associated with reduced CNI measurements were identified.

Conclusion: The implementation of a new protocol by pharmacists to standardize and reduce the frequency of CNI monitoring significantly decreased the number of CNI measurements per hospitalized patient, without compromising the achievement of CNI TDM target or patient safety. This approach highlights a valuable strategy for hospitals to manage costs effectively amidst increasing financial pressures without affecting patient outcomes.

ID#13

Hyunwoong Harry Chae, UBC Medical Student

Chlorhexidine-induced anaphylaxis in the setting of renal transplantation and urologic surgeries: a case series

Background: Chlorhexidine is an antiseptic widely used in perioperative and acute care settings. Chlorhexidine-induced anaphylaxis is an underrecognized but potentially life-threatening condition. Patients undergoing kidney transplantation (KT) or urological procedures may be at higher risk due to increased exposure from chronic hemodialysis or repeated sterile urinary catheterizations.

Methods: Using data from formal reports made to our centre's perioperative anaphylaxis clinic, we retrospectively reviewed all patients who experienced an anaphylactic reaction to chlorhexidine in perioperative or acute care settings and summarized characteristics of cases related to KT and urological surgeries.

Results: From 2017-2023, there were 12 cases (10 patients) of anaphylactic reactions to chlorhexidine in all perioperative and acute care settings at our centre. Nine (9/12; 75%) cases involved chlorhexidine-coated central venous catheters (CVC). Five (5/12; 41.7%) cases occurred in patients who were previously or currently on dialysis. Four cases (4/12; 33.3%) occurred during KT surgery (in 3 patients, including one with two separate KT attempts), and one case (1/12; 8.3%) occurred during a laparoscopic nephroureterectomy. Of these 5 KT/urological surgeries involving chlorhexidine anaphylaxis, 2 KTs and 1 nephroureterectomy were aborted during surgery, 1 KT was cancelled, and 1 KT was successfully completed. Two of the three aborted or cancelled KT surgeries ultimately received successful KT at a later date. Three cases (60%) had a grade 3 anaphylactic reaction (life-threatening hypotension and/or severe bronchospasm), and two (40%) had a grade 4 reaction (requiring cardiopulmonary resuscitation).

Conclusion: The incidence of chlorhexidine anaphylaxis at our institution was approximately 1/15,000 - substantially higher than the 1/100,000 incidence rate in general populations reported in the literature. With 41.7% of chlorhexidine anaphylaxis cases occurring in patients undergoing KT or urological surgeries, this population may be at increased risk. Implementation of chlorhexidine-free protocols in operating rooms for these surgeries should be considered to mitigate risk for anaphylaxis.

ID#14

Yasmeen Mansoor, University of Toronto, Hospital for Sick Children

Prevalence of household food insecurity and financial challenges amongst caregivers of paediatric chronic kidney disease, dialysis, and kidney transplant patients

Background: Families of paediatric chronic kidney disease (CKD), dialysis, and kidney transplant patients may face an increased financial burden due to the care needs of their children. There is little existing data about the prevalence of financial challenges and caregiver-perceived impact of these challenges in Canada. The objective of this study was to measure self-reported household food insecurity, poverty, and financial stress among Canadian caregivers of children with CKD, kidney failure requiring dialysis, and kidney transplant.

Methods: We conducted a cross-sectional study using an online survey with caregivers of children with CKD, kidney failure requiring dialysis, or kidney transplant in the Greater Toronto Area in Ontario, Canada from September 2024 to June 2025. Household food insecurity was measured with the two-item Hunger Vital Sign tool. Self-reported poverty was assessed using the screening question from the Canadian Community Health Survey, 'Does your household ever have trouble making ends meet at the end of the month?' Caregiver-reported financial stress was measured with the Financial Impact Scale, which asks respondents to rate three statements about financial strain on the household due to their child's healthcare needs using a Likert scale.

Results: There were 84 caregiver respondents to the survey (46 kidney transplant, 7 dialysis, and 31 CKD) (Table 1). The prevalence of food insecurity was 40%. Thirty percent of caregivers reported having difficulty making ends meet at the end of the month. Caregivers reported high levels of financial stress related to their child's medical needs (Table 2).

Conclusion: We identified high self-reported rates of food insecurity, poverty, and financial distress among caregivers of children with CKD, dialysis, and kidney transplant in a Canadian setting. Given the impact of food insecurity and household financial challenges on long-term child health outcomes, interventions in these areas may be needed to reduce health disparities in pediatric kidney disease.

ID#15

Marie-Chantal Fortin, Centre hospitalier de l'Université de Montréal

Canadian HLA experts' perspectives on precision medicine and molecular matching in kidney transplantation

Background: Kidney transplantation is the best treatment for chronic kidney failure, but antibody-mediated rejection (AMR) is a major cause of graft loss. Molecular-based HLA matching aims to reduce the risk of donor-specific antibody formation and thereby lowers the risk of AMR. However, integrating molecular matching into organ allocation raises ethical concerns. This study aims to gather perspectives of HLA professionals on molecular matching in kidney transplantation.

Methods: Seven HLA experts across Canada participated in semi-structured interviews between January and June 2024. The interviews were digitally recorded, transcribed and analyzed using a qualitative descriptive approach.

Results: Participants reported positive feelings about the current allocation system but highlighted that HLA matching could be improved. They differed on whether kidney allocation should prioritize medical utility or fairness, but all agreed that decisions should involve a multidisciplinary team of physicians and patient representatives. While acknowledging the potential benefits of precision medicine in improving transplant outcomes, experts emphasized that its implementation confronts scientific uncertainties and practical challenges, identifying logistical, financial, technological, and occupational issues such as staff shortages. They also expressed concerns regarding decreased access to kidney transplantation for marginalized groups such as ethnic minority and homozygous patients. Regarding the kidney-paired donation program, experts supported the use of precision medicine as an optimizing tool to complement the current algorithm. Participants recommended that implementation of precision medicine in Canadian transplant programs involve nationwide collaboration; the determination of maximum wait times and appropriate selection criteria; additional research; adequate staffing and funding of HLA laboratories; measures to mitigate access barriers; and education of transplant professionals and patients.

Conclusion: This study highlights the complexities of integrating molecular matching into organ allocation, raising concerns about equity, feasibility, and implementation. To ensure ethical and equitable implementation, future efforts must address access disparities through targeted mitigation strategies.

ID#16

Andrew Purssell, University of Ottawa

Chagas meningoencephalitis and myocarditis from reactivation of occult chronic Trypanosoma cruzi infection after cardiac transplantation

Case Summary: A 51-year-old female from El Salvador underwent heart transplantation for presumed peripartum cardiomyopathy. She received anti-thymocyte globulin induction followed by tacrolimus, mycophenolate mofetil, and prednisone maintenance.

Two months later, she presented with a 1-week history of confusion and progressive weakness, speech disturbance, right-sided facial droop, and hemiplegia, along with upgoing Babinski sign. Neuroimaging revealed subacute infarction with surrounding edema of the left basal ganglia, internal capsule, and thalamus suggesting early cerebritis/encephalitis. This was accompanied with new ventricular bigeminy with mild troponin elevation but normal cardiac function by echocardiography.

Results: Extensive review of referred-out testing revealed a prior positive IgG-ELISA serology for Trypanosoma cruzi. Chagas reactivation with CNS and cardiac involvement was suspected prompting high-dose benznidazole. Blood and CSF smears were negative for trypomastigotes. Repeat T. cruzi serologies submitted to two reference laboratories were highly positive by IgG-ELISA and immunoblot with all six antigen targets detected. Allograft biopsy was negative for both T. cruzi PCR and cellular rejection. T. cruzi blood and CSF PCR were both positive. Explanted heart histopathology showed features of lymphocytic myocarditis without presence of amastigotes, but T. cruzi PCR was positive. Altogether, this substantiated the diagnosis of Chagas meningoencephalitis and graft myocarditis. With treatment, ventricular arrhythmia resolved and troponins normalized. Neurological deficits persisted but did not progress further.

Conclusion: The optimal management of Chagas disease in SOT remains unclear. While current practices include post-transplant serologic or PCR monitoring paired with pre-emptive therapy, prophylaxis may be considered in high-risk SOT recipients. In cases of suspected Chagas meningoencephalitis, molecular testing may be considered in blood and CSF. High-dose benznidazole may benefit those with refractory disease or CNS involvement.

ID#17

Louis Vanpeperstraete, Université de Montréal, CRCHUM, CDTRP

The role of complement in the microvascular rarefaction associated with kidney ischemia-reperfusion and the impact of age

Background: Ischemia-reperfusion (IR), an integral component of kidney transplantation, is a common cause of acute kidney injury (AKI). We have demonstrated that caspase-3-mediated apoptosis of peritubular capillaries is an important predictor of transition from AKI to chronic kidney disease (CKD). Activation of the complement system within the renal microvasculature has been associated with microvascular rarefaction and progression toward CKD. Kidney from older donors exhibit lower microvascular density than younger donors, increasing the risk of progression toward CKD. However, the dynamics of complement activation in peritubular capillaries during the transition from AKI to CKD in older subjects remain to be investigated.

Hypothesis: Microvascular rarefaction induced by aging, IR, or both is dependent on the activation of the complement system.

Experimental approach: Young (8-12weeks) and old (1year) mice deficient in complement protein C3 (C3KO) or wild-type mice were studied at baseline and 21 days after renal artery clamping and contralateral nephrectomy. Loss of renal function was assessed by measuring blood urea nitrogen levels. Microvascular rarefaction, renal fibrosis, complement deposition were quantified using respectively immunohistochemistry for CD34, smooth muscle actin, and C4d.

Results: At baseline, old wild-type mice showed increased PTC rarefaction, renal fibrosis and C4d deposition compared with young wild-type mice. Also, aged C3KO mice showed decreased microvascular rarefaction and reduced fibrosis, but no change in C4d deposition nor renal function compared with aged wild-type mice. Twenty-one days post-IR, aged wild-type mice showed increased microvascular rarefaction and enhanced fibrosis compared to young wild-type mice. Old C3KO mice showed less PTC rarefaction and reduced fibrosis 21 days post-IR compared to aged wild-type mice exposed to IR.

Conclusion: Complement C3 deficiency prevents age-associated and IR-induced microvascular rarefaction and fibrosis. These results highlight the potential use of complement blockade to preserve the renal microvasculature and long-term renal function post-transplantation, particularly in kidneys from older donors.

ID#18

Patricia Gongal, Canadian Donation and Transplantation Research Program, University of Alberta

Implementation of a National Integrated Knowledge Translation Strategy for Transplant Recipients

Background. The COVID-19 pandemic has deeply affected transplant recipients. Research gaps with this population remain, particularly regarding national studies that include their voices. For the Canadian Donation and Transplantation Research Program (CDTRP), patient-oriented research and knowledge mobilization are key priorities. To develop a research agenda relevant to transplant patients and families, we used an integrated knowledge translation (iKT) approach, leveraging CDTRP infrastructure and events to engage patients, families, as well as researchers and partner organizations.

Methods. In 2022, we recognized the need for a national research strategy to address ongoing COVID-19 issues, which involve multiple disciplines and sectors. The CDTRP leadership team consulted clinicians, researchers, and policy advisors to begin setting research priorities for COVID-19 therapies in transplant patients, building on previous vaccination studies. Then, through an iKT approach, diverse stakeholders – including patients, family members/caregivers, healthcare professionals, and researchers – were regularly engaged to develop the TREAT-COVID project. A series of national forums from 2022-2025 informed the project's design and ongoing implementation, ensuring it meets evolving stakeholder needs as the pandemic evolves.

Results. Forum 1 generated a draft research agenda by identifying research questions focused on antiviral and antibody use, rapid awareness of new therapies, and psychosocial needs. Forum 2 refined the research agenda to emphasize mental health and supports for patients and families. Forum 3 highlighted distinctions in the priorities of transplant recipients and their families, namely clinical treatments and mental wellness, respectively. Forum 4 addressed study participation barriers and communication strategies. Forum 5 focused on communication around COVID-19 and diverse perceptions of the costs and benefits of prevention and treatment measures. These forums collectively shape the TREAT-COVID research project.

Conclusions. Through national forums, our approach to research design and execution prioritizes inclusive participation and patient/family perspectives. This approach fostered collaboration and aligned research with stakeholder needs.

ID#19

Gabriel Siebiger, University of Toronto

Mitochondrial transplantation for the recovery of donor lungs subjected to prolonged warm ischemia: a novel strategy to expand the donor pool for transplantation

Background: Lung utilization rates from uncontrolled donation after circulatory death (uDCD) remain exceedingly low due to concerns regarding severe injuries resulting from prolonged warm ischemia (WI). Mitochondrial transplantation (MT) is an innovative strategy that involves the direct transfer of viable mitochondria into damaged cells, heralding a new era of regenerative medicine. This study evaluates the potential of MT therapy to recover WI-injured donor lungs in a porcine ex vivo lung perfusion (EVLP) model and explores potential mechanistic underpinnings.

Methods: During Efficacy phase (Phase 1), donor lungs (n=5/group) subjected to circulatory death, 3h of WI, and 12h of static preservation at 10ºC were randomized to receive intravascular MT (MT group) or vehicle solution (control) at 3 time points: at flushing during harvest, upon initiation of EVLP, and at 1h of EVLP (Fig. 1A/B). Lungs were assessed on EVLP for 6h, and perfusate and tissue biopsies were collected. High resolution respirometry (HRR) was performed on post-EVLP lung tissue samples to assess mitochondrial oxygen consumption rates. In the Mechanistic phase (Phase 2), mitochondrial aliquots were inactivated prior to administration (n=4, MTi group), aiming at informing whether mitochondrial viability is required for benefits on EVLP.

Results: MT in WI-injured lungs led to superior performance on EVLP (Fig. 1C), including higher delta PO2 (P=0.04), higher dynamic compliance (P=0.01), lower glucose consumption (P=0.09), lower total perfusate loss (P

Conclusion: MT effectively promoted functional recovery of donor lungs subjected to WI, achieving similar parameters to those of organs normally accepted for transplant. Importantly, most treatment effects are specific to metabolically viable mitochondria.

ID#20

Francis Migneault, CRCHUM, Université de Montréal, CDTRP

MiR-423-5p predicts microvascular rarefaction and regulates microvascular homeostatis after renal ischemia-reperfusion injury

Background: Ischemia-reperfusion injury (IRI) is a major cause of acute kidney injury (AKI) and delayed graft function (DGF) in renal transplant recipients. Microvascular rarefaction is a key driver of progression to chronic kidney disease (CKD), yet reliable biomarkers and therapeutic strategies to preserve the renal microvasculature remain limited. We identified miR-423-5p as a microRNA highly enriched in endothelial cell (EC)-derived extracellular vesicles. This study investigates the functional role of miR-423-5p as a potential predictor and modulator of microvascular injury.

Methods: Murine IRI was induced by unilateral renal artery clamping with contralateral nephrectomy. Mice received subcapsular injections of a miR-423-5p mimic or control and were sacrificed at 2 or 21 days post-injury. Histology and immunohistochemistry assessed caspase-3 activation, rouleaux formation, microvascular rarefaction, and fibrosis. In a retrospective cohort of 51 renal transplant recipients with DGF, serum miR-423-5p levels at one month post-transplant were correlated with peritubular capillary (PTC) density, fibrosis, and graft function. In vitro, ECs were transfected with miR-423-5p or control and assessed for apoptosis, wound healing, and angiogenesis. Proteomic analysis identified miR-423-5p–regulated pathways.

Results: In transplant patients, higher serum miR-423-5p levels correlated positively with PTC density and negatively with fibrosis, both predictive of improved renal function at one and three years. In mice, miR-423-5p levels at three weeks post-IRI also correlated with higher PTC density, better renal function, and lower fibrosis. Therapeutically, miR-423-5p delivery reduced PTC caspase-3 activation, rouleaux formation, capillary rarefaction, and fibrosis. In vitro, miR-423-5p decreased EC apoptosis, enhanced migration and tube formation, and upregulated VEGFA-related pro-survival pathways.

Conclusion: MiR-423-5p is a promising biomarker and therapeutic target for preserving renal microvascular integrity after IRI. Its modulation may enable precision strategies to prevent fibrosis and improve long-term graft outcomes in kidney transplant recipients.

ID#21

Ellina Lytvyak, Division of Preventive Medicine, University of Alberta

Concomitant Sarcopenia and Myosteatosis in Cirrhosis patients is associated with longer recovery and mortality after liver transplant

Background: Sarcopenia (low muscle mass) and myosteatosis (pathological fat accumulation in muscle) predict worse outcomes in patients with cirrhosis, but their impact post-liver transplantation (LT) is unknown. This study evaluated the impact of these skeletal muscle abnormalities on post-LT recovery and long-term survival.

Method: This cohort study evaluated 302 cirrhotic patients who underwent LT and had preoperative computed tomography (CT) imaging performed. Skeletal muscle index (SMI) and muscle radiodensity were assessed using Slice-O-Matic. Sarcopenia was defined as SMI

Results: Sarcopenia and myosteatosis affected 51.3% (n=155) and 41.1% (n=124) of patients, respectively, with 26.2% (n=79) having both. Patients with both abnormalities had longer ICU stays (4 vs. 3 days; p=0.082), extended hospital stays (28 vs. 20 days; p=0.017), and worse 5-year survival (56.9% vs. 83.0%; log-rank p=0.005). Concomitant sarcopenia and myosteatosis increased post-LT mortality risk (HR 1.86, p=0.006), particularly in patients over 60 (HR 2.61, p=0.038). The association persisted after adjusting for age, sex, and MELD score (HR 4.82, p=0.037).

Conclusion: Concurrent sarcopenia and myosteatosis are associated with prolonged recovery and worse post-LT survival. These findings support the integration of objective muscle assessments into pre-transplant risk stratification and could be implemented as a futility indication for LT.

ID#22

Ellina Lytvyak, Division of Preventive Medicine, University of Alberta

Liver stiffness measurement by vibration-controlled transient elastography predicts adverse clinical outcomes in autoimmune hepatitis: results from a large multicenter longitudinal study

Background: Non-invasive techniques may have a potential in predicting outcomes and evaluating the effectiveness of therapies in people living with autoimmune hepatitis (AIH), especially for checking treatment response and timely referral for liver transplantation. We aimed to investigate the usefulness of liver stiffness measurement (LSM) by vibration-controlled transient elastography (VCTE) in predicting adverse clinical outcomes in AIH.

Methods: Our study design is retrospective and prospective with 853 people living with AIH included from the CaNAL (Canadian Network for Autoimmune Liver Disease) registry in which 13 academic and medical centres from across Canada participate. We included patients with a simplified international score of at least 6 or more and who had at least one reliable LSM via VCTE performed before the occurrence of any adverse event (development of decompensation, hepatocellular carcinoma (HCC), liver transplantation or death). Our statistical analysis includes descriptive, univariate and multivariate cox regression analysis along with cumulative probabilities of event-free survival calculated using Kaplan-Meier and Log-Rank test.

Results: Our analysis demonstrated LSM by VCTE is a strong and independent predictor of adverse liver outcomes in people with AIH even after adjusting for other well established risk factors and biochemical treatment response (Fig 1). VCTE may potentially be used to establish risk stratification to identify individuals with AIH who may benefit from closer screening for liver decompensation, HCC and timely liver transplantation referral (Fig 2).

Conclusion: LSM by VCTE is a strong independent predictor for adverse liver outcomes when considering risk factors and biochemical treatment response. It helps to establish risk stratification to identify people with AIH who may benefit from closer screening for liver decompensation, HCC and timely LT referral.

ID#23

Ellina Lytvyak, Division of Preventive Medicine, University of Alberta

PSC-specific prognostic scores associated with graft loss and overall mortality in recurrent PSC after liver transplantation

Background: Primary sclerosing cholangitis (PSC) is a progressive liver disease with no treatment apart from liver transplantation (LT). After LT, patients can develop recurrent PSC (rPSC). The United-Kingdom (UK-PSC) and Amsterdam-Oxford (AOPSC) scores are used as prognostic models for PSC outcomes. We aimed to assess these scores as predictive tools for graft loss and overall mortality in rPSC.

Methods: We evaluated 67 people who developed rPSC. Using Cox regression models, we quantified associations between UK-PSC and AOPSC scores and graft loss and overall mortality. Cut-offs were established using receiver operator characteristic analysis and the highest Youden index.

Results: Both UK-PSC and AOPSC scores were independently associated with graft loss (hazard ratio [HR] 2.43; p p=0.009). The probability of overall graft survival was 72% at 5 years and 47% at 10 years (Figure 1a). Individuals with UK-PSC ≥-4.2 (6.1±0.8 vs. 14.7±1.0 years; p=0.001), AOPSC score ≥2.4 with age at recurrence (5.4±1.3 vs. 12.0±1.1 years; p

Conclusion: UK-PSC score at rPSC predicts both graft loss and overall mortality, while AOPSC scores using either age at rPSC or at diagnosis, along with severe cholestasis, predict graft loss in people with rPSC. These easy-to-administer tools can be utilized to identify high-risk rPSC patients and guide decisions about monitoring/interventions.

ID#24

Ellina Lytvyak, Division of Preventive Medicine, University of Alberta

Sex, ethnicity and clinical outcomes in autoimmune hepatitis: results from a large multicenter longitudinal cohort

Background: We aimed to identify and quantify the magnitude of associations between sex, ethnicity, treatment response and clinical outcomes in a large multicentric cohort of people with autoimmune hepatitis (AIH) across Canada.

Method: A retro- and prospective cohort study was conducted using data from the Canadian Network for Autoimmune Liver Diseases (CaNAL). Adverse events were defined as the development of decompensation, hepatocellular carcinoma (HCC), liver transplantation (LT), or death. Treatment response was defined as normalization of alanine transaminase 6 months post-treatment initiation.

Results: Data of 1198 people with AIH with 13443 person-years follow-up were analyzed. No significant difference was observed between sexes in the frequency of cirrhosis, decompensation and mortality. However, males had a higher frequency of HCC and LT as well as poorer transplant-free survival. Males have substantially lower biochemical treatment response than females.

Compared to other ethnicities, Indigenous Canadians had the highest frequency of adverse events (44.1% vs. 27.0%; p=0.027) that was mainly driven by twice the frequencies of development of decompensation, LT, mortality and poorer transplant-free survival. They also had a substantially shorter event-free survival time (4.3 [IQR 1.5–9.5] vs. 8.2 [IQR 3.8–14.2] years; p In a time-dependent Cox regression, Indigenous people have a significantly higher risk of developing adverse outcomes (HR 2.70, 95%CI 1.60–4.54; p Conclusion:

Males living with AIH have a higher frequency of HCC and LT and have lower rates of treatment response compared to females. Indigenous Canadians living with AIH have a substantially higher risk of developing adverse liver outcomes compared to other ethnic groups.

ID#25

Nicholas Avdimiretz, BC Children's Hospital, University of British Columbia

Disparities in lung transplantation in children: Community-level socioeconomic factors impact illness severity and post-transplant outcome

Background: No studies to date examine aggregate socioeconomic risk factors on outcomes in pediatric lung transplant (LTX). Equity in health outcomes for these recipients remains understudied.

Methods: SRTR / UNOS data was queried for LTX recipients community socioeconomic distress, and was linked to LTX data via zip code. Outcomes were analyzed using univariate and multivariate analyses.

Results: 1,319 recipients with zip code data were identified, 17% of whom were from distressed areas. 48% of Black children were from distressed or at-risk communities, with the distribution of ethnicities being different based on DCI ($p = 0.014$). Those from distressed communities were far more likely to have public insurance versus private (p

Conclusion: Nearly 50% of Black children listed were from distressed or at-risk communities. Recipients from distressed areas were more likely to require ventilator support at listing, suggesting more severe lung disease in recipients from these areas or a bias towards ventilator use. Community distress was associated with shorter time to graft failure, indicating poorer long-term outcomes for those from distressed communities. These findings should be disseminated to stakeholders to improve access to care for children from disadvantaged communities.

ID#26

Kendra-Lee Dupuis, Brock University

An integrative review exploring organ donation after death by circiulatory criteria in Canada

Background: Donation after death by circulatory criteria (DCC) has increased in practice in Canada to try and meet the need for life-saving organs, yet ongoing discrepancies between the supply and demand exist. It is essential then, to consider how Canada can continue to advance this practice to meet these needs. To do so, we should establish how DCC programs have evolved and identify future opportunities. The purpose of this review was to describe the evolution of and experience with DCC in Canada, along with the perspectives of Canadians regarding this practice.

Methods: A search of the literature was performed on June 1st, 2024, through electronic databases, a grey search of Google Scholar and by reviewing references of included documents. Articles located through these methods were imported into a reference software, where they underwent data extraction, analysis using descriptive statistics and inductive qualitative approaches, and quality appraisal.

Results: A total of 50 articles met inclusion criteria and were incorporated in the review. The three primary categories that emerged from the data were 1) Evolution of DCC organ donation guidelines 2) Experiences with DCC program development and delivery and 3) Perspectives and understanding of DCC. Consensus meetings and discussions have led the way for practice and guideline development. However, significant variations exist regarding this practice across Canada, and with the education and comfortability of Canadians.

Conclusion: Despite the great strides that have been made for DCC practice in Canada over the past 20 years, there is a need to consider the development of additional guidelines and to standardize programs to enhance care delivery and continue saving lives. The use of meetings with healthcare experts, as well as patient-family partners may be used to support this and furthur advancements.

ID#28

Michael Manno, Canadian Institute for Health Information

Thoracic transplantation in Canada: volumes and patient outcomes, 1988-2023

Background: Thoracic transplantation in Canada has seen tremendous advances in the last 40 years. Improvements in donor matching, surgical techniques, and organ preservation have led to more transplants and improved patient outcomes. To assess the impact of these changes, we examine volumes and outcomes of patients undergoing thoracic transplantation.

Methods: Adult patients who received a thoracic transplant (heart, lung, heart-lung) in Canada (excluding Quebec) from 1988 to 2023 were identified in the Canadian Organ Replacement Register. Volumes for each organ were examined over time to identify trends. Patient survival was compared between patients by transplant type, age, sex, and era. Unadjusted patient survival rates were calculated using the Kaplan–Meier method. Adjusted hazard rates were calculated using Cox regression.

Results: Overall, the number of thoracic transplants performed per year in Canada increased by over 350% from 1988 to 2023, with bilateral lung procedures increasing from < 1 0 per year prior to 1990 to over 300 in 2023 (Figure 1). Heart transplants remained constant over time (~100 procedures/year). Single-lung, and heart-lung combinations were less common (~10% of procedures). Patient survival at 10 years was highest for heart transplant recipients (46.5%) and lowest for single-lung recipients (30.9%) (Figure 2). Patient survival declined with age at transplant but improved by era. Patients transplanted post-2010 had higher 10-year survival (54.9%) than patients transplanted pre-2000 (52.0%). The difference by era for 10-year survival was largest for heart transplant recipients, namely, 72.4% for transplants performed after 2010 compared to 57.6% for transplants prior to 2000 (Table 1).

Conclusion: Thoracic transplant procedures in adults have increased substantially over time, with bilateral lung transplants being the main driver of the increase. Improved patient survival has also been observed, and may be the result of several factors, including technological advances, improvements in integrated post-transplant care and advances in immunosuppressive medication.

ID#29

Hyunwoong Harry Chae, UBC Medical Student

Native nephrectomy through a massive flank hernia in a renal transplant patient: a case report.

Background: Transplant patients may be at higher risk of developing flank hernias due to delayed wound healing associated with immunosuppression. Repair can be challenging, and subsequent surgeries may be complicated due to weakened tissue integrity and limited surgical access.

Methods: Case report.

Results: A 73-year-old male patient who received a deceased donor kidney transplant in 2004 developed a massive flank hernia on his right lower quadrant Gibson incision. Hernia repair was attempted in 2006 unsuccessfully. His graft function remained stable (eGFR of 60 –70 mL/min/1.73 m^2). During workup for recurrent urinary tract infections, ultrasound revealed a 2.5 cm lesion on his right native kidney, which enlarged from 1.8 cm 3 years prior. Follow-up computer-tomography scan confirmed a 2.7 cm complex cystic lesion and a new 0.9 cm lesion. Radical nephrectomy was recommended. Laparoscopic access was attempted but aborted, as there was no safe window to establish pneumoperitoneum. An 8cm, right lateral flank incision directly overlying the hernia was made. The hernia was so large that the hernia sac and peritoneum were pushed aside to find retroperitoneal space, which was then developed via blunt dissection. The right native kidney was removed. With no fascia to close, loose tissue layers were reconstituted with 2-0 Vicryl. Mesh closure was not an option as the fascia edges were extremely far apart. Skin was closed using 4-0 Monocryl subdermal stitches and staples. The patient was discharged after 2 days without complications. Pathology confirmed a 2.2 cm papillary renal neoplasm with reverse polarity and a 1.3 cm papillary adenoma – both were benign. At 3 months post-operation, despite the presence of the hernia, the incision wound healed well.

Conclusion: Transplant and urologic surgeons must be aware of the distortions in anatomy caused by a flank hernia and explore creative approaches to nephrectomies and other abdominal/retroperitoneal procedures.

ID#30

Hemant Sharma, Royal Liverpool University Hospital

Donor Recipient ABO Compatibility Status has minimal influence on Renal Transplant Outcomes : A Retrospective NHSBT Data Analysis

Objectives: To determine whether donor-recipient ABO compatibility status (identical versus compatible non-identical) influences renal allograft outcomes, with primary endpoints of 1-year and 5-year graft survival.

Design: Retrospective cohort study following STROBE guidelines for observational research reporting.

Setting: Data from the National Health Service Blood and Transplant (NHSBT) UK Transplant Registry spanning 2000-2019.

Participants: 51,260 kidney transplant recipients, with comparative analysis between ABO-identical and ABO-compatible (non-identical) transplant groups.

Methods: Kaplan-Meier survival analysis with log-rank testing (α=0.05) compared graft survival rates. Multivariable Cox proportional hazards models assessed potential confounding variables. Propensity score matching (1:1, calliper=0.02) generated 2,400 balanced recipient-donor pairs. Model assumptions were verified through Schoenfeld residuals testing (p>0.12) and demonstrated adequate discrimination (Harrell's C-index=0.74, 95% CI: 0.71-0.77).

Results: Five-year graft survival rates were comparable between ABO-identical and ABO-compatible cohorts (82.3% vs. 81.1%, log-rank p=0.29). Multivariable Cox regression demonstrated no significant association between ABO compatibility status and graft failure (adjusted HR=0.97, 95% CI: 0.88-1.07, p=0.59) or patient mortality (HR=0.99, 95% CI: 0.90-1.09, p=0.81). Significant predictors of graft failure included recipient age (HR=1.05 per year, 95% CI: 1.03-1.07, p 35 (HR=1.09 per unit, 95% CI: 1.05-1.13, p < 0 .001), donor diabetes (HR=1.35, 95% CI: 1.12-1.63, p=0.002), and donor smoking history (HR=1.28, 95% CI: 1.07-1.53, p=0.007). Propensity-matched analysis corroborated these findings (HR=1.01, 95% CI: 0.92-1.11, p=0.78).

Limitations: Retrospective design with potential for unmeasured confounding despite robust statistical methodologies.

Conclusions: ABO-compatible (non-identical) kidney transplants provide equivalent graft and patient survival outcomes compared to ABO-identical transplants.

Implications: These findings support expanded utilization of ABO-compatible donors, potentially increasing transplantation access while maintaining outcome parity.

ID#31

Dheyaa Al-Najafi, UBC Faculty of Medicine, Department of Medicine.

Efficacy of Corticosteroid Pretreatment in the Management of Deceased Organ Donors: A Systematic Review and Meta-Analysis

Background: The persistent gap between organ supply and demand has stimulated efforts to improve deceased donor management. Corticosteroid pretreatment has emerged as a controversial tool to counteract hypothalamic–pituitary–adrenal axis dysfunction and dampen systemic inflammation in donors, attempting to stabilize physiology and enhance transplant outcomes. Despite their inclusion in clinical guidelines, evidence from randomized controlled trials (RCTs) remains inconsistent.

Methods: A systematic review and meta-analyses were conducted following PRISMA 2020 guidelines. RCTs examining corticosteroid administration to deceased donors were identified through comprehensive database searches in Ovid MEDLINE, Ovid Embase, CENTRAL, and Web of Science, up to March 2024. Random-effects meta-analysis and subgroup analyses were performed, with evidence quality assessed using GRADE.

Results: Eleven studies examining 10 RCTs (n=687 donors; 1,680 recipients) were included. Corticosteroid pretreatment showed no significant benefit for mortality (RR 0.72, 95% CI 0.37–1.38), length of stay (MD 0.46 days, 95% CI -6.99–7.91), acute graft rejection (RR 0.93, 95% CI 0.53–1.61), incidence of donor vasopressor use (RR 0.95, 95% CI 0.87 to 1.05), graft survival (RR 1.03, 95% CI 0.98–1.10), graft dysfunction (RR 0.95, 95% CI 0.83–1.10), or delayed graft function (RR 0.91, 95% CI 0.53–1.57). Subgroup and meta-regression analyses revealed no consistent benefits, though heterogeneity in corticosteroid regimens and donor-recipient characteristics limited interpretation. The risk of bias was high across most studies.

Conclusion: Current evidence for utilizing corticosteroid pretreatment in deceased donors demonstrates no clear benefit for transplant outcomes. Findings highlight the need for large, well-powered trials using standardized outcome definitions and rigorous methodology to explore whether certain subgroups could benefit from this intervention.

ID#32

Terri Ser, UBC

Parapelvic cysts presenting as allograft dysfunction 10 years post-renal transplant: a case report

Background: Parapelvic cysts (PPCs) are rare, typically asymptomatic cysts originating from the renal parenchyma. The literature on PPCs remains limited due to their rarity and is largely focused on the misdiagnosis of PPCs as hydronephrosis in native kidneys. We present a case of PPCs presenting as allograft dysfunction in a transplanted kidney.

Case report: A 61-year-old female who received a living-related donor renal transplant in 2014 for stage 5 chronic kidney disease presented to our clinic 10 years later with allograft dysfunction in January 2024. Her creatinine was elevated from her baseline of 85 to 100 µmol/L. The initial ultrasonography demonstrated moderate hydronephrosis, but no cause was noted at that time. In July 2024, her creatinine was 122 µmol/L and a repeat ultrasound identified severe hydronephrosis. A cystoscopy was performed, and the results were negative. Subsequently, a percutaneous nephrostomy tube was placed. However, despite the nephrostomy draining moderately well, a follow-up non-contrast CT in September 2024 continued to show severe hydronephrosis. A contrast CT was conducted, revealing numerous PPCs within the interior of kidney. It was determined that while the PPCs mimicked a presentation similar to that of hydronephrosis on imaging, they were not obstructive, and the patient was able to void following removal of the tube. Pathology from cyst aspiration was negative for malignant cells, and the patient's creatinine levels remained stable at 110 µmol/L in November 2024. As such, a conservative management approach was taken with no further interventions.

Conclusion: While PPCs have previously been reported to mimic hydronephrosis in native kidneys, their presentation can be more challenging in renal transplant patients due to the broad differential diagnosis of allograft dysfunction. Given the numerous potential causes of transplant dysfunction, it is crucial that transplant care providers consider PPCs in their differential when encountering unusual presentations of hydronephrosis.

ID#34

Cagdas Duru, University Health Newtwork

Successful 24-Hour Ex-Vivo Perfusion in the Swine Total Hindlimb Model

Static cold storage (SCS) at 4°C remains the standard for preserving Vascularized Composite Allotransplants but limits viability to 6 hours. Ex-vivo perfusion offers a promising alternative. This study presents a 24-hour sub-normothermic perfusion protocol in a swine hindlimb model using autologous red blood cells (RBCs).

Methods: Limbs that were perfused for 24-hours were compared to cold stored limbs. The perfusate included LPD, 2.5 g/dL BSA, heparin, methylprednisolone, dextrose, insulin, L-alanyl L-glutamine, sodium bicarbonate, and washed RBCs (hematocrit 10–15%). Perfusion pressure was 60–65 mmHg and temperature 28–32ºC. Perfusate was hourly monitored. Muscle biopsies (thigh and distal foot) were taken every 6 hours for histology and ATP measurement. Limb weights were recorded at baseline and endpoint.

Results: Our ex vivo perfusion protocol showed stable ATP levels in both biopsy sites, indicating adequate oxygen and nutrient delivery throughout the limb to maintain oxidative phosphorylation (Proximal muscle: 0.416 to 0.367 nmol/µL, distal muscle: 0.315 to 0.267 nmol/µL). Control limbs showed a significant decrease in proximal (0.502 to 0.15 nmol/µL $p=0.0086$) and distal (0.335 to 0.078 nmol/µL $p=0.0216$) muscles. This finding was also corroborated by injury scores assessing edema, variability, and myocyte damage at both biopsy sites. In proximal muscle, injury scores changed from 3.03 to 3.26 to in the perfusion group while in SCS it increased from 2.4 to 3.73 ($p=0.0079$). In distal muscle, scores rose from 2.90 to 4.63 in perfusion and 2.56 to 4 in SCS, with significant rise only in controls ($p=0.0291$). Moreover, our perfusion protocol did not result in significant weight changes (–0.53% in the perfusion group vs. –0.62% in the SCS group).

Conclusion: Twenty-four-hour swine hindlimb perfusion preserved ATP, morphology, and function. Perfusion prevented ATP depletion and muscle damage, supporting its potential to extend VCA preservation. Transplant studies are warranted.

ID#35

Kate Rokoss, University Health Network

Effectively engaging high school students about organ donation and transplantation: An update on the High School Outreach Initiative experience

Background: Youths have the power to embrace and change societal perceptions of organ donation and transplantation (ODT). The High School Outreach Initiative (HSOI) was established to raise awareness and knowledge about ODT among youth in the Greater Toronto Area (GTA) and now, Ottawa. This study aims to evaluate the effectiveness of the HSOI program presentations in changing awareness and interest about ODT among students in the GTA and Ottawa.

Methods: Pre- and post-presentation surveys were administered throughout 2017-2023 to high school students about their knowledge of ODT, awareness of donor registration, importance of donation, intent to register, and willingness to talk to their families about donation. Descriptive statistics were used to characterize baseline knowledge and interest, which was later analyzed with quantitative statistics.

Results: 805 presentations were delivered to 46,415 students at 160 high schools in the GTA and Ottawa between 2012-2023. Data from 4096 surveys completed by students showed 41.3% were not knowledgeable about ODT pre-presentation. Post-presentation, 52.4% of students stated they were willing to register to donate their organs and tissues after death, and 72.0% of students stated they were willing to speak to their families about ODT. Between 2017-2019, among 1224 matched pre- and post-presentation surveys, 49.8% of students who stated they were not knowledgeable about ODT pre-presentation decreased to 3.8% after ($p < 0 .001$). Those who were not willing to register decreased by half after the presentation ($p < 0 .001$).

Conclusions: The HSOI is an effective educational program which improves youth's attitudes and perceptions toward ODT. Students evidently feel more empowered to make an informed decision to register and discuss ODT with their families. Future directions of the program include further expansion beyond the GTA and Ottawa regions, and to investigate the relationships between different demographic characteristics of youths' and their attitudes toward ODT.

ID#36

June Wang, University Health Network

Shared Care between a Cystic Fibrosis Program and a Lung Transplant Program: A Quality Improvement Endeavour

Background: The cystic fibrosis (CF) landscape has drastically changed in recent years with new treatments eliminating the need for lung transplant for many CF patients. Fewer patients requiring lung transplant and increased life expectancy means a new focus on long term health outcomes (including chronic conditions), and wellbeing. To meet these needs, we have embarked on a joint shared care quality improvement initiative; two programs at separate institutions to have the same goal of optimizing communication and handover between teams, access and referral to specialists, and patient-centred care.

Methods: Clinical team members from our transplant and local CF program attend quarterly meetings to review shared patients. Previous quality improvement work at both centres, as well as the CF Foundation position paper titled Models of Post-Transplant Care for Individuals with Cystic Fibrosis and Post-Transplant checklist, helped inform our process and a shared documentation template. Using the Toronto Lung Transplant database and cross-referencing with our CF program, we identified patients that have CF and had a lung transplant (n=160).

Results: Twelve patients (67% female) were reviewed since May 2024. Time since transplant ranged from eighteen months to eleven years. Categories were identified and assigned to either of the centres. The CF program manages endocrinology (n=3), gastrointestinal (n=2), colon cancer screening (n=3), and nutrition (n=2). The transplant program manages dermatology (n=2) and cardiology (n=1). One patient was deemed lost to follow-up. Minimal information was found on women's health, fertility and mental health.

Conclusion: Our initiative exemplifies the collaboration between a transplant and local CF program to identify patients and medical issues that require population-specific attention. Next steps include identifying gaps in care and creating documentation templates that are easily shareable between both programs. We have been selected to participate in the CF Foundation's inaugural Shared Care Innovation Lab and anticipate more improvements for our shared patients.

ID#37

Tony Kiang, Faculty of Pharmacy and Pharmaceutical Sciences

Differential effects of music on the kinetics of mycophenolic acid 7-O-glucuronide and acyl glucuronide formations in rodents

Background: Mycophenolic acid (MPA), a first line immunosuppressant in solid organ transplantation, is associated with large pharmacokinetic (PK) variabilities. MPA undergoes extensive hepatic metabolism to generate MPA 7-O-glucuronide (MPAG, inactive) and MPA acyl glucuronide (AcMPAG, toxic). We aimed to quantify MPA glucuronidation in liver microsomes from Sprague Dawley rats exposed to different elements of music which are hypothesized to affect MPA PK variability.

Methods: Rats (6-8 weeks old; 200-300g; N=8 per group [equal sex]) were exposed to combinations of composed music (i.e., fast or slow tempo; regular or irregular rhythm; tonal or atonal) for 24 h. MPA glucuronidation was quantified under initial velocity conditions (1.2 µg/mL MPA; 0.2 mg/mL liver microsomal protein; 15 min). Enzyme kinetics were determined using increasing MPA concentrations (0-320 µg/mL). Niflumic acid (10 µM) was used as the positive control for reducing MPAG.

Results: The tested music elements did not affect MPAG formation, but niflumic acid reduced MPAG production by ~59.9%. AcMPAG formation was reduced by a music combination with fast tempo and irregular rhythm (FT IR, by 42.5±14.4% vs. control, mean±SEM; p Conclusion: Music preserves MPA 7-O-glucuronidation (main clearance pathway) but reduces AcMPAG (toxic metabolite) formation, which are therapeutically beneficial. Clinical investigations are ongoing to translate these findings.

ID#38

Mitchell Webb, UBC / VGH

Comparison of Yttrium-90 Transarterial Radio Embolization vs Stereotactic Body Radiotherapy for Locoregional Treatment of Hepatocellular Carcinoma Prior to Liver Transplantation: a comparison of pathologic and clinical outcomes

Background: Yttrium-90 TransArterial Radio Embolization (TARE) and Stereotactic Body Radiotherapy (SBRT) offer viable options for locoregional therapy to bridge and down-stage patients with Hepatocellular carcinoma (HCC) toward Liver Transplantation. Yet, there is clinical equipoise between each of these for patients with early and intermediate stage HCC. We sought to compare the clinical efficacy of SBRT and TARE in treating HCC prior to liver transplantation.

Methods: A retrospective review of all patients who underwent liver transplantation after treatment with either SBRT or TARE was conducted (2015 - 2022). Demographic data, tumour characteristics, treatment details, complications, and clinical outcomes were recorded. The primary outcome was pathologic response. Secondary outcomes were radiographic response after LRT, bridge-to-transplantation, downstaging to transplantation, treatment complications, and disease free survival.

Results: Between 2015 and 2022, 59 patients with HCC underwent SBRT (n = 34) or TARE (n = 25) prior to liver transplantation. Although demographics were similar, HCC tumor burden was significantly greater in the TARE group. Pathologic complete response (28% vs 20%) and radiographic response (20% vs 32%) was not significantly different for TARE and SBRT, respectively. Rates of downstaging and bridging were similar as well. However, there was a trend toward better tumor control with SBRT when comparing tumor size on pre-treatment imaging and final explanted pathology. Overall survival and recurrence-free survival was similar.

Conclusion: Our experience suggests similar rates of disease control and survival outcomes with SBRT versus TARE. Both appear to serve as viable options for bridging and down-staging HCC for transplant. Further work is necessary to ascertain whether confounding factors such as tumour location, use of adjunctive locoregional therapies and operator learning curve are factors to consider when choosing one form of radiation over the other.

ID#40

Max Levine, University of Alberta

Robotic-assisted kidney transplantation in a Canadian centre: a review of the first in Canada implementation

Background: Robotic assisted kidney transplantation (RAKT) has become an increasingly adopted technique in select transplant centres around the world, but with no implementation in Canada as of 2023. RAKT was introduced at our centre in June 2024 after specialized training was obtained by one transplant surgeon with a urologic practice that includes robotic renal surgery. We reviewed the feasibility of implementing RAKT in a transplant centre in Canada.

Methods: A quality assurance review of prospectively collected data of all RAKT completed over the first year of implementation was performed. Intraoperative performance of procedure components were analyzed using cumulative summation analysis to assess the learning curve. Post-operative creatinine, opioid consumption, creatinine, and wound related complications were prospectively collected.

Results: Nine patients underwent a RAKT over 10 months. The initial patient underwent nephrectomy/autotransplant for Nutcracker syndrome and 8 patients underwent living donor kidney transplants (LDKT) using robotic assistance. Mean (SD) age was 42 (13) yr, median BMI was 26.8 (range 19.1-40.2), 4 were males. Eight grafts were placed on the right side, and one on the left. Mean (SD) surgical time for the LDKT cases was 212 (22) min. Mean (SD) rewarm time (RWT) was 41 (4.7) min. No cases went beyond the scheduled operative day. No cases required conversion to open. Total RWT, arterial, and venous anastomosis times were performed at or near a mastery level for most cases, with no appreciable learning curve (Figure1). There were no cases of wound infection, dehiscence, lymphocele, or delayed graft function.

Conclusions: Introducing RAKT into a Canadian transplant centre is safe and feasible when there is adequate surgeon experience in both robotic and transplant surgery. Components of the operation that influence graft function (RWT, anastomotic times) can be performed satisfactorily during initial cases. Cases continue to accrue, with further work to optimize patient selection and explore application to deceased donor recipients.

ID#41

Tom Blydt-Hansen, Director, Multi-Organ Transplant Program, BC Children's Hospital

Challenges in Non-invasive Biomarker Profiling of Subclinical Borderline Rejection in Pediatric Kidney Transplantation

Background: Subclinical acute rejection (SCAR) is detected on surveillance biopsies and has been associated with subsequent clinical rejection and decreased allograft survival. The purpose of this study was to evaluate the diagnostic performance of 3 emerging biomarkers for SCAR: peripheral blood gene expression profiling (GEP; TruGrafä), donor-derived cell-free DNA (dd-cfDNA; TRACä) and torque-teno virus (TTV) in a surveillance biopsy cohort of pediatric kidney recipients.

Methods: We completed a prospective cohort study in 3 North American pediatric kidney transplant centers with universal surveillance biopsy programs. We measured GEP and dd-cfDNA at the time of 3, 6, 12, and/or 24-month surveillance biopsies performed according to local practice patterns. We then measured TTV viral load in a subset of patients with adequate residual genomic material for testing. Surveillance biopsies were classified according to Banff 2019 criteria. We applied cutoff values for each biomarker that were previously established in adults to assess their diagnostic performance for distinguishing SCAR vs. normal biopsies in children.

Results: We enrolled 73 incident pediatric kidney recipients with at least 1 surveillance biopsy and a concurrent biomarker assessment during the study period, including 52 with TTV testing. SCAR was detected in 13 (18%), 11 with SC-B-TCMR and 2 with SC-TCMR. Clinical and demographic data were similar between those with/without SCAR. Using established adult cutoffs, GEP, dd-cfDNA, and TTV were positive in 22 (31%), 14 (20%), and 29 (56%), respectively. None of the 3 biomarkers performed well in discriminating SCAR from normal surveillance biopsies (Figure). Similar results were found using alternative Youden index-derived cutoff values, and in a sensitivity analysis of SC-B-TCMR vs. normal biopsies.

Conclusions: We performed one of the largest prospective biomarker studies of surveillance biopsies in pediatric kidney transplant recipients to date. Neither GEP, dd-cfDNA, or TTV viral load could discriminate SCAR (predominantly SC-B-TCMR) from normal biopsies.

ID#42

Jenny Wichart, BScPharm, ACPR

Optimization of Ambulatory Immunosuppressant Ordering in a Provincial Electronic Medical Record

Background: In 2019, our Provincial Health Services commenced a phased implementation of an electronic medical record (EMR), Epic Hyperspace®, across all affiliated healthcare facilities. Ambulatory immunosuppressant prescribing based upon drug strength often resulted in multiple prescriptions. Each prescription displayed as unique entries throughout the EMR increasing the complexity of medication management. A review of ordering processes was initiated secondary to perceived increases in confusion and medication incidents.

Methods: Baseline investigations included an environmental scan of Canadian sites, a provincial clinician survey and review of safety reports to determine scope and scale of issues. The environmental scan highlighted similar issues in other programs with no solutions offered. The clinician survey confirmed immunosuppressants requiring multiple strengths was the perceived top safety issue. The safety report review assigned a high-risk score to the issue, indicating it should be investigated and addressed quickly.

Results: A working group was established with the goal of creating a safer, more intuitive process for ordering immunosuppressants. The initial step was to confirm all ways immunosuppressants were ordered throughout the province. Areas where immunosuppressant orders intersected with the EMR were noted, such as flowsheets, medication schedules and the patient interface. Characteristics of preferred solutions were captured from both the clinician survey and working group meetings. Ultimately an “immunosuppressant alternative record” providing a single order was agreed upon. Additionally, interactive decision support was utilized during transitions to and from inpatient admissions to ensure the correct medication record was used when ordering immunosuppressants. This solution was tested with clinicians and reviewed with patient and family advisers for feedback prior to implementation.

Conclusion: A multistep, multidisciplinary approach to complex ordering of immunosuppressants resulted in a creative solution and new build in our provincial EMR. We have set a formal process for other multi-strength medications in ambulatory care.

ID#43

Marie-Chantal Fortin, Centre hospitalier de l'Université de Montréal

Expanding the use of less-than-ideal kidneys: Exploring the educational needs of Black Canadian kidney transplant candidates and recipients

Background: A potential approach to the shortage of deceased donor kidneys and long wait times for transplant is to expand the use of kidneys from donors with characteristics suggestive of suboptimal long-term graft survival (less-than-ideal (LTI) kidneys). Effective education is crucial to ensure patients can meaningfully participate in decision-making about LTI kidneys. Educational tools that are seen disrespectful by patients from historically marginalized communities could exacerbate access disparities. This study aimed to explore the educational needs about LTIs among self-identified Black kidney transplant candidates and recipients.

Methods: Semi-structured interviews with 9 Black kidney transplant candidates (4) and recipients (5) from the Centre Hospitalier de l'Université de Montréal. Interview transcripts were analysed using NVivo.

Results: Most participants supported expanding LTI kidney use. Participants saw a registry of patients consenting to be offered LTI kidneys as potentially benefitting both patients, in increasing their options or "chances" to be free of dialysis sooner, and organ procurement systems, in locating suitable recipients. They evoked questions about LTI kidneys concerning expected graft longevity, the treatability and "transmissibility" of donor health conditions, the impact of LTI kidney registry listing on regular list priority, and the implications of an LTI kidney graft for post-transplant care. Most participants did not think it was discriminatory to offer LTI kidneys or registry listing to patients from marginalized communities but a few recognised that such perceptions were possible. Some further mentioned medical mistrust, religiosity, low rates of organ donation and preference for oral and visual over textual forms of communication as factors to consider in approaching members of their communities.

Conclusion: Our findings suggest that it is feasible to expand LTI kidney use in an inclusive and equitable manner, but that educational tools must address the concerns and preferences expressed by patients from historically marginalized communities.

ID#44

Holly Mansell, University of Saskatchewan

Patient Perceptions and Educational Needs on Suboptimal donor organs: A Scoping Review

Background: Optimizing the use of suboptimal donor organs could potentially help alleviate the shortage of organs for transplantation. However, effective education is necessary for ensuring that patients understand the risks and benefits. This study summarized existing literature regarding educational needs and strategies and the decision-making process to accept or decline a suboptimal organ.

Methods: A scoping review was undertaken using Joanna Briggs Institute methodology. The search was conducted in MedLine, Embase, and PsycInfo and included five topic domains: Organ Transplantation, Suboptimal Organs, Patient Health Education, Patient/Caregiver Perceptions and Decision-Making with synonymous terms. Boolean operators (AND/OR), and the Adjacent operator (ADJ) connected the subjects. All academic type publications published in English and French, regardless of study design were included. Data was summarized according to a) studies describing how patients felt about suboptimal organs and what factors helped make decisions; b) studies that assessed educational interventions; and c) educational needs directly identified by patients.

Results: Of 6,781 papers identified, 175 articles met inclusion for full review and 28 articles were included in the analysis. Twenty studies described patient perceptions/attitudes towards suboptimal organs. The majority were from the USA (n=14), followed by Canada (n=2), France, Ireland, Sweden, the Netherlands (n=1 each). Eight studies assessed educational interventions about suboptimal organs (6 kidney and 2 liver studies), and all were from the US. Interventions included education from healthcare providers (n=2), animations (n=2) mobile apps (n=2), decision aids (n=2). Four studies described educational needs directly identified by patients (n=3 from the USA and n=1 from Canada). Patients desired information about the donor's situation, potential outcome and clear terminology for decision-making.

Conclusion: An educational strategy about suboptimal organs is needed for patients to feel secure in their ability to make informed choices without fear of penalty. This literature review will guide us in developing an educational toolkit.

ID#45

Sacha De Serres, Medicine Université Laval Québec

Multicenter Validation of a Cell-based Risk Score to Predict Over-immunosuppression Events in Kidney Transplant Recipients – TCAD-01 Study

Background. Immunosuppressants are associated with serious infections, cancer, and premature death in organ recipients. There is currently no tool to pro-actively personalize immunsuppressive therapy. We previously derived and validated, in the single center setting, a risk score combining age and a cell-based assay measuring TNF-α production by CD14+16+ intermediate monocytes, following stimulation with Epstein-Barr virus (EBV) peptides.

Methods. We conducted a prospective, multicenter, observational study in 236 stable adult kidney recipients. Peripheral blood mononuclear cells were collected at two timepoints. The risk score and risk categories were calculated based on the previously derived equation and thresholds. The primary endpoint was the occurrence of OIS events at one year.

Results. Enrollment began before the pandemic; 14% (34) patients were unable to provide a confirmation sample. 171 of the 202 remaining patients (85%) provided two samples with sufficient cell viability for assay evaluation. A higher percentage of CD14+CD16+TNF-a+ cells was predictive of a lower risk of OIS events (OR 0.96 95%CI 0.93 – 0.99, p=0.02 per 1% increase in positive cells). The risk score significantly predicted events (in the high risk compared to the low risk category (OR 1.4 95%CI 1.1–1.8, p=0.01). This association was of similar magnitude when adjusted for sex, eGFR, prednisone dose, tacrolimus through level, and mycophenolate dose (OR 1.4 95%CI 1.1–1.9, p=0.01). Importantly, the score predicted a calibrated shift in risk, with absolute proportion of events increasing from 11% to 18% and 30% in the low-, intermediate-, and high-risk categories defined previously (p=0.02). The score appeared calibrated across post transplant periods. No patient who experienced rejection during follow-up was classified at high risk of OIS.

Conclusion. The data indicate that this risk score predicts OIS events with a calibration allowing intuitive use in the clinic. They support testing its efficacy and safety in an interventional trial.

ID#46

Tony Kiang, Faculty of Pharmacy and Pharmaceutical Sciences

Pharmacokinetic interactions between protein-bound uremic toxins and mycophenolic acid in adult kidney transplant recipients

Background: Mycophenolic acid (MPA) is a first-line immunosuppressant in kidney transplantation. Variations in MPA's plasma exposure have been documented, and our recent work indicated uremic toxins may contribute to immunosuppressant pharmacokinetic (PK) variability (PMID:32421801, 35182318, and 38931865). The current work investigated the plasma correlations (r) between uremic toxins (i.e., p-cresol sulfate (pCS), p-cresol glucuronide (pCG), indoxyl sulfate (IxS), and indoxyl glucuronide (IxG)) and MPA or MPA glucuronide (MPAG; major metabolite) to elucidate potential mechanisms of their PK interactions.

Methods: Adult kidney transplant recipients (N=39, 18 females) on mycophenolate-mofetil at 1-month post-transplant were recruited. MPA exposure (area under the curve [AUC]) was calculated using limited sampling strategies. Simple linear and multiple regression analyses were conducted on dose-normalized, log-transformed data. MPAG-to-MPA ratios and free fractions were used to delineate MPA metabolism and protein-binding, respectively.

Results: Initial control analysis indicated expected correlations (e.g., total MPA-C0 [minimum concentration] and total MPAG-C0). Simple regression indicated total MPA-AUC correlated with pCS-C0 or pCS-CMAX [maximum concentration], (r=0.44 and r=0.43, respectively, p Conclusion: Our novel findings suggest a positive, strong association between pCS and total MPA exposure. The lack of correlation with metabolism and protein-binding markers suggest the PK interaction might be mediated by other pathways (e.g., renal excretion). Our data also support a potentially relevant protein-binding interaction between IxG and MPA.

ID#47

Serena Chan, University of British Columbia

Clinical utility of routine MAG-3 scan for surveillance of kidney allograft injury at 48h post-kidney transplant

Background: The utility of routine surveillance mercaptoacetyltriglycine-3 (MAG-3) renal scan within 48 hours post-kidney transplant in all patients for prognosticating early acute kidney injury recovery needs evaluation.

Methods: In this retrospective analysis, time to creatinine nadir (TTN) represented timeliness of recovery, and 3-month recipient unfiltered glomerular filtration rate (uGFRR 3mo) represented extent of recovery. Four MAG-3 scan parameters, time to peak activity, peak to half peak time, 30 min/peak ratio and 30 min/3 min ratio, were analyzed. Cox and linear regression models were built. Outcomes were TTN and uGFRR 3mo. Covariates included a priori clinical variables and MAG-3 metrics.

Results: 67 patients (58% male, aged 13 (IQR 7, 16) years) were included. Clinical factors associated with TTN included younger donor age (ρ=-0.39, p R 3mo included older recipient age (ρ=0.68, p R 3mo. The optimal TTN model including recipient BSA, donor age, Cr 24h/0h, MAG-3 peak to half peak time and 30 min/peak ratio (R2 = 0.33, AIC=348, p R 3 mo model included donor and recipient BSA (adjusted R2 = 0.40, AIC=571, p Conclusion: This study is first to demonstrate early post-transplant MAG-3 scan utility in pediatric patients, for identifying peri-operative injury manifesting as slower functional recovery but not requiring post-operative dialysis, and for early diagnosis of actionable post-operative complications in minority cases. This data supports continued use.

ID#48

Trana Hussaini, University of British Columbia and Vancouver General Hospital

Early Corticosteroid Protocols in Liver Transplantation: A Survey of Canadian and American Centres

Background: Corticosteroids are commonly included in early immunosuppressive regimens following liver transplantation (LT). However, dosing and duration of steroids varies significantly between transplant centres. Despite their widespread use, there is limited evidence to guide standardized corticosteroid protocols post-LT. Current literature offers no clear consensus on the optimal perioperative steroid strategy. This study aimed to characterize early postoperative corticosteroid use across North American liver transplant programs.

Methods: We conducted a cross-sectional survey of liver transplant centres in North America. The survey was developed using the REDCap platform and distributed via email through the Canadian Society of Transplantation (CST) pharmacist group, the Canadian Liver Transplant Network (CLTN) and the American Society of Transplantation (AST) pharmacy community of practice. The survey opened on August 19, 2024, and closed on September 30, 2024.

Results: A total of 37 individuals from 34 transplant centres responded, including three physicians and 34 pharmacists, representing 30 U.S. and 7 Canadian centres. Three programs (one Canadian, two American) used steroid-free protocols; five centres discontinued corticosteroids within two weeks post-LT. The remainder continued corticosteroids for 3–24 weeks. Most centres (27 of 32) individualized steroid regimens based on factors such as diabetes, osteoporosis, or infection. Twenty centres reported indefinite low-dose steroid use in select autoimmune hepatitis patients. Additionally, 29 centres used induction immunosuppression in specific populations, such as those at high risk of rejection or with chronic kidney disease.

Conclusion: There is substantial variation in corticosteroid practices post-LT across North America, including in duration, tapering strategies, and patient selection. This variability reflects the absence of consensus guidelines and highlights the need for further research. Establishing evidence-based recommendations could help standardize care, support clinical decision-making, and optimize outcomes in liver transplant recipients.

ID#49

Sabrina Leo, McGill University Health Center Research Institute

Retinoid acid receptor-related orphan receptor gamma (RORγ): a potential target in transplantation oncology to expand therapeutic options for patients with hepatocellular carcinoma (HCC)

Background: Hepatocellular carcinoma (HCC) often arises in the context of chronic liver inflammation and cirrhosis. Type 3 immunity (driven by the transcription factor RORγ) plays a central role in promoting neutrophil recruitment, inflammation, and tumour progression. This immune axis also contributes to transplant rejection. As liver transplantation remains the most effective curative treatment for HCC, identifying strategies that reduce tumour aggressiveness and recurrence risk is essential for expanding transplant eligibility.

Methods: We examined RORγ expression in human (HuH-7) and mouse (Hepa1-6, Hep55-1.c) HCC cell lines. RORγ was inhibited using siRNA (siRORC) or a novel inverse agonist (C10). Effects on tumour growth were assessed by cell viability and colony formation assays. PD-L1 mRNA levels were quantified by RT-qPCR. Cancer cell migration and neutrophil chemotaxis were evaluated using trans-well assays, and Ly6G+ neutrophil infiltration was assessed via immunofluorescence. In vivo, mice bearing subcutaneous or orthotopic HCC tumours were treated with daily C10 to assess tumour burden and lung metastases.

Results: All HCC cell lines expressed high levels of RORγ. Inhibition of RORγ significantly reduced cell viability, colony formation, and cancer cell migration. Neutrophil chemotaxis toward RORγ-inhibited HCC cells was markedly decreased. A significant increase in PD-L1 mRNA expression was observed after RORγ inhibition. In mouse models, C10 treatment reduced primary tumour size and significantly decreased the extent of lung metastases. Histological analysis revealed reduced Ly6G+ neutrophil infiltration in tumours from C10-treated mice.

Conclusion: RORγ promotes neutrophil recruitment and enhances the migratory capacity of HCC cells, supporting its role in metastatic progression. Inhibiting RORγ impairs both tumour growth and metastasis, reduces neutrophil migration toward cancer cells and potentially enhances immune checkpoint sensitivity. These findings identify RORγ as a promising therapeutic target in HCC, with potential to limit metastatic spread, lower recurrence risk, and increase access to life-saving liver transplantation.

ID#50

Christie Rampersad, University of Toronto

Time-Varying Risk of Post-Transplant Lymphoproliferative Disorder in Kidney Transplant Recipients by Donor/Recipient Epstein-Barr Virus Serostatus

Background: Post-transplant lymphoproliferative disorder (PTLD) is a serious complication in transplant recipients, warranting improved risk-stratification. We sought to evaluate time-varying PTLD-risk, and its impact on mortality, by donor/recipient Epstein-Barr virus (EBV) serostatus in kidney transplant recipients.

Methods: This retrospective cohort study included deceased donor kidney transplant recipients from the U.S. Scientific Registry of Transplant Recipients (2003–2023). Recipient and donor/recipient EBV serostatus were binary exposures. Time-to-PTLD was analyzed using Kaplan-Meier methods and Cox proportional hazards models, stratified into 0–1, 1–2, and 2–3 year intervals to address non-proportional hazards. Adjusted models included clinically relevant covariates identified using a causal diagram. Secondary outcomes included mortality and all-cause graft failure, by PTLD status modeled as a time-dependent exposure. Effect measure modification across key subgroups was evaluated. Temporal trends and PTLD characteristics were described.

Results: A total of 309,585 kidney transplant recipients (2,353,086 person-years follow-up) were included. There were 3,147 PTLD events (1.1%), with highest incidence in D+/R- (3%) and D-/R- (1.8%) groups

Conclusion: EBV D+/R- recipients experienced the highest and sustained PTLD-risk across three years post-transplant, while D-/R- recipients faced early elevated risk. PTLD development was associated with significantly higher mortality and graft failure, supporting targeted surveillance for pediatric and high-risk serostatus groups.

ID#51

Christie Rampersad, University of Toronto

Time-Varying Risk of Post-Transplant Lymphoproliferative Disorder in Pancreas Transplant Recipients by Donor-Recipient Epstein-Barr Virus Serostatus

Background: Association of donor/recipient Epstein-Barr virus (EBV) status and post-transplant lymphoproliferative disorder (PTLD) is poorly characterized in pancreas transplantation. We sought to evaluate the time-varying PTLD-risk, and its impact on mortality, in pancreas transplant recipients by donor/recipient EBV serostatus and pancreas transplant types.

Methods: This retrospective cohort study included deceased donor pancreas transplant recipients (simultaneous pancreas kidney (SPK), pancreas after kidney (PAK), and pancreas transplant alone (PTA)) from the U.S. Scientific Registry of Transplant Recipients (2003 to 2023). Recipient and donor/recipient EBV serostatus were binary exposures. Time-to-PTLD was analyzed using Kaplan-Meier methods and Cox proportional hazards models stratified into 0–2 and >2-year cohorts to address non-proportional hazards. Adjusted models included clinically relevant covariates. Secondary outcomes were PTLD-associated mortality, modeled as a time-dependent exposure, and an epidemiologic description of PTLD characteristics. Effect measure modification by key subgroups were reported as ratio of hazard ratios (RHR).

Results: A total of 21,217 pancreas transplant recipients (163,787 person-years of follow-up) were included. There were 285 PTLD events during follow-up (1.3%), with a higher 5-year cumulative incidence in D+/R- (3.1%) and D-/R- (2.6%) groups

Conclusion: EBV seronegative recipients faced significant early PTLD risk, especially among PTA patients. PTLD development was associated with a five-fold higher mortality, highlighting the importance of tailored surveillance and preventive strategies.

ID#52

Christie Rampersad, University of Toronto

Bias in Kidney Transplant Risk Prediction: Fairness of the Kidney Donor Risk Index and Estimated Post-Transplant Survival Score

Background: This study evaluated whether the Kidney Donor Risk Index (KDRI) and Estimated Post-Transplant Survival (EPTS) models, which assess donor kidney quality and recipient survival, introduce disparities in graft survival and mortality risk predictions across biologic sex and racial groups.

Methods: This cohort study included first-time adult deceased donor kidney transplant recipients from the U.S. Scientific Registry of Transplant Recipients (2013–2023). Cohorts were constructed using complete-cases based on variables for KDRI and EPTS calculation. KDRI was analyzed as a predictor of death-censored graft failure, while EPTS was assessed for post-transplant mortality. Cox proportional hazards models were used for time-to-event analyses, and predicted vs. observed outcomes were compared. Fairness of risk-classification at clinical thresholds (20%, 80%, 85%) for sex and racial groups was evaluated using four metrics: demographic parity, equal opportunity, predictive parity, and disparate impact (values outside 0.8–1.25 suggest possible bias).

Results: Among 135,721 transplants, 134,001 were included in the KDRI cohort and 135,667 in the EPTS cohort, with total follow-up exceeding 650,000 person-years. At all thresholds, KDRI disproportionately classified kidneys from female donors as higher risk, with disparate impact increasing from 1.18 at 20% to 1.84 at 85% thresholds. Predictions for female donor kidneys had higher sensitivity but lower specificity and accuracy. No significant disparities were observed for KDRI by donor race, recipient sex, or recipient race. EPTS predictions showed fairness at the 20% threshold, but at the 80% threshold, disparate impact declined to 0.83 for female recipients and 0.84 for Black recipients, reflecting lower positive prediction.

Conclusion: KDRI systematically misclassified female donor kidneys as higher risk at all thresholds, reducing allocation to EPTS < 2 0% recipients at the 20% threshold, and labelling kidneys as ‘high-KDPI’ with higher discard-risk at the 85% threshold, limiting organ utilization. Future studies should explore strategies like recalibrated scores to improve kidney allocation.

ID#53

Christie Rampersad, University of Toronto

Development of a Donor-Based Predictive Model for Pancreas Discard in Deceased Donor Transplantation in the U.S.

Background: Pancreas discard remains a significant barrier in transplantation, with 25–30% of deceased donor offers discarded in the U.S. The European-derived Pre-Procurement Pancreas Suitability Score (P-PASS) has performed variably in external validations. A robust, donor-based tool is needed to improve utilization and streamline procurement.

Methods: We retrospectively analyzed deceased donor pancreas offers from the U.S. Scientific Registry of Transplant Recipients (2003–2023); the primary analysis used the cohort of procured pancreas offers. The primary outcome was pancreas discard. Candidate predictors included donor demographics, comorbidities, peri-donation variables, and logistical, geographic, and temporal factors. A multivariable logistic regression model was fitted with risk factors derived from a causal diagram, LASSO selection, and univariable analyses. A parsimonious predictive model for pancreas discard was developed and evaluated for discrimination, calibration, and net reclassification improvement (NRI) vs. a modified P-PASS. Internal validation used 1,000 bootstrap resamples. Sensitivity analyses tested model performance in sub-cohorts of patients since 2013, excluding discards unrelated to donor factors, and in a broader cohort of all-comer pancreas offers (including those not procured).

Results: Among 30,757 pancreas offers, 8,048 (26%) were discarded. The prediction model incorporated ten donor factors independently associated with discard: older age, female sex, higher BMI, hypertension, gastrointestinal disease, smoking, donation after cardiac death, stroke as cause of death, elevated terminal creatinine, and abnormal lipase. This model achieved moderate discrimination (AUC 0.699; optimism-corrected 0.698), accurate calibration, Brier score of 0.090, and 9.2% NRI over the modified P-PASS. Sensitivity analyses confirmed robust performance, including AUC 0.8 among all-comer offers.

Conclusion: We developed a novel donor-based prediction model for pancreas discard that demonstrated robust performance in a large North American cohort, improving risk-classification over existing tools. These findings support its potential as a practical decision aid for optimizing donor selection and reducing discard rates, ultimately enhancing outcomes in pancreas transplantation.

ID#54

Christie Rampersad, University of Toronto

The Comparative Effectiveness of Rabbit Anti-Thymocyte Globulin vs. Basiliximab in Simultaneous Kidney-Pancreas Transplantation: A Target Trial Emulation

Background: We sought to evaluate comparative effectiveness of rabbit anti-thymocyte globulin (rATG) versus basiliximab induction immunosuppression for reducing pancreas death-censored graft failure (DCGF) and other outcomes in simultaneous kidney-pancreas (SPK) transplantation.

Methods: This target trial emulation included first SPK recipients from the U.S. Scientific Registry of Transplant Recipients (2013 to 2022). Patients with known induction therapy were included. Outcomes were compared using intention-to-treat (ITT), as-treated (AT), and per-protocol (PP) analyses, adjusted for baseline confounders with propensity scores and inverse probability weighting. The primary outcome of pancreas death-censored graft failure (DCGF) was assessed in Cox proportional hazards models. Secondary outcomes included pancreas all-cause graft failure (ACGF), death with graft function (DWGF), kidney graft outcomes, and early complications (delayed graft function [DGF], acute rejection [AR], length of stay [LOS]). Center-effects were addressed in sensitivity analyses using stratified and mixed-effects models.

Results: 5,783 SPK recipients were included (30,111 person-years follow-up). rATG was assigned to 5,147 recipients (ITT, PP) and received by 5,433 (AT), while basiliximab was assigned to 636 (ITT) and received by 350 (AT, PP). Basiliximab use declined over time and varied across centers. There were 754 pancreas DCGF events, with 657 in the rATG group and 80 in the basiliximab group. rATG was associated with lower pancreas DCGF beyond 3-years in ITT (HR 0.52 [95% CI: 0.35, 0.76]), with consistent findings in AT and PP (AT: HR 0.73 [95% CI: 0.56, 0.96]; PP: HR 0.74 [95% CI: 0.57, 0.97]) and sensitivity analyses. Kidney graft outcomes and early complications showed no significant differences, apart from minimally longer LOS with rATG (mean 0.9 days longer).

Conclusion: rATG was associated with lower long-term pancreas graft failure in SPK recipients, with no significant differences in kidney outcomes or early complications apart from LOS. These findings support rATG for managing immunologic risks in SPK recipients.

ID#55

Christie Rampersad, University of Toronto

Transplanting Change: The Slow Progress of Gender Equity in Editorial Leadership

Background: Gender disparities persist in academic medicine, particularly in leadership roles like journal editorships. Solid organ transplantation reflects these imbalances, yet gender representation in editorial boards remains understudied. This study examines gender distribution, temporal trends, and predictors of female editorship in high-impact transplantation journals.

Methods: We conducted a cross-sectional analysis of the top 20 transplantation journals by Scimago Journal Rank in 2024. Editor gender, specialty, geographic location, and journal characteristics were extracted from public sources. Gender was determined through web searches and validated software. Female representation among editors-in-chief in 2024 was compared to 2014. Predictors of female editorship were assessed using multivariable logistic regression.

Results: Of 1,479 editors, 31% were female, including 3/24 (13%) editors-in-chief and 29/90 (32%) chief/deputy editors. There was no change in female editors-in-chief from 2014 to 2024 (10% vs 13%, p=0.99). Physicians comprised 80% of editors, with lower female representation than non-physicians (28% vs 46%,

Conclusions: Female representation on transplant editorial boards align with clinical workforce proportions but remains notably lower among editors-in-chief, with no change from 2014 to 2024 – highlighting a "leaky pipeline" in academic publishing. Representation was particularly low among surgeons, echoing broader gender disparities in the surgical workforce. Structural barriers, lifestyle demands, and limited mentorship contribute to this disparity. Targeted policies, mentorship programs, and transparent tracking of gender metrics are critical to advancing equity and inclusivity in academic transplantation.

ID#56

Christie Rampersad, University of Toronto

Pancreas Graft Failure in Simultaneous Kidney-Pancreas Transplantation: Epidemiology, Mortality, and Kidney Graft Outcomes

Purpose: To describe epidemiology of pancreas death-censored graft failure (DCGF) in simultaneous pancreas-kidney (SPK) transplantation and evaluate associations with mortality and kidney graft failure.

Methods: This retrospective cohort study included first-time SPK recipients from the U.S. Scientific Registry of Transplant Recipients (2013 to 2022). Pancreas DCGF was analyzed as a time-dependent exposure for mortality, and kidney all-cause graft failure (ACGF) and DCGF. Cox proportional hazards models assessed time-to-event outcomes; early (0 to 1 year) and landmarked (>1-year) cohorts addressed proportional hazards violations. Sensitivity analysis was done in a subcohort transplanted since standard pancreas failure definitions implemented in 2018. Subgroup analyses evaluated modification by recipient age and sex. Mortality-risk of technical pancreas DCGF (surgical) was assessed. Similarly, kidney DCGF was analyzed as a time-dependent predictor of 5-year mortality in a landmarked cohort with both functioning allografts at 1-year post-transplant.

Results: Among 7,677 SPK recipients (40,542 person-years follow-up), pancreas DCGF occurred in 1,013, predominantly within 1-year, with early failures driven by technical causes (n = 334). Pancreas DCGF was associated with higher mortality early (HR 2.97 [95% CI: 2.04, 4.34]) and >1-year (HR 2.47 [95% CI: 1.87, 3.25]), robust to sensitivity analyses. Technical pancreas DCGF conferred modest mortality-risk (HR 1.56 [95% CI: 1.16, 2.09]). Pancreas DCGF was associated with increased kidney ACGF (HR 2.33 [95% CI: 2.01, 2.69]) and DCGF (HR 2.70 [95% CI: 2.25, 3.25]). Among recipients with functioning allografts at 1-year (n = 6,856), kidney DCGF was associated with 5-year mortality (HR 9.37 [95% CI: 7.04, 12.48]). Age-stratified analysis identified minimally higher relative hazard in younger recipients (RHR 1.10).

Conclusions: Pancreas graft failure is common and associated with higher mortality and kidney graft failure. Kidney DCGF further amplifies mortality-risk, highlighting compounding effects of sequential graft failures. Preventing pancreas graft failure is critical to improving long-term outcomes in SPK recipients.

ID#57

Holly Mansell, University of Saskatchewan

Characterizing the Role Transplant Pharmacists Internationally

Background: Pharmacotherapy for solid organ transplant (SOT) recipients is complex. Pharmacists are officially recognized as part of the transplant team in the USA, but in other countries the role is less defined. Our objectives were to identify which countries have transplant pharmacists and to describe their role in SOT care.

Methods: An internet search identified contact information for SOT centers in countries other than the USA. (Search=country name+transplant+center OR institution OR program). Institutions were emailed a survey in their official language (39 translations) to determine if they had a transplant pharmacist (Survey 1). Snowball distribution was undertaken via transplant networks. If 'yes', institutions were asked to share another electronic survey with pharmacists (Survey 2). If 'no', they were asked why. Survey 2 for pharmacists had 4 sections: demographics; assessment of roles; barriers to providing care; interest in joining a network.

Results: Of 194 countries, 128 (65.8%) performed SOTs. Survey 1 (sent to 1726 institutions) received responses from 131 institutions/42 countries. Survey 2 received responses from 157 pharmacists in 17 countries other than the USA and 54 in the USA. Of 43 countries responding in total, 41.9% had transplant pharmacists, 21% supplied mixed responses, and 37.2% did not; the most common reason was that pharmacists did not routinely provide clinical care. Most pharmacist respondents from non-US countries (n=157) were licensed for 6-10 years (26.3%), didn't have specialized transplant training (88.4%) and provided inpatient care (86.6%). Most were confident in their ability to provide care (94%) and perceived a demand for SOT pharmacists (94%). Having insufficient time was the most common barrier (59%). In contrast, 72.5% of pharmacists from the USA had clinical training. 53% perceived value in joining a network.

Conclusion: Transplant pharmacists are present in many countries and successes and barriers are identified. A professional network may facilitate international collaborations.

ID#58

Trana Hussaini, University of British Columbia and Vancouver General Hospital

Hematocrit-Adjusted Tacrolimus Levels Early Post-Liver Transplantation: Impact on Rejection and Acute Kidney Injury

Background: Tacrolimus (Tac) is the most widely used immunosuppressant in solid organ transplantation and is highly bound to red blood cells. The pharmacologically active component—unbound Tac (Methods: In this single-center retrospective study, all LT recipients from January 2018 to December 2022 were included, excluding those requiring dialysis. Clinical and biochemical data—including Tac troughs, creatinine, and hematocrit—were collected for the first 90 days post-transplant. Hct-adjusted Tac was calculated as: Adjusted Tac = (0.45 ÷ Hct) × Total Tac

Cox proportional hazards models assessed time to T-cell mediated rejection (TCMR) and acute kidney injury (AKI) as a function of the Tac delta (adjusted Tac – total Tac), adjusting for known risk factors.

Results: Among 413 LT recipients (mean age 56.4 ± 11.2 years, 61% male), median MELD-Na was 19.5. Alcohol-related liver disease (23.5%) and MASLD (12.8%) were the leading etiologies. CMV mismatch occurred in 17.2%; 66% received basiliximab induction. In the first 90 days, TCMR occurred in 15.3%, and 63.2% experienced AKI—most cases were mild. TCMR was associated with immune-mediated liver disease, CMV mismatch, and lack of induction. AKI was associated with higher MELD-Na, serum creatinine pre-LT, and lack of induction. Tac delta was not associated with increased risk of rejection (HR 1.19; P=0.38). Total Tac level, however, was significantly associated with AKI (HR 1.083; P=0.05).

Conclusion: Hct-adjusted Tac levels may better reflect pharmacologically active Tac in anemic LT recipients. Targeting adjusted Tac appears safe and may support more individualized immunosuppression.

ID#59

Muhammad Tassaduq Khan, DOW UNIVERSITY HOSPITAL

Profile of avascular necrosis cases among kidney transplant recipients on a low-dose steroid regimen, A Retrospective Study

Objective: To describe the clinical profile, biochemical parameters, and outcomes of kidney transplant recipients who developed avascular necrosis (AVN) while on a low-dose steroid regimen.

Methods: This descriptive cross-sectional study included 30 kidney transplant recipients diagnosed with AVN between 2017 and 2022. Data on demographics, biochemical markers (calcium, phosphorus, parathyroid hormone levels pre- and post-transplant), steroid protocols, joint involvement, diagnostic methods, rejection episodes, and surgical interventions were analyzed using descriptive statistics.

Results: All patients had hip joint involvement. Most were men (n=21, 70%) with a mean age of 37.23 ± 8.62 years. Five of the nine women (16.7% of total) were postmenopausal. Steroid maintenance started at 0.5 mg/kg/day, tapered to 5 mg/day by the third month. Induction therapy included a single 500 mg intraoperative dose. Biochemical markers remained largely within normal ranges pre- and post-transplant. AVN diagnosis was confirmed by MRI in 28 (93.3%) cases. Eight patients (26.7%) required surgical intervention. Sixteen (53.3%) had experienced rejection episodes in the preceding six months, while 14 (46.7%) developed AVN without prior rejection. Rejection history did not significantly correlate with surgical need (p=0.689). However, gender showed a significant association with surgical intervention (p=0.032), with female recipients more likely to undergo surgery.

Conclusion: AVN in kidney transplant recipients predominantly affects the hip joint, with MRI being the preferred diagnostic tool. Although prior rejection was not significantly associated with surgical outcomes, female recipients were more likely to require surgical management. These findings highlight the importance of incorporating gender-sensitive orthopedic monitoring into post-transplant care.

ID#61

Christie Rampersad, University of Toronto

A Decade of Kidney Transplantation in Canada (2014 to 2023): Regional Trends, Disparities, and Progress

Background: National-level analyses of kidney donation, waitlist outcomes, and transplant activity in Canada are limited. We aimed to describe trends in kidney donation and transplantation across Canada (2014 to 2023), providing a national assessment of transplant system performance.

Methods: This descriptive study used publicly available data from the Canadian Organ Replacement Register of the Canadian Institute for Health Information. We evaluated national and provincial trends in transplant rates (per million population), waitlist outcomes, wait-times, and donor and recipient characteristics. Temporal trends were assessed using linear regression and Jonckheere-Terpstra tests, with waitlist disposition analyzed using chi-squared tests.

Results: From 2014 to 2023, the number of patients remaining on the kidney transplant waitlist declined (3377 to 2448, p Conclusion:

This analysis provides a comprehensive contemporary assessment of Canadian kidney donation and transplantation activity over the past decade. Our findings highlight improvements in deceased donation and reduced waitlist burden, but underscore persistent provincial disparities. These results support ongoing efforts to standardize national reporting and drive system-level improvements.

ID#62

Somaya Zahran, McGill University

Graft Survival Following Microvascular Inflammation: Impact of Donor-Specific Antibodies and Crossmatch Status in Kidney Transplant Recipients

Background: Microvascular inflammation (MVI) is a hallmark of antibody-mediated rejection (ABMR) and is linked to variable graft outcomes. The Banff 2022 classification recognizes MVI as a spectrum based on the presence or absence of donor-specific antibodies (DSA). We evaluated how DSA status and flow cytometric crossmatch (XM) affect graft survival in kidney transplant recipients with MVI.

Methods: We conducted a retrospective cohort study of kidney transplant recipients at Mayo Clinic Rochester (2010–2024) with at least one biopsy showing MVI. Indication and surveillance biopsies (4 months, 1-, 2-, 4-, and 7-yrs post-transplant) were included. Patients were categorized into four groups: de novo DSA, preformed DSA with positive or negative XM, and no DSA. DSA was defined using MFI >1000, and de novo DSA was newly detected 3 months post-transplant. Graft survival was assessed using Kaplan-Meier methods.

Results: Among 3,352 recipients, 410 (12%) had MVI with DSA data: 19% de novo DSA, 62% preexisting DSA, and 19% no DSA. Among DSA-positive patients, 72% had a positive XM. Mean follow-up was 4.5±3.2 years. Graft survival differed significantly by DSA group ($p = 0.031$), with the best outcomes in DSA-negative patients. Survival was similar in de novo and preformed DSA groups. Among DSA-positive recipients, those with a positive XM trended toward worse survival than those with a negative XM ($p = 0.062$).

Conclusion: In kidney transplant recipients with MVI, DSA and XM status predict graft survival. Absence of DSA was linked to better outcomes, while a positive XM identified a higher-risk group. Graft survival was similar in patients with de novo and preformed DSA, differing from prior studies, possibly due to the inclusion of surveillance biopsies, which may have enabled earlier detection. These markers can guide risk stratification and personalize post-transplant care.

ID#64

Jaswanth Gorla, University of Toronto

Perioperative care of kidney transplant recipients: a pan-Canadian survey

Background: Kidney transplantation is the preferred treatment for kidney failure. Demand for organs exceeds supply, making it critical to avoid transplant complications such as delayed graft function (DGF). Several perioperative decision points are associated with DGF, including use of diuretics, blood pressure targets, immunosuppression, blood transfusion, and intravenous fluid use. There are no accepted standards for perioperative management of kidney transplant recipients, and how these key decision points are addressed across Canada is largely unknown. We conducted a Pan-Canadian survey of perioperative kidney transplant clinicians to consider these issues.

Methods: Kidney transplant nephrologists, surgeons, and anesthesiologists working in Canadian kidney transplant centers (n=18) were eligible for inclusion and were invited by email to complete the survey. This survey was developed based on a literature review and multidisciplinary consultation. We included 40 multiple-choice and 16 free-text questions addressing key decision points relating to DGF. Responses were analyzed through descriptive statistics and thematic analysis. Agreement was defined as ≥70% of converging responses.

Results: Seventy-one complete responses were received from perioperative clinicians across 18 surveyed transplant sites (Table 1). There were 13 decision points with agreement, including immunosuppression induction with basiliximab, having a target blood pressure at reperfusion (though the specified target differed), using an intraoperative transfusion threshold of 70-80 g/L, and routine postoperative analgesia by an acute pain service (Figure 1). No agreement was evident for several decision points, including preoperative optimization, perioperative fluids and diuretics, and postoperative hospital course (Figure 2).

Conclusion: We show widespread disagreement regarding several key perioperative decision points for the management of kidney transplant recipients on a national scale. Despite emerging evidence to guide perioperative management, implementation into patient care is lagging. Our data show that a call to action is needed to establish a national multidisciplinary standard for perioperative management of kidney transplant recipients in Canada.

ID#65

Sameer Rathnayaka Koralage, Saskatchewan Health Authority

KTOPPS-AMR: The Kidney Transplant Outcomes and Practice Patterns Study Following Antibody Mediated Rejection

Background: Rejection remains a leading cause of kidney allograft failure, with antibody-mediated rejection being particularly difficult to treat. Despite its clinical significance, optimal management strategies are lacking and vary widely across transplant centers, thus underscoring the need for real-world data to inform evidence-based care and design future clinical trials. Our objective was to identify practice patterns in antibody mediated rejection management in Canadian transplant units and evaluate associations between immunologic risk factors, treatment approaches, and allograft outcomes.

Methods: This retrospective study included adult kidney transplant recipients with biopsy-confirmed antibody mediated rejection, diagnosed between January 1, 2020, and December 31, 2022, across five Canadian transplant centres. The primary outcome was a composite of graft failure or a ≥30% decline in eGFR at 24 months post-diagnosis. Multivariate analysis on immunologic profiles, treatments, and outcomes were performed.

Results: Preliminary analysis was performed on 135 kidney transplant recipients, majority were male (62%) with an average age of 38 ± 15 years. Over half had received a deceased donor kidney (60%) vs. living donor (40%). Median serum creatinine and urine albumin-to-creatinine ratio at time of rejection diagnosis were 192mmol/L (IQR 134, 298) and 42.9mg/mmol creatinine (IQR 9.1, 162.7), respectively. Class II donor-specific antibodies were the most common (55%) while 20% of patients had none. Treatments included steroids (60%), plasma exchange (33%), IVIG (42%), monoclonal antibodies (16%), increasing baseline immunosuppression (34%), and no treatment (13%). Most patients received combination treatments. The primary outcome of graft failure or a ≥30% decline in eGFR at 24 months was reached in 50% of patients. In multivariate analysis, only serum creatinine and urine albumin-to-creatinine ratio predicted the primary outcome.

Conclusions: Antibody mediated rejection remains challenging for clinicians and patients and portends poor outcomes. There is significant treatment heterogeneity, and clinical equipoise would suggest the need for well-designed therapeutic clinical trials.

ID#66

Brianna Andrews, University of Saskatchewan

A pathway of excellence in organ donation and transplantation: A novel curricular design

Background: Solid organ transplantation is a lifesaving treatment for individuals with end-stage organ failure. The demand for donor organs far exceeds supply, resulting in patients dying on the waitlist. Numerous studies report that medical students have limited knowledge in topics around organ donation and transplantation. Our objective was to design a curriculum on organ donation and transplantation.

Methods: This study utilized Kern's curricular development. Qualitative interviews were performed with 1) donation and transplantation healthcare professionals (n=18), 2) organ transplant recipients (n=6), live donors (n=6) and deceased donor families (n=5) to identify teaching topics. A survey conducted with primary care providers (n=16) assessed the significance of topics. Curricular threads were developed linking objectives with specific courses.

Results: Stakeholder interviews identified two competencies essential for organ donation and transplantation education: 1) medical knowledge, 2) patient-centered communication. Within each category, sub-themes emerged: knowledge of kidney disease and transplantation, patient processes, post-surgical care, logistical challenges, empathy and compassion, personal connection, clear communication, advocacy, and practical experiences. Consensus surveys highlighted communication, ethics, logistical challenges, and medical overview of donors and transplantation as being important. Five curricular threads were developed-Science of organ donation and transplantation, Skills of organ donation and transplantation, Communication, Humanistic Aspect of organ donation and transplantation, Showing Empathy-to be embedded within existing courses. Upon completion of the proposed curriculum (Table One), medical students will receive a certificate of excellence in organ donation and transplantation.

Conclusion: We propose a novel curriculum on organ donation and transplantation that is designed from the needs of key stakeholders; healthcare professionals, patients, families, and donors. This curriculum aims to enhance medical student education, ultimately contributing to improved organ donation rates and transplant opportunities.

ID#67

Jacob Michaud, Dalhousie University

Kidney transplant referral, waitlist activation, and transplantation rates in older adults with end-stage kidney disease

Background: Kidney transplantation (KT) offers significant survival and quality-of-life benefits for patients with end-stage kidney disease (ESKD) even for eligible older adults. Despite this, older individuals are less frequently referred for KT. While prior studies have shown age-related disparities in access to KT, contemporary Canadian data are limited. Thus, we sought to describe KT referral, waitlist activation, and transplantation rates in a contemporary Canadian cohort to better define this potential disparity.

Methods: We analyzed a cohort of all adult patients initiating dialysis in our province from 2010 to 2020, with follow-up through 2021, using merged data from our provincial dialysis and transplant databases. Patients aged 18–80 were categorized into three age groups: ≤60, 61–70, and >70–80 years. Those with absolute contraindications to KT were excluded. Multivariable logistic regression and Cox proportional hazards models were used to assess referral within one year, waitlist activation, and time to transplantation, adjusting for demographics, comorbidity, and frailty severity (using the Clinical Frailty Scale).

Results: Of 1153 patients, 785 did not have a contraindication to transplantation. Adjusted odds ratio (aOR) of referral at one year were significantly lower for older groups (aOR 0.56, 95% confidence interval [CI] 0.35-0.89 for the 61–70 group and aOR 0.07, 95% CI 0.04-0.13 for the >70–80 group). Similar trends were observed for waitlist activation (aOR 0.57, 95% CI 0.36-0.89 for the 61-70 group and aOR 0.10, 95% CI 0.06-0.19 for the 71-80 group). However, there was no significant difference in time to transplantation across age groups (adjusted hazard ratios of 0.88, 95% CI 0.62-1.26 for 61-70 years and 0.65, 95% CI 0.33-1.19 for those aged >70-80 years).

Conclusion: Accounting for comorbidity and frailty, older adults with ESKD in our centre face significant disparities in KT referral and waitlist activation, particularly those aged 71–80 years.

ID#68

Robert Wright, BC Children's Hospital Research Institute

Epstein-Barr Virus Donor Seronegative Status Increases the Risk of Post-Transplant Lymphoproliferative Disorder in Seropositive Lung & Heart-Lung Transplant Recipients: Data from the Organ Procurement and Transplantation Network

Purpose: Donor Epstein-Barr virus (EBV) donor seropositive (D+) status is a risk factor for post-transplant lymphoproliferative disorder (PTLD) in EBV seronegative recipients (R-). The impact of donor EBV serostatus on mortality and PTLD in EBV seropositive (R+) thoracic organ transplant recipients is unknown. Methods: We analyzed EBV R+ thoracic organ transplant recipients from the US Organ Procurement and Transplantation Network database (01/2004 – 12/2021). The primary exposure was EBV D+, and the primary outcomes were death and PTLD. Multivariable Cox regression models were used to assess the relationship between donor EBV serostatus and the outcome of death and PTLD. Results: Of 49,458 EBV R+ thoracic organ transplant recipients, 93% were EBV D+/R+, with a median age of 59 years. EBV D-/R+ and D+/R+ thoracic organ transplant recipients differed in donor age, CMV serostatus, and early PTLD. EBV D+ status was not associated with decreased hazard of death in multivariable analyses in lung and heart-lung transplantation (adjusted hazard ratio [aHR] 0. 98; 95% CI, 0.91-1.05; p = 0.598) or in heart transplantation (aHR 1.01; 95% CI, 0.92-1.11; p = 0.802) after controlling for multiple variables. EBV D+ status was associated with decreased hazard of PTLD in lung and heart-lung transplantation when adjusting for donor and recipient age, CMV serostatuses, and early treated rejection (aHR of 0.59; 95% CI, 0.42-0.0.83; p = 0.002). Conclusion: Among EBV R+ thoracic organ transplant recipients, D+ EBV serostatus is not associated with mortality. However, in EBV R+ lung transplant recipients, EBV D+ status may be associated with a reduced risk of PTLD.

ID#69

Varalika Tyagi, University Of Alberta

Norovirus and Sapovirus Associated Chronic Diarrhea in SOT: Does Viral Load Correlate with Severity of Symptoms?

Norovirus (NoV) and Sapovirus (SapV) in solid organ transplant recipients (SOTRs) are highly prevalent and cause chronic diarrhea and prolonged viral shedding. This study aims to evaluate the relationship between clinical severity and stool NoV/SapV-viral load (VL), and clinical and virologic response to different therapeutics. Single center prospective study of adult (>18) SOTRs diagnosed with NoV or SapV. Stool samples were collected at regular intervals; participants' initial clinical samples were also tested. RNA extracts were prepared from 10% weighted-stool samples and subjected to RT-PCR to obtain cDNA (complementary DNA), and quantified using digital PCR (dPCR) assays. Total viral copies per reaction were calculated and converted per gram of stool for each sample. Clinical assessments were performed through questionnaires and chart review. Patients are followed for up to 2 years. Since November 2023, 8 SOTRs (4 lungs, 3 kidney, 1 liver) were enrolled and provided at least one stool sample, median age 58.5, 88% M, with the following viruses: NoV genotype(G) GI (1), NoV GII (5) and SapV (2). Cohort characteristics are in table 1. Diarrhea lasting >14 days was seen in 6/8 SOTRs. Nausea/vomiting was seen in 4/8 SOTRs. Treatment included oral immunoglobulin 3/8, cholestyramine 1/8, modification in immunosuppression 6/8, antimotility 6/8, intravenous hydration 5/8. Five SOTRs required hospitalization. In the 2 SOTRs with SapV, symptoms resolved between 1-1.5 months, and follow-up VL in stool was negative. In NoV SOTRs, stool VL ranged from 1.05 x 10^6 to 2.05 x 10^10 copies/gram at enrollment and diarrhea lasted from 5 days -14 months, with NoV remaining positive in stools despite improvement of symptoms in 5/6 that had follow up stool samples. Figure 1 shows VL of NoV in 6 SOTRs. Preliminary data suggest a high burden of gastrointestinal symptoms and viral shedding in SOTRs with NoV. Continued enrollment, sample collection and sample testing will provide insight into the relationship between stool VL, virus type and clinical symptoms.

ID#70

Matthew Kadatz, University of British Columbia

Prevalence of Tobacco and other Substance Use Disorders Among Solid Organ Transplant Recipients in British Columbia: A Population-Based Analysis

Background:

Tobacco and other substance use disorders (SUDs) are increasingly recognized as important determinants of outcomes in solid organ transplantation, yet the prevalence of SUDs among transplant recipients remains poorly quantified. Improved understanding of SUD prevalence in this population is essential to guide health system planning, support resource allocation, and align with British Columbia's provincial mandate to expand access to mental health and addictions care.

Methods:

We conducted a population-based study of all adult recipients of kidney, liver, heart, or lung transplants in British Columbia from January 1, 2020 to December 31, 2024. Tobacco and other SUDs were identified using linked provincial administrative health datasets, including PharmaNet (medication dispensation), physician billing claims, and hospital discharge abstract database (DAD). Diagnoses were categorized by substance type (e.g., tobacco, alcohol, opioids) and recipients were stratified by organ type. Descriptive statistics were used to estimate the prevalence of SUDs and stratify results by source and transplant type.

Results:

Among the 2,167 solid organ transplant recipients, n = 296 (13.7%) were identified as having a tobacco or other SUD. The most common were tobacco use disorder n = 140 (6.5%) and alcohol use disorder n = 130 (6.0%), followed by opioid use disorder n = 51 (2.4%) (Table 1). Most tobacco and other SUDs were identified using medication dispensation (PharmaNet), followed by physician billings (Medical Services Plan) and hospital discharge (Discharge Abstract Database) data. Prevalence varied by organ type, with the highest rates observed among liver transplant recipients n = 139 (33.0%) (Table 2).

Conclusion:

Tobacco use and other SUDs are common among solid organ transplant recipients in British Columbia. These conservative estimates highlight an under-recognized burden of disease and underscore the need for policies and programs that address addiction as part of pre- and post-transplant care planning and delivery.

ID#71

Varalika Tyagi, University Of Alberta

SARS-COV-2 and other Respiratory Viruses - Prevention and Infection rates in SOT and Caregivers enrolled in TREAT-COVID

Solid organ transplant recipients (SOTRs) are at increased risk of severe respiratory viral infections. Although early in the pandemic, COVID 19 vaccination rates were high in SOTRs, it is unclear if this is still the case in 2024-2025 nor whether SARS-Cov-2 still causes severe disease in SOTRs compared to other respiratory viruses. TREAT-COVID, a prospective multicenter study, with adult and pediatric SOTRs and their Caregivers (Ca), assesses the clinical, mental health, and economic burden of COVID-19 and other respiratory viruses. At each center, participants self enroll on an online platform and enter data through questionnaires every 3 months for up to 2 years. Data is also collected through medical chart reviews. Between September 2024 and March 2025, 438 adult SOTRs and 79 Ca were enrolled and completed baseline questionnaires. Demographics are in Table 1. Organ transplant type: 36% kidney, 25% liver, 22% lung, 8.4% heart, 2% kidney-pancreas and 5.4% other. COVID-19 prevention: 96% of SOTRs and 94% of Cas received at least two doses of COVID-19 vaccine. COVID-19 booster vaccination rates for 2024/25 were 50% and 66% for SOT and Cas respectively. Other vaccines in SOTRs: yearly influenza - 74%; RSV - 25% of eligible. COVID-19 was common prior to 2024 with 65% of SOTRs experiencing COVID-19 before enrollment and among them 39% had multiple infections with treatment administered to 60% of SOTRs for the first and second infection. Remdesivir was the most common treatment. Since enrollment, at the University of Alberta site 9 SOTRs have had COVID-19, 2 - RSV, 3- influenza, 4 - enterovirus/rhinovirus, 2 - coronavirus NL63, 1 - metapneumovirus, and 1 - parainfluenza 2. Participants enrolled have a diverse demographic and organ-type composition. SOTRs had very high vaccination rates but only 50 % of SOTRs received a COVID-19 booster vaccine in 2024. Continued enrollment/data collection will provide insight into other respiratory viruses vaccination and infection rates.

ID#72

Vikas Sridhar, University of British Columbia

Impact of diabetes on the efficacy, mechanisms and safety of SGLT2 inhibitors in kidney transplant recipients

Background: Cardiovascular and kidney protective mechanisms with 12 weeks of the sodium-glucose cotransporter-2 (SGLT2) inhibitor dapagliflozin (10 mg daily) were assessed in kidney transplant recipients (KTR) with and without diabetes.

Methods: This randomized double-blind, parallel-group, placebo-controlled study enrolled 52 KTR and comprised three sequential physiologic assessments under clamped euglycemia (4-6 mmol/l): baseline, at 1 week and 12 weeks of treatment. The primary objective was to evaluate blood pressure (BP) lowering with dapagliflozin in KTR. Secondary outcomes were: iohexol-measured glomerular filtration rate (GFR), natriuresis, body composition, cardiac output monitoring, arterial stiffness, heart rate variability, neurohormones and safety. A subgroup analysis by diabetes status was performed using a three-way interaction between treatment, visit and diabetes status

Results: 51 KTR completed the study – mean age 53.2 years, 62% with hypertension, 57% with T2D, 50% on RAS inhibitors & mean eGFR 68.2 mL/min/1.73m2. Compared to placebo, dapagliflozin did not lower systolic BP at 1 or 12 weeks, though it did reduce mean arterial pressure after 1 week (-3.9±1.8 mmHg, p=0.04). Dapagliflozin led to significant, placebo-adjusted reductions in iohexol-measured GFR from baseline to 1 week (4.2±1.5 ml/min/1.73m2) and 12 weeks (3.48±1.41 ml/min/1.73m2). Dapagliflozin significantly increased glucosuria without altering proximal sodium handling. Dapagliflozin acutely decreased arterial stiffness (carotid augmentation index -3.55±1.24%, pwithin group=0.006) & decreased sympathetic activation (dopamine pwithin group=0.03 and heart rate variability pwithin group=0.04) after 12 weeks. Dapagliflozin was safe and well tolerated. There was no evidence of interaction by diabetes status with respect to the effects of dapagliflozin on BP, arterial stiffness, natriuresis, measured GFR, sympathetic activation, or safety outcomes (Fig 1).

Conclusion: Dapagliflozin activates mechanisms associated with cardiovascular and kidney protection in KTR irrespective of diabetes status.

ID#73

Kevin Meesters, BC Children's Hospital

Trichodysplasia Spinulosa in Pediatric Solid Organ Recipients: a Case Series and Review of Clinical Management

Background: Pediatric solid organ transplant recipients are vulnerable to opportunistic infections, including Trichodysplasia Spinulosa (TS), a rare and disfiguring disease caused by the Trichodysplasia spinulosa–associated polyomavirus (TSPyV). Greater awareness will enhance recognition and timely diagnosis.

Methods: We present a case series detailing the presentation, clinical course, and outcome of children with TS managed at our center.

Results: We describe four pediatric kidney transplant recipients on maintenance immunosuppression with mycophenolate mofetil, tacrolimus, and steroids; one also received antithymocyte globulin for rejection prior to presentation. All patients developed facial and occasionally truncal follicular spicules, with eyebrow and occipital alopecia. The condition caused significant psychological distress, including school avoidance. Diagnosis was based on typical clinical findings; one patient underwent skin biopsy, which showed dilated follicles with keratinaceous debris and enlarged inner root sheath cells—consistent with TS. Management included cautious tapering of immunosuppression and short courses of valganciclovir, which appeared ineffective. Two patients received topical cidofovir with marked improvement in treated areas. One patient received systemic cidofovir after a prolonged course and in preparation for retransplantation, with notable improvement and no recurrence after therapy, despite intensified immunosuppression. All patients ultimately achieved complete lesion resolution.

Conclusion: TS is a rare but likely underrecognized viral infection affecting immunocompromised hosts, particularly kidney transplant recipients. Its true incidence may be underestimated due to limited awareness. TS presents with characteristic follicular spicules—typically facial—and alopecia, particularly of the eyebrows and occiput. These features can cause considerable psychological distress in children. Diagnosis is primarily clinical. Reducing immunosuppression remains the cornerstone of management, though may be constrained by rejection risk. Topical and systemic cidofovir appear beneficial;

valganciclovir showed limited efficacy. Greater clinical awareness is essential for timely diagnosis and care.

ID#74

Hana Mitchell, BC Children's Hospital

Optimizing vaccine uptake in pediatric solid organ transplant recipients – a single center retrospective study by the Canadian Immunization Research Network (CIRN)

Background: Solid organ transplant (SOT) recipients are at increased risk of infections but may be under-immunized. Since 2021, our center has implemented quality improvement (QI) measures to increase vaccine uptake, including annual vaccine reviews, written recommendations to patients, and informational materials. We conducted a retrospective review to compare vaccine uptake before and after implementation of these measures.

Methods: We included all SOT recipients aged 2–18 years, at least one year post-transplant, followed at our program as of March 1, 2020 (pre-intervention cohort), or March 1, 2024 (post-intervention cohort). Recipients meeting eligibility at both time points were included in both cohorts. Vaccine uptake was assessed using immunization records. Participants were considered fully immunized if they had received all recommended, non-live, publicly funded vaccines in accordance with provincial guidelines for SOT recipients, excluding seasonal influenza and COVID-19. Data were analyzed using descriptive statistics.

Results: The pre-intervention cohort included 106 participants, and the post-intervention cohort included 118; 58 were included in both. Participant characteristics are summarized in Table 1. The proportion of fully immunized participants increased marginally from 0% in 2020 to 8% in 2024. The proportion of participants missing three or more vaccines declined from 75% in 2020 to 44% in 2024 (Table 2).

Changes in vaccine uptake by antigen are presented in Chart 1. Improvements were most notable for meningococcal and hepatitis B boosters, the pneumococcal polysaccharide vaccine, and the human papillomavirus (HPV) series. Influenza uptake, measured only in 2024 for the preceding season, was low at 46%. The three-dose COVID-19 vaccine series was completed by 67% of participants in 2024.

Conclusion: SOT recipients at our center remain under-immunized. Implementation of QI measures has led to improved uptake. Future efforts should focus on booster vaccines,

HPV, and influenza. Incorporating patient and caregiver perspectives on vaccination may enhance counselling and further improve uptake.

ID#75

Irene Chen, UBC and BCCHR

Information seeking and engagement on social media among pediatric solid organ transplant recipients and their families

Background:

Social media is widely used among adolescents and offers unique opportunities to support children with chronic illnesses by enhancing disease-specific knowledge and improving psychosocial well-being. Despite this, little is known about how pediatric solid organ transplant (SOT) recipients and their families engage with these platforms. The objective of this study is to characterize how this population seeks and shares information and engages with other users on a transplant support group.

Methods:

A comprehensive search of the Reddit support group r/transplant was performed. Publicly available posts and comments were included if they self-identified as a pediatric SOT recipient (0–24 years old) or a family member of one. An inductive content analysis was performed to identify key topics. Self-disclosed demographic information was used to explore differences in discussion topics and levels of engagement.

Results:

A total of 357 posts and 5827 comments met inclusion criteria. Users most commonly discussed medical complications or symptoms, medication management, peer and social support, healthcare experiences, and post-transplant recovery (Figure 1). Family members predominantly focused on medical issues, while recipients addressed a broader range of topics, including mental health and personal milestones (Table 1). Topics users engaged with varied by time since transplant: recipients 0–4 years post-transplant frequently discussed emotional and medical challenges, while those 5+ years post-transplant focused more on celebrating milestones in their transplant journey. No significant differences were observed based on self-disclosed gender, type of organ, or age at

transplant. Overall, users described r/transplant as a valued source of community and connection.

Conclusions:

Pediatric SOT recipients and their families use social media to seek information, share lived experiences, and foster peer support. Engagement patterns differ between recipients and their family members and years post-transplant, suggesting the potential for tailored online interventions to support evolving needs across the transplant journey.

ID#76

Maya Allen, University Health Network

Unbiased and Spatial Proteomics of Kidney Allograft Biopsies: Terminal Complement Proteins Dominate Chronic Active Antibody Mediated Rejection

Transplantation is the optimal treatment for end-stage kidney disease, but many grafts fail prematurely due to antibody mediated rejection (AMR). AMR is caused by donor-specific antibodies (DSA) against antigens on the graft endothelium. Diagnostic criteria for AMR in kidney allografts consider graft injury, evidence for antibody interaction with the endothelium (i.e. C4d staining in the microvasculature), and circulating DSA. AMR is further stratified into active (aAMR) or chronic-active (caAMR) by the presence of chronic glomerulopathy in the latter. Intriguingly, 50% of patients exhibiting microvascular inflammation consistent with AMR do not have DSA (DSA-AMR). To gain insights into the molecular underpinnings of AMR with and without DSA, we investigated proteomic differences in for-cause biopsies of these groups. Laser capture microdissection was used to separate tubulointerstitium and glomeruli of biopsies from 83 DSA+ and DSA- patients with aAMR or caAMR, followed by unbiased proteomic analysis using a Q-Exactive HFX mass spectrometer. Results demonstrated that proteins in the complement cascade were amongst the most significantly differentially expressed proteins in both compartments ($p < 0.05$). Terminal proteins of the complement cascade (C5-C9) were not significantly different in C4d+ and C4d- biopsies. Interestingly, C6, C8B, and C8G were increased in DSA+AMR biopsies compared to DSA-AMR biopsies (Fig. 1). All terminal complement proteins except C7 were increased in caAMR when compared to aAMR. In the glomeruli, quantified complement proteins were increased in caAMR compared to aAMR, with no significant difference between DSA+AMR and DSA-AMR biopsies (Fig. 1). Regulatory complement proteins followed similar patterns in both compartments. Preliminary imaging mass cytometry data demonstrated C5a expression in the basement membranes of biopsies with DSA+caAMR, while activated terminal complement C5b-9 co-stained with IgG (Fig. 2). Increased complement expression in both DSA+ and DSA- biopsies with caAMR, with C5a expression notable in basement membranes, suggests complement involvement in chronic glomerulopathy.

ID#78

Irene Chen, UBC and BCCHR

Mental health in children living with a solid organ transplant and their families: exploring narratives shared on social media

Background:

Solid-organ transplantation (SOT) can save a child from organ failure, but it comes with many challenges. Recent studies show higher rates of anxiety, depression, chronic stress and post-traumatic stress symptoms in pediatric organ recipients, and their families.

Although social media is an important resource for children and adolescents with chronic health conditions, we know very little about how children with a SOT and their families share and access information on social media. The objective of this project is to determine how the SOT patient community uses social media to engage about mental health.

Methods:

A comprehensive search of the Reddit support group r/transplant was performed. Publicly available posts and comments were included if they self-identified as a pediatric SOT recipient (0–24 years old) or a family member of one. A qualitative thematic analysis was conducted using a coding guide developed through an iterative process, specifically targeting mental health-related content to identify major themes.

Results:

A total of 357 posts and 5827 comments were included in analysis. Three central themes emerged: (1) Uncertainty surrounding organ rejection and retransplantation, highlighting mortality and anxiety as a persistent concern; (2) Emotional burden of receiving an organ, with many users expressing guilt toward their donor and dealing with existential questions and expectations about life post-transplant; and (3) Being a young person living with a

transplant, including peer and relationship difficulties, struggles with body image and self-esteem, and identity formation as a transplant recipient (Table 1).

Conclusion:

This study will contribute new evidence and actionable findings on the mental health challenges shared by pediatric transplant patients and their families on social media. By understanding how this community uses social media, we can advocate for the improved quality and availability of mental health resources both online and offline.

ID#79

Christopher Yu, BC Chilren's Hospital Research Institute

Long Term Life Experiences and Outcomes of Pediatric Transplant Patients

Background: Social media is used extensively by adolescents to share information and find community. This study seeks to understand how pediatric Solid Organ Transplant (SOT) recipients share their lived experience on social media.

Methods: We accessed r/transplant, a subreddit for transplant patients, donors and supporters, and extracted posts (post-2015) involving pediatric recipients (0-24 years old). Using a mixed method qualitative approach, inductive coding/codebook development was conducted in NVivo 14. Topics relevant to life experience were subclassified under 8 subthemes. Post demographics were evaluated for differences in subtheme topical trends.

Results: Of the 357 posts from 247 unique users, 301 (84%) posts were from 203 recipients of a transplant at mean age 12±7 years. In reporting subsets, 20 (49%) were female and recipients of kidney (47%), heart (25%), liver (21%) or lung transplants (5%). Life experience post-transplant was a predominant theme in 262 posts (87%), dealing with medical care (60%), attitude, quality or outlook on life (23%), interpersonal relationships (22%), education or career (16%), celebrating milestones (13%), and general (10%) (Table 1). The life experience themes shared by family or transplant recipients themselves were similar.

Patients who received their transplant before age 13 shared their attitude, quality or outlook on life more than recipients 13 years or older (p Conclusion: The types of engagement on life experiences in social media by transplant recipients differs based on the demographics of the participant. Exploring these differences may help inform tailoring clinical supports for transplant recipients to their phase of transplant journey.

ID#80

Kendra-Lee Dupuis, Brock University

Prospect of an Organ Donation After Uncontrolled Death by Circulatory Criteria Program in Canada: Leaders and Key Stakeholders Perspectives

Background: While organ donation rates in Canada have increased, particularly from donation pathways following death determined by circulatory criteria, the demand continues to exceed supply. This ongoing gap underscores the importance of pursuing innovative approaches to expand donation opportunities. Programs of uncontrolled donation after death by circulatory criteria (UDCC) have demonstrated success internationally, yet they remain underexplored in the Canadian context. Thus, the purpose of this study was to explore the perspectives of leaders and key stakeholders in organ donation organizations across the country, to gain an understanding of the unique factors that may influence UDCC program development.

Methods: In this ongoing qualitative descriptive study, we are using semi-structured virtual interviews to explore the perspectives of key leaders and stakeholders in organ donation and transplantation programs across the country regarding a potential implementation of a UDCC program in Canada. The interviews are being transcribed verbatim and transcripts are being analyzed through identification and organization of codes and themes.

Preliminary Results: We interviewed 19 leaders, with representation from national and provincial level programs. Early findings highlight the numerous logistical, ethical, geographical, economic and resource-related challenges that may impact feasibility and implementation of UDCC programs in Canada. Concerns about increasing inequities were also raised. Participants have expressed a strong desire for clear data to determine whether pursuing this pathway is worthwhile. Meanwhile, some saw an opportunity to expand into alternative routes such as ECMO and tissue donation pathways. A majority emphasized the need to prioritize saving lives and maintaining public trust in the donation process when considering any advancements.

Conclusion: This is an ongoing project that has the potential to shed light for national discussions on novel pathways to support the system in increase donation rates. We will present final results at the 2025 CST Annual Scientific Meeting.

ID#81

Irene Chen, UBC and BCCHR

Social media as a tool for information and support: survey insights from pediatric solid organ transplant recipients and their families

Background: Social media is becoming increasingly integrated in the healthcare journeys of children and adolescents. Despite this, little is known about the role of social media in the lives of pediatric solid organ transplant (SOT) recipients and their families. This study aims to better understand this population's motivations for using social media, particularly for psychosocial support, and perceived barriers and facilitators to its use.

Methods: A social media use survey was developed in consultation with patient partners and distributed through transplant organizations and social media groups. The survey consisted of multiple question types and assessed: 1) type and frequency of social media use, 2) motivations for use, 3) barriers and facilitators to accessing social media, and 4) psychosocial resource needs.

Results: Thirty-three respondents participated in the survey. Respondents used an average of 5 social media platforms, with Facebook and Reddit being used more frequently to engage with transplant-related content. There were three main motivations for social media use: seeking or sharing information or support on medical topics, psychosocial topics, and long-term transplant outcomes (Table 1; Table 2). While many respondents reported using social media for these purposes, concerns about the credibility, relevance, specificity, and privacy of online content were prevalent (Figure 1). Online and social media-based mental health resources were generally perceived as helpful.

Conclusions: These findings underscore the need for safe, credible, and tailored digital supports for this population that address information and support needs while mitigating concerns about engagement.

ID#82

Brianna Andrews, University of Saskatchewan

Exploring the journey of patients, families, and donors in organ donation and transplantation: A qualitative study

Background: Organ transplantation is the treatment of choice for most patients with end stage organ failure. However, the journey of patients, families, and donors within donation and transplantation can be complex. Understanding this journey can help improve the quality of care and efficiency of the organ donation and transplantation process. Our goal was to better understand the journey of transplant recipients, live donors and families of deceased donors and explore interactions with the healthcare system.

Methods: Qualitative interviews were performed with 17 transplant recipients (n=6), live donors (n=6), and family members of deceased donors (n=5) to explore experiences with the donation process, factors impacting decision-making, information received, interaction with healthcare providers, views on areas of improvement, and public information on donation. Interviews were audio-recorded, transcribed, and analyzed thematically using NVivo 14.

Results: Themes identified for each category are summarized as 1) decision making: finances, support systems, and concerns for dependents; 2) information received: surgery process, recovery process, testing plan, lack of information on timelines; 3) interaction with healthcare providers: communication methods, support from transplant coordinators, negative interactions; 4) areas of improvement: culturally sensitive supports, empathy for patients. The recovery and surgery process were common themes for living donors and transplant recipients, while knowledge around which organs are considered and viable were important for family members of deceased donors. Participants felt that information around the entire transplant and donation process was an area of potential improvement. Patient quotes from each category are summarized in Table one. Attitudes on public information around organ donation included awareness campaigns, schools, family doctor visits, and with healthcare teams.

Conclusions: Patients, families, and donors provide valuable information to improve the donation and transplant journey and processes. Healthcare providers can improve this

journey using empathy, culturally sensitive communication, and more thorough information.

ID#83

Daniel Fantus, CHUM

Diagnostic Potential of Combined Urine CXCL10 and Donor-Derived cfDNA in Kidney Transplant Rejection

Background: There is evidence to suggest donor-derived cell-free DNA (dd-cfDNA) and urine CXCL10 outperform serum creatinine as a biomarker of antibody-mediated rejection (AMR) and T cell-mediated rejection (TCMR). We hypothesized combining these biomarkers would improve the overall detection of rejection. Methods: We performed a retrospective single-center, case-control study of 96 adult renal transplant recipients who had for cause or surveillance biopsies, participated in our local biobank, and had urine and plasma samples available. Rejection was classified by Banff 2022 criteria. Results: In a multiple logistic regression model, log10 percent dd-cfDNA (OR 32.218, 95%CI 2.683-884.425, p=0.005) and de novo DSA (OR 19.612, 95%CI 1.439-2795.090, p=0.024) were associated with AMR, while serum creatinine and CXCL10 were not. In a multiple logistic regression model, log10 urine CXCL10 was associated with TCMR (OR 4.830, 95%CI 1.320-23.900, p=0.030), while serum creatinine and dd-cfDNA were not. Conclusion: dd-cfDNA and urine CXCL10 independently improved the non-invasive detection of AMR and Banff Borderline and greater TCMR, respectively, above standard-of-care biomarkers. Individualised biomarker-guided screening strategies based on AMR versus TCMR risk and time post-transplant warrants further study.

ID#84

Jacob Michaud, Dalhousie University

Impact of COVID-19 on hospital outcomes for solid organ transplant recipients: a retrospective analysis of the Canadian Organ Replacement Register

Background: Solid organ transplant recipients (SOTRs) are vulnerable to adverse hospital outcomes from COVID-19, but less is known about comparative risks between organ subtypes, particularly for admissions with and without a COVID-19 diagnosis.

Methods: We used data from the Canadian Organ Replacement Register and the Discharge Abstract Database to examine hospitalization rates and outcomes among adult SOTRs in all provinces (excluding Quebec and Manitoba) from January 2021 to December 2022. Hospitalization rates and adverse outcomes including transfer to a special care unit (SCU), and in-hospital mortality were analyzed by organ subtype (kidney was reference). Separate analyses were performed based on COVID-19 diagnosis status. Rates were analyzed using negative binomial or Poisson regression models.

Results: Among 23,497 SOTRs, 14,628 (62.3%) were recipients of kidney transplants. 10.3% and 33.2% of SOTRs experienced a hospitalization that did and did not include a COVID-19 diagnosis, respectively. Incidence rates and incidence rate ratios (IRRs) are noted in Table 1. Lung transplant recipients were more likely to be hospitalized (IRR 1.65, 95% confidence interval [CI] 1.52-1.80) and die in hospital (IRR 1.2, 95%CI 1.05-1.34) with a COVID-19 diagnosis than kidney transplant recipients. Heart and liver recipients were less likely to be hospitalized or develop a poor outcome. Lung and other/multi-organ recipients were more likely to be hospitalized without a COVID 19 diagnosis (IRR 1.94, 95%CI 1.76-2.15; IRR 1.81, 95%CI 1.45-2.26; respectively), transferred to a SCU (IRR 1.89, 95%CI 1.58-2.27; IRR 1.81, 95%CI 1.45-2.26; respectively) , and die in hospital (IRR 2.04, 95%CI 1.84-2.27; IRR 1.57, 95%CI 1.33-1.85; respectively) relative to kidney transplant recipients.

Conclusion: SOTRs in Canada, especially lung transplant recipients, experience high rates of hospitalization, SCU admission, and in-hospital mortality. Comparative differences between organ subtypes for admissions with and without a COVID-19 diagnosis may reflect differences in immunosuppression, informing areas for future research.

ID#85

Julie Turgeon, CHUM centre de recherche, Université de Montréal, CNTRP

Circulating Apoptotic Exosome-Like Vesicles (ApoExos) are Associated with Alloimmune Vascular Injury in Kidney Transplant Recipients

Background: Apoptotic endothelial cells release small, proteasome and LG3 carrying extracellular vesicles (ApoExos). Although rejections with alloimmune vascular injury (AVI) portend a poor prognosis, there is currently no available biomarker for AVI. Here, our aim was to evaluate whether circulating ApoExos are increased in kidney transplant recipients (KTR) experiencing acute rejections with AVI.

Methods: We performed a retrospective cohort study including consecutive KTR between 2008 and 2016 in 2 Canadian adult transplant centers. All patients underwent a surveillance or indication kidney graft biopsy and had serum available for analysis from our biobanks. AVI was defined as grade 2A, 2B or 3 T-cell mediated rejection (TCMR) or antibody-mediated rejection according to the Banff 2022 classification. We measured ApoExos at the time of the biopsy using high sensitivity flow cytometry with a LWA300 proteasome probe, Cell Tracker and Annexin V. We fit a multivariable linear regression model to assess the association between rejection with AVI and natural log (ln) transformed ApoExos levels.

Results: Amongst the 307 KTR, 50 had rejections with AVI, while 257 biopsies without alloimmune vascular injury served as comparators (grade 1 TCMR (n=33), borderline changes (n=68), thrombotic microangiopathy (n=13), other diagnoses (n=5) and normal histology (n=138)). ApoExos were higher in patients with rejections with AVI compared to those without (Figure 1, p=0.03). In a multivariable model (Table 1) adjusting for recipient age, race, estimated glomerular filtration rate at the time of biopsy, post-transplant diabetes and donor vascular disease, we observed higher levels amongst patients with acute rejection with AVI (adjusted difference: 0.53 ln higher, 95% confidence interval 0.14-0.93).

Conclusions: Alloimmune vascular injury at the time of acute graft rejection is independently associated with higher levels of ApoExos. The clinical usefulness of this novel biomarker to predict the occurrence of AVI or follow treatment response deserves further studies

ID#86

Nicole Chrysler, Toronto Lung Transplant Program, University Health Network

Anti-donor t cell dynamics and CLAD risk in the assessment of lung allograft rejection – measurement of T cell immune synapses (ALARM-T) study

Background: Assessing T cell alloreactivity in lung transplant (LT) recipients may allow risk stratification and immunosuppression optimization. We have developed an imaging flow cytometry (IFC) based immune synapse detection method for quantifying and phenotyping alloreactive T cells. We hypothesized that an increase in peripheral blood alloreactive T cells in LT recipients post-LT would be associated with the development of chronic lung allograft dysfunction (CLAD).

Methods: We prospectively and longitudinally collected peripheral blood lymphocytes and monocytes from 61 LT recipients and their donors (Fig A). Donor and recipient monocytes were differentiated into monocyte-derived dendritic cells (MoDCs) while recipient T cells were isolated pre-LT and every 3 months post-LT for one year. Cells were cryopreserved, recovered for 4h MoDC-T cell coculture, fixed, stained for IFC, and immune synapses were enumerated as a percentage of T-MoDC contacts in a membrane contact gate. Alloreactive T cell frequencies were normalized to the lymphocyte count at each time point (Fig A).

Results: Anti-donor T cell counts increased from pre-LT to 6 months post-LT in patients developing CLAD within 5-years ($p=0.0002$, Fig B). In contrast, patients who did not develop CLAD within 5-years post-LT showed a significant decrease in alloreactive T cell count from pre-LT to 6 months post-LT ($p=0.0004$, Fig C). Pre-LT memory CD4+ T cells dominate the alloreactive compartment in patients with later CLAD by 5 years (Fig D).

Conclusions: Our data suggest that T cell alloreactivity changes within the first 6 months post-LT, as identified by our immune synapse detection assay, may impact graft outcome, with pre-LT anti-donor memory T cells linked to CLAD. Ongoing full cohort analysis will clarify the link between alloreactive T cells, CLAD, and other outcomes, considering clinical variables.

ID#87

Bohan Zhu, University Health Network

Determining the Presence and Mechanism of Ferroptosis in Steen-related Cell Injury in a Cell Culture Model

Background: Ex-vivo lung perfusion (EVLP) is a technology that has revolutionized donor lung assessment. However, markers of programmed cell death pathways have been observed to be activated and/or exacerbated in donor lungs that have undergone EVLP. EVLP may be further improved by addressing the EVLP perfusate – Steen solution. This study aims to examine the effect of Steen solution on mechanisms of ferroptosis - an iron-mediated form of cell death implicated in EVLP - to guide the development of a novel EVLP perfusate.

Methods: Human bronchial epithelial cells and human pulmonary microvascular endothelial cells were cultured to sub-confluence at 37℃ and then exposed to either Steen solution or control (culture medium) for 24 and 48h. Antioxidant and protein levels related to ferroptosis were examined with enzymatic assay and western blotting.

Results: Glutathione, a critical antioxidant, was significantly depleted in epithelial cells incubated in Steen solution compared to control after 24h. Related, the activity of glutathione peroxidase 4, an enzyme that attenuates lipid peroxidation, was significantly decreased in Steen solution after 48h. However, no difference in protein levels was observed. Protein levels of SLC7A11, a major transporter involved in glutathione biosynthesis, were increased in Steen solution after 48h in both cell lines, indicating a compensatory upregulation. Moreover, there was no significant difference in antioxidant transcription factor NRF2 after 48h. However, its regulator, KEAP1, was significantly decreased in both cell lines at 48h. Upregulation in iron storage was implicated by an increase in FTH1, a regulator of iron levels, and a decrease in its modulator, NCOA4, in both cell lines after 48h.

Conclusions: Compared to culture medium, prolonged exposure to Steen solution led to a disruption in the antioxidant axis and compensatory anti-ferroptosis mechanisms. Further investigation into ferroptosis is warranted to identify targeted therapeutics to improve the cytoprotective function of the EVLP perfusate.

ID#88

Daniel Vosoughi, Toronto Lung Transplant Program, University Health Network (UHN)

Post-lung transplant (LT) longitudinal bronchoalveolar lavage (BAL) profiling reveals prognostic autoantibodies (AABs) with pathogenic potential in Chronic Lung Allograft Dysfunction (CLAD)

Introduction: We identified novel AABs strongly associated with future CLAD. It remains unknown whether AABs exhibit distinct longitudinal dynamics that might likewise carry prognostic value, and whether they bind cognate cell-surface antigens of pathogenic relevance.

Methods: Post-LT BAL samples were retrospectively collected at 3, 6, 12, 18, and 24-months (m) post-LT from 79 patients who developed CLAD before 5 years (CLAD; n=28) or remained CLAD-free for at least 5 years (noCLAD; n=51). AABs were profiled by antigen microarray. Surfactant protein-D (SP-D), secreted by alveolar-type-II (AT2) cells, was measured by ELISA. Next, explanted lung tissue from CLAD (n=12; BOS, n=5; RAS, n=7), IPF (n=3), COPD (n=3), and donor (n=5) patients were analysed by flow cytometry. Plasma samples paired to CLAD tissue (n=11) were profiled for AABs.

Results: Four BAL AABs significantly elevated over time in CLAD were associated with future CLAD at 12, 18, and 24-m post-LT (Fig.1A). Among these, IgG anti-GRP78 levels spiked at 12-m (Fig.1B), more so in early CLAD (≤ 24-m, Fig.1C), and coincided with a marked decline in SP-D levels (Fig.1D). GRP78 is known to translocate to the cell surface under conditions of stress. AT2 cell-surface GRP78 was significantly elevated in BOS, and more so in RAS – the more severe CLAD phenotype – and in IPF (representing non-transplant related pulmonary fibrosis) (Fig.2A). Plasma IgG anti-GRP78 levels were strongly negatively correlated with GRP78+ AT2 cells (Fig.2B), possibly reflecting depletion, and positively correlated with intragraft IgG+ class switched memory B-cells (Fig.2C).

Conclusion: BAL AABs appear prognostically useful. IgG anti-GRP78 levels spike concurrent with SP-D decline, possibly reflecting AAB-mediated AT2 cell injury/death. Presumably, allograft stress induces AT2 cell-surface GRP78 translocation, driving a GRP78-directed B-cell response and enabling AAB-GRP78 ligation, leading to injury, death, and clearance as a conceivable mechanism of CLAD and pulmonary fibrosis.

ID#89

Sarita Negi, Human Islet Transplant Laboratory and Program, McGill University Health Centre

Modulation of the PD-1/PD-L1 Axis by Novel RORγ Inverse Agonists: Implications for Immune Regulation in Transplantation

Background

The PD-1/PD-L1 immune checkpoint axis is critical for regulating peripheral tolerance and alloimmune responses in transplantation. RORγ, a nuclear receptor essential for Th17 differentiation, appears to negatively regulate PD-L1 expression by binding its promoter. Our lab previously developed RORγ inverse agonists that suppress Th17 activity, reduce inflammation and fibrosis, and prolong graft survival in skin transplant and liver injury models. However, the impact of RORγ on PD-1/PD-L1 expression in immune cells remains unclear.

Methods

We inhibited RORγ expression using siRNA or inverse agonists in pancreatic and breast cancer cell-lines and quantified PD-L1 expression using qPCR. To investigate this mechanism in immune cells, PBMCs from eight healthy donors. PBMCs were stimulated with CD3/CD28 and treated for five days with vehicle or two RORγ inverse agonists (100nM and 1µM). Flow cytometry was used to quantify PD-1 and PD-L1 expression on $CD4^+$ and $CD8^+$ T cells, $CD19^+$ B cells, $CD14^+$ monocytes, $CD11b^+$ myeloid cells, and $CD56^+$ NK cells. Data were analyzed using FlowJo; paired t-tests were used for comparisons.

Results

Inhibition of RORγ with siRNA or inverse agonists increased PD-L1 expression in both cell-lines. In PBMCs, 1µM RORγ inverse agonist treatment significantly upregulated of PD-1 on $CD4^+$ T cells, with no consistent changes observed in $CD8^+$ T cells or B cells. PD-L1 expression was upregulated on $CD14^+$ monocytes and $CD56^+$ NK cells, indicating cell type–specific effect. Increased PD-1 expression on $CD4^+$ T cells may reflect a shift toward an exhausted or tolerogenic phenotype, while enhanced PD-L1 on monocytes and NK cells could contribute to peripheral immune suppression.

Conclusion

In transplantation, RORγ inverse agonists may offer dual benefits: promoting immune tolerance through enhanced checkpoint signaling and suppressing pathogenic Th17 responses. Further studies are needed to define the downstream functional consequences and assess their therapeutic utility.

ID#90

Golnaz Amidpour, University of Toronto, Ajmera Transplant Center

Deep Phenotypic Profiling of T-cells in Solid Organ Transplant Recipients with Relapsing Human Cytomegalovirus DNAemia

Background: Human cytomegalovirus (HCMV) relapse after initial clearance of DNAemia is a common complication in solid organ transplant (SOT) recipients and is associated with increased risk of HCMV disease, graft dysfunction, and mortality. However, the immunological correlates of relapse remain poorly defined. This study aimed to characterize T-cell features associated with HCMV relapse in this high-risk population. Methods: We conducted longitudinal immunophenotyping in 33 SOT recipients with HCMV DNAemia. Peripheral blood mononuclear cells were assessed at onset of DNAemia and one month post-DNAemia and correlated with HCMV relapse, using a 25-colour multiparameter flow cytometry assay to characterize global and HCMV-specific $CD4^+$ and $CD8^+$ T-cell responses. Relapse was defined as recurrent DNAemia (>1,000 IU/mL) within six months of initial clearance. Results: Participants had a median age of 59 years; 39.4% developed HCMV relapse. HCMV-specific $CD4^+$ and $CD8^+$ T-cell frequencies were generally low across participants. Although these responses increased over time, no significant differences were observed between relapsing and non-relapsing individuals. Notably, distinct differences emerged in bulk T-cell profiles. Participants with relapsing DNAemia had lower frequencies of granzyme B^+ $CD4^+$ T cells at both timepoints, granzyme B^+ $CD8^+$ T cells at DNAemia onset, and $CD40L^+$ $CD4^+$ T cells at one month. Exhaustion marker profiling using Boolean gating identified common $CD4^+$ and $CD8^+$ T-cell phenotypes associated with differential relapse risk: LAG-3^+PD-1^+TIGIT$^+$ T cells were more frequent in non-relapsing individuals, while CTLA-4^+TIGIT$^+$ T-cells were enriched in those who relapsed. Conclusion: T-cell activation and cytotoxicity markers, particularly granzyme B and CD40L, along with distinct exhaustion phenotypes, may serve as biomarkers for predicting HCMV relapse. These findings support the use of immune profiling to stratify SOT recipients by relapse risk as a complement to conventional virologic monitoring, and inform the development and timing of T-cell-based therapies against HCMV.

ID#92

Cora England, Western University

The addition of molecular hydrogen during the hypothermic pulsatile perfusion of renal grafts in porcine models confers a protective effect against IRI in ex vivo simulated transplantation

Background: The clinical standard of kidney preservation for transplantation involves storage of renal grafts in a preservation solution on ice at 4ºC. However, experimental and clinical evidence show that storage with standard preservation solutions contributes to renal injury, and negatively impacts graft quality and function. The present study compares the effects of a novel, shelf-stable hydrogen-saturated solution and standard organ preservation solution in an ex vivo porcine model of donation-after-circulatory-death (DCD) kidney preservation and transplantation.

Methods: Renal arteries of male Yorkshire pigs (n=6) were clamped in situ for 60 minutes to induce ischemia, and the ureters and arteries were cannulated to mimic DCD kidney injury. Upon nephrectomy, renal grafts were flushed with University of Wisconsin (UW) solution or hydrogen-saturated (0.5mM) UW solution and then preserved by hypothermic pulsatile perfusion at 4°C for 4 hours followed by a 4-hour reperfusion with autologous blood at 37°C using ex vivo pulsatile perfusion apparatus. Urine and arterial blood samples were collected hourly for analysis, and hourly urine production during reperfusion was recorded. Sham-operated pigs served as control.

Results: Histopathologically, hydrogen-treated kidneys demonstrated significantly improved cellular structure, evidenced by an over 50% reduction in acute tubular necrosis score, as well as reduced renal expression of KIM-1, IL-6, CD68, MPO, MDA and TUNEL compared to UW only group (Figure 1; p Conclusion: Supplementation of standard preservation solution with molecular hydrogen improved renal graft quality and function. This suggests that clinical adoption of ready-for-use hydrogen-based organ preservation solutions may help expand the pool of donor kidneys by enhancing the quality and viability of kidneys procured under sub-optimal conditions.

ID#93

Tamara Sidar Ortas, UWO

Evaluation of Sodium Thiosulfate Supplementation in a Porcine Model of DCD Kidney Preservation

Background

Kidneys from donors-after-circulatory-death (DCD) are increasingly used to meet transplant demands but are highly susceptible to ischemia-reperfusion injury (IRI). We investigated whether supplementing the standard preservation solution with sodium thiosulfate (STS), an FDA-approved hydrogen sulfide (H_2S) donor, could enhance graft viability and function in an ex vivo porcine model of DCD kidney transplantation.

Methods

Male (n=7) and female (n=7) pigs underwent 60 minutes of warm ischemia via in situ renal artery clamping. Kidneys were then nephrectomized and preserved at 4°C in University of Wisconsin (UW) solution with or without STS (150 µM) for 8 hours. Reperfusion was simulated ex vivo using autologous blood at 37°C for 4 hours.

Results

In males, STS-treated kidneys demonstrated higher urine output (2340 mL vs. 1426 mL, P = 0.057) and improved renal flow rate (Figure 1) during reperfusion, and significantly improved creatinine clearance in the first hour of reperfusion (28.9 vs. 12.7 mL/min, P = 0.0089). While a similar trend was observed in females, differences were not statistically significant. Across both sexes, STS significantly reduced acute tubular necrosis scores (mean 1.8 vs. 2.4, P = 0.0051). Scoring was based on percent necrosed area: 1 = 75%. Western blot analysis of male kidneys showed reduced IL-6 expression with STS treatment (P = 0.045), indicating decreased inflammation (Figure 2). Transcriptomic analysis (n=1 per group) suggested STS upregulated genes involved in repair, anti-oxidative, and anti-apoptotic pathways, and downregulated inflammatory and apoptotic markers (Figure 3).

Conclusion

STS supplementation during kidney preservation appears to mitigate IRI and support graft function, particularly in males, with promising potential to improve DCD transplant outcomes.

ID#94

Francisco Reyna-Sepulveda, MOTP Atlantic Canada

Hypothermic Machine Perfusion for Renal Preservation in Low-Income Regions

Background: Ischemia-reperfusion injury during organ procurement and transport remains a major challenge. Traditional static cold storage provides suboptimal preservation, especially in marginal or extended-criteria donors. This study designed and developed an innovative, portable, and cost-effective device for hypothermic renal perfusion to enhance renal preservation during organ transportation in Mexico.

Methods: The device was conceptualized as a compact and portable renal perfusion and transport system, designed for low cost and real-time monitoring. It is enclosed in a thermally insulated container with three internal compartments: a coolant storage, an electronic control platform, and a disposable perfusion circuit. The electronic platform monitors: perfusate temperature (0-4 °C) using DS18B20 sensors to suppress metabolic activity and preserve ATP; renal arterial pressure (target: 25-30 mmHg) via with a Pressure Transducer; vascular resistance, as an indirect indicator of endothelial function and graft viability; air bubbles, using a BE-A401 optical sensor to prevent embolism risk. The perfusion circuit includes a sterile organ chamber in contact with ice blocks, a renal artery cannula, a conduction tube, and a three-way stopcock for bubble diversion. Custodiol® solution was used as the preservation fluid. A Raspberry Pi 5 coordinates all components and drives the peristaltic pump.

Resultados: The proposed invention enables a donor kidney's continuous and controlled hypothermic perfusion. Real-time digital feedback is provided for key parameters, including temperature, pressure, flow, and air bubble detection, managed by the Raspberry Pi 5. All hardware components—sensors, pump, and perfusion elements—have been successfully assembled and operated under controlled conditions. Initial bench integration using ex vivo porcine kidneys confirmed the system’s capacity to circulate preservation solution and monitor the designed variables.

Conclusions: The device features a modular, portable, and user-friendly design, with potential utility in surgical simulation, organ transport, and educational environments. Calibration and performance validation remain pending and are required before clinical or experimental application.

ID#95

Shabitha Arumugarajah, Western University

KIM-1 upregulation in the allograft predisposes to premature graft failure

Kidney transplantation is the optimal treatment for patients with end-stage kidney disease. However, the lifespan of renal allografts remains suboptimal. Understanding the mechanisms of graft failure may lead to a reduced need for repeat kidney transplantation.

Kidney Injury Molecule-1 (KIM-1) is a phosphatidylserine receptor that is specifically expressed on the apical surface of injured renal proximal tubule epithelial cells. We previously showed that KIM-1 protects against tissue damage due to ischemia-reperfusion injury (IRI) in a syngeneic murine renal transplantation model by facilitating the phagocytic clearance of apoptotic and necrotic cells, thereby limiting necroinflammation. However, the role of graft KIM-1 in allotransplantation, where both IRI and alloimmune responses contribute to injury, remains unknown.

Our study aimed to determine the role of donor KIM-1 in renal allotransplantation using a fully MHC-mismatched murine renal allotransplant model.

We performed life-saving transplants of single kidneys from either wild-type or KIM-1 knock-out B6 mice into fully nephrectomized BALB/c mice and followed the mice for 30 days. We utilized histopathological, immunological, and biochemical assays to investigate KIM-1 expression, alloimmune responses (including rejection), tissue injury, and cell proliferation.

KIM-1 expression was significantly upregulated and sustained in wild-type kidney allografts. Unexpectedly, recipients of allografts from wild-type donors exhibited significantly reduced graft survival compared to those who received grafts from KIM-1 knockouts. There were no differences in alloimmune responses or graft rejection between groups, but we observed reduced cell proliferation and increased fibrosis in wild-type allografts.

Our results suggest that KIM-1 expression is sustained in the graft due to ongoing alloimmune injury and drives maladaptive repair and premature graft failure. These findings

contrast with KIM-1's protective role in syngeneic transplantation and suggest that strategic targeting of KIM-1-dependent pathways may be a novel therapeutic strategy to extend the lifespan of kidney transplants.

ID#97

Shok Hoon Ooi, Doctor

Differential impact of tacrolimus concentration-to-dose ratio (C0/D Ratio) with different tacrolimus formulations on kidney function in kidney transplant recipients (KTRs)

Background:

An association exists between tacrolimus concentration-to-dose (C/D) ratio and clinical outcomes in kidney transplant recipients (KTRs). This study evaluated the impact of tacrolimus C/D ratio across quartiles and assessed the effect of various formulations—LCP-tacrolimus, immediate-release (IR), and prolonged-release (PR)—on outcomes.

Methods:

This preliminary retrospective study analyzed 202 of the planned 555 adult KTRs who received tacrolimus-based immunosuppression between 2019–2023. Patients were grouped into C/D ratio quartiles based on 3-month post-transplant data. The primary outcome was estimated glomerular filtration rate (eGFR) at 12 months. Patients were also stratified into FAST (C/D below median) and SLOW (C/D above median) metabolizer groups to compare rates of cytomegalovirus (CMV) and BK polyomavirus (BKV) viremia and the impact of tacrolimus formulation on eGFR.

Results:

Of the 202 subjects, 118 (58.4%) received IR/PR tacrolimus and 84 (41.6%) received LCP-tacrolimus. The lower quartile, median, and upper quartile C/D ratios at 3 months were 1.02, 1.42, and 2.52. eGFR at 3 months showed no significant difference across quartiles ($p = 0.267$). At 12 months, mean eGFRs by C/D quartile were: Q1: 52.5, Q2: 54.8, Q3: 59.4, Q4: 56.7 ml/min/1.73m^2 ($p = 0.363$). CMV and BKV viremia rates >1000 IU/ml were similar in FAST and SLOW groups. Mean 12-month eGFR in IR/PR vs LCP-tacrolimus was 54.1 vs 53.1 (FAST, $p = 0.790$) and 56.4 vs 59.6 ml/min/1.73m^2 (SLOW, $p = 0.472$).

Conclusion:

Tacrolimus formulation may influence the relationship between metabolism rate and clinical outcomes. Targeting the planned sample size will clarify these effects more definitively.

ID#98

Ngan Lam, University of Calgary

Duration of PJP Prophylaxis in Adult Kidney Transplant Recipients and Outcomes: A Population-Based Study

Background: Kidney transplant recipients are prescribed prophylactic medications to prevent Pneumocystis jiroveci pneumonia (PJP), but there is a lack of consensus regarding the optimal duration of therapy.

Methods: We used linked healthcare databases in Alberta, Canada to describe patterns of PJP prophylactic prescriptions in incident adult kidney transplant recipients from 2008 to 2019. We also compared clinical outcomes in recipients taking short-term (≤9 months) versus long-term (>9 months) PJP prophylaxis.

Results: We identified 1,265 kidney transplant recipients. The median age was 53 years (interquartile range [IQR] 41-62), 35% were female, and the index estimated glomerular filtration rate (eGFR) was 59 ml/min/1.73 m2 (IQR 47-72). There were 817 (65%) recipients on short-term PJP prophylaxis and 448 (35%) recipients on long-term PJP prophylaxis. There was no significant difference in the risk of all-cause mortality between the short-term and long-term prophylaxis groups (11% vs. 13%; 20.6 vs, 23.0 events/1,000 person-years; aHR 0.77, 95% CI 0.52-1.13; p=0.19). Compared to recipients in the short-term group, recipients in the long-term group were 46% less likely to experience graft failure (4% vs. 7%; 7.7 vs. 13.3 events/1,000 person-years; aHR 0.54, 95% CI 0.30-0.98; p=0.04) and 18% less likely to experience all-cause hospitalization (58% vs. 58%; 189.4 vs. 179.3 events/1,000 person-years; aHR 0.82, 95% CI 0.68-0.98; p=0.03). Overall, the risk of hospitalization for PJP infection was low (n=3, 0.2%), with no significant difference between the groups.

Conclusions: Compared to short-term PJP prophylaxis, long-term PJP prophylaxis did not significantly reduce the risk of post-transplant mortality or infections, including PJP

infections. Further research is needed to explore the association between PJP prophylaxis and graft survival.

ID#99

Shok Hoon Ooi, Doctor

Long term outcomes of HLA-incompatible and ABO-incompatible kidney transplantation – a single centre Canadian experience

Background:

Highly sensitized kidney transplant (KT) candidates often face long wait times due to the difficulty of finding human leukocyte antigen (HLA) or blood type (ABO) compatible donors. HLA-incompatible (HLAi) or ABO-incompatible (ABOi) transplants may expand access for these patients.

Methods:

This single-centre, retrospective cohort study compared 53 HLAi/ABOi living donor KTs to 53 matched controls who received compatible transplants (HLAc/ABOc). Matching was based on age, gender, dialysis duration, and transplant year. The median follow-up was 13.1 years. HLAi was defined by donor-specific antibodies (DSA+) with or without a positive flow cytometry crossmatch (FCXM). The primary outcome was death-censored kidney allograft survival. Secondary outcomes included acute rejection, primary non-function (PNF), patient survival, and kidney function (eGFR).

Results:

Of the 53 HLAi/ABOi recipients, 12 (22%) were ABOi and 41 (78%) were HLAi. Within the HLAi group, 21 (51%) were FCXM+/DSA+ and 20 (49%) were FCXM-/DSA+. Death-censored graft survival at 3, 5, and 10 years was comparable between HLAi/ABOi and control groups: 94.3% vs 94.1%, 94.3% vs 91.9%, and 89.8% vs 87.5% ($p = 0.216$). PNF occurred in two HLAi/ABOi cases (3.8%) but not in controls. Ten-year patient survival was also similar (83.8% vs 89.3%, $p = 0.185$). There was a trend toward higher rejection in the HLAi/ABOi group at 5 years (odds ratio 2.99, $p = 0.064$). eGFR at 3, 5, and 10 years showed no significant differences between groups.

Conclusion:

Although there may be a slightly higher risk of rejection, long-term graft and patient survival are comparable between incompatible and compatible KT. HLAi and ABOi transplantation remain viable options for carefully selected patients.

ID#100

Jiwon Hwang, UBC Department of Medicine

Cardiac Testing Delays and Geographic Variability in Pre-Transplant Assessments Across a Large Catchment Area

Background

Geographic disparities in access to kidney transplantation persist despite universal health coverage in British Columbia, Canada. All transplant surgeries are centralized in Vancouver, while pre-transplant evaluations are distributed across five health authorities. We aimed to quantify regional variability in access to required pre-transplant tests and to assess whether prolonged cardiac testing wait times are associated with delayed transplant approval.

Methods

We conducted two complementary analyses. First, median wait times for six pre-transplant tests (basic labs, fecal immunochemical test, IGRA, ECG, echocardiogram [ECHO], and myocardial perfusion imaging [MIBI]) were obtained by contacting all testing facilities across BC. Second, using data on 1,882 kidney transplant recipients between 2018 and 2024, we linked individual patient postal codes to the closest cardiac testing facilities and conducted linear regressions to assess whether ECHO and MIBI wait times predicted time from referral to transplant approval. Models were adjusted for age, sex, and health authority.

Results

Wait times for basic testing were generally short (Conclusion

Although cardiac testing delays were pronounced and regionally variable, they did not significantly impact transplant approval timelines in this cohort. These findings suggest that other factors—such as system coordination or individual patient complexity—may play a greater role in delaying transplant access than geographic testing availability alone.

ID#101

Talal Shamma, Western University

Renal cell preservation at 10°C protects from ischemia reperfusion injuries in vitro

Background: Kidney transplantation is the preferred treatment option for end stage renal disease patients, but it is limited due to the worldwide shortage in acceptable donor kidneys. Many transplant centers are utilizing marginal kidneys from donors after cardiac death (DCD). However, the severity of ischemia/reperfusion injuries (IRI) on DCD kidneys depends on the duration and the preservation conditions during organ transportation. Recent studies have demonstrated the cytoprotective effects of preserving lungs, hearts, and livers at 10°C compared to the clinical standard 4°C, which is still unknown in kidney grafts.

Methodology: Two renal proximal tubule cell lines were used throughout the study, human (HK-2) and pig (LLC-PK1). In vitro model consisted of a 2-hour of warm ischemia, followed by 22-hours of cold ischemia at 4°C, or 10°C in a hypoxia-controlled chamber, mimicking a DCD type of donation (Figure 1). Cells were then incubated for 24-hours in normoxia, inducing reperfusion injuries. Cellular viability, apoptosis, and markers of kidney injury, antioxidant, and necroptosis genes were quantified.

Results: Both cell types preserved at 10°C demonstrated a significant increase in cell viability compared to preservation at 4°C (p (Figure 2A). Furthermore, apoptosis levels were significantly reduced in cells preserved at 10°C (p (Figure 2B). Cells preserved at 10°C showed lower relative expression of renal injury marker (KIM-1), necroptotic marker (MLKL), and higher expression of antioxidant defense mechanism (GPX4 and Catalase).

Conclusion: Overall, results indicate that preservation at 10°C is superior to the clinical standard of preservation at 4°C with a cytoprotective effects. These results may further support the translational use of 10°C preservation in kidney grafts as seen in other solid organ transplants.

ID#102

Judith Rho, University of Alberta

Vaccination rates in solid organ transplant recipients and their caregivers

Background: Solid organ transplant recipients are at increased risk of infection due to underlying disease and post-transplant immunosuppression. Vaccination is a major preventive measure against specific infections and is most effective when administered pre-transplant, as vaccine responses are decreased early post-transplant. To further decrease infection risk, caregivers of SOT recipients are also encouraged to maintain up-to-date with age-appropriate vaccinations. However, little is known about vaccination rates in caregivers of SOT recipients. This study aimed to assess vaccination rates in adult SOT recipients before and after transplant and their caregivers.

Methods: Immunization records and serological data of adult SOT recipients and their caregivers enrolled in the TREAT-COVID study were retrospectively reviewed. Vaccination rates were calculated for tetanus/diphtheria (Td), pertussis, polio (IPV), measles/mumps/rubella (MMR), varicella (VZ), herpes zoster (Var-SI), Haemophilus influenzae b (Hib), hepatitis B (HBV), pneumococcus (PCV/PSV), influenza, and RSV.

Results: 85 SOT recipients (median age = 62, 28% female) and 45 caregivers (median age = 63, 84% female) were included. Organ types included liver (25), kidney (24), lung (23), heart (11), and kidney-pancreas (2). Vaccination rates varied across different types of vaccines. Among SOT recipients, rates of at least one vaccine dose were lowest for RSV (25%) and Var-SI (53%) and highest for Td (99%). There was no significant difference in vaccination rates for different organ types. Among caregivers, 78% received regular influenza vaccines, 27% had the RSV vaccine, and 9% were non-immune to MMR.

Conclusion: While overall vaccination rates in SOT recipients were high, coverage for certain vaccines, particularly newer and non-publicly funded vaccines, was suboptimal. Vaccination rates for caregivers of SOT recipients were generally lower. Further studies with larger cohorts of SOT recipients and their caregivers are needed to more accurately identify barriers to completing recommended vaccinations.

ID#103

Tammy Lau, Canadian Institute for Health Information

A national study on hospital length of stay outcomes for sequential and simultaneous liver-kidney transplants

Background

Whether a patient receives a sequential or simultaneous organ transplant depends on various factors, including their anticipated recovery process. The objective of this study was to examine length of stay (LOS) for sequential and simultaneous liver-kidney transplants (seq-LKT and sim-LKT, respectively), and how it differs by demographics.

Methods

Adult Canadians (≥18 years) who received a seq-LKT or sim-LKT between 2013-2024 were identified in CIHI's Hospital Morbidity Database and Canadian Organ Replacement Register. Re-transplants and records with an invalid discharge date or health care number were excluded. Median LOS (time between transplant and discharge) was calculated and stratified by demographics. For seq-LKT, the median of the summed LOS for both transplants was calculated.

Results

Of the 161 recipients included, 30% received a seq-LKT and 70% received a sim-LKT (Table 1). The median time from first to second transplant for seq-LKT was ~3 years. For both seq-LKT and sim-LKT, most recipients were between ages 45-59 (60% and 50%, respectively), male (58% and 59%, respectively), resided in lower (Q1-3) neighbourhood income quintiles (NIQ) (65% and 64%, respectively), and in urban areas (81% and 83%, respectively).

Overall, median LOS for seq-LKT was 68% longer than sim-LKT (Table 2). For seq-LKT, LOS was longer for recipients who were older (32% longer for 45-59 vs. 18-44; 28% longer for ≥60 vs. 45-59), resided in rural/remote areas (167% longer than urban), and in lower NIQ

(24% longer in Q1-3 than Q4-5). For sim-LKT, LOS was longer for recipients who were older (17% longer for 45-59 vs. 18-44; 6% longer for ≥60 vs. 45-59), resided in rural/remote areas (31% longer than urban), and were male (52% longer than females).

Conclusion

Differences in LOS for seq-LKT and sim-LKT were most evident with older age and rural/remote residence. Additional research is warranted to understand factors associated with these differences.

ID#104

Tom Blydt-Hansen, Director, Multi-Organ Transplant Program, BC Children's Hospital

Early experience with interprovincial sharing of class II matched donor kidneys for pediatric transplant recipients

In December 2024, the Canadian Transplant Registry (CTR) for interprovincial sharing implemented prioritized allocation of deceased donor (DD) kidneys with zero class II mismatch (DR, DQA, DQB) to registered pediatric (Allocation and outcome data is collected by CTR with informed consent for all registrants. All pediatric registrant activity from Dec 1, 2024, until May 1, 2025, was compiled and reported using descriptive statistics.

Twenty-nine children were registered (59% male, median age 12 years), with median cPRA 4% (97% shipped (2 interprovincial) and transplanted successfully (0.9%% of all CTR allocations). Recipients were aged 2-18 years after 10-132 days post-registration, with cPRA 0-50%, from donors aged 18-32 years. One was a pre-emptive transplant. Of the four allocated kidneys, only one would have been allocated at subsequent CTR rank. The remainder (66% of offers) were declined for donor medical issues (58%), older age (25%) or Other. Of the kidneys declined, none were accepted for transplant at a subsequent CTR rank. 17 children (59%) were delisted on average 42 days (1-124 days) post-registration after receiving a local DD transplant. Eight remained active in the CTR at last review. CTR wait-time vs. current/historical pediatric HSP is depicted in Figure 1.

Initial experience with the 0 DR/DQA/DQB allocation has yielded 4 successful, lower-risk transplants in pediatric recipients, with minimal impact on other CTR registrants. Future analysis will evaluate impact on cold-ischemia time, waiting time and outcome vs. locally allocated DD.

ID#105

Wanda Rojas, UBC

Anti-nephrin antibodies in recurrence of focal segmental glomerulosclerosis: A case series of four patients.

Introduction:

Recurrent focal segmental glomerulosclerosis (FSGS) following kidney transplantation leads to poor long-term outcomes including graft loss. The presence of circulating factors, such as anti-nephrin antibodies, may be implicated in disease recurrence. This case series aims to characterize and compare transplant outcomes in patients with and without anti-nephrin antibodies.

Methods:

This is a case series of three adult and 1 pediatric patients who developed recurrent FSGS after kidney transplantation. Clinical data was obtained from chart review. Anti-nephrin antibodies were obtained from frozen samples archived before transplant and at the time of transplant measured with ELISA at Brigham and Women's Hospital, Boston, MA. All patients received induction with ATG or Basiliximab and were maintained on Tacrolimus, MMF and systemic corticosteroids as per center protocol.

Results:

The patients with anti-nephrin antibodies were younger at time of transplant and disease onset and had a faster recurrence of FSGS (table 1). There was more treatment resistance and less likelihood to develop a complete remission. Three of four patients received treatment with plasmapheresis and Rituximab and one patient received only Rituximab. While 3 patients achieved partial remission, two of them continued on plasmapheresis, and one patient did not experience remission and underwent graft nephrectomy.

Conclusion:

Recurrent FSGS following kidney transplantation remains a major concern, and may be earlier and more aggressive in patients with pre-transplant anti-nephrin antibodies. Understanding the clinical differences between anti-nephrin positive and negative patients could help improve management but also guide decision-making for repeat transplants.

ID#106

Wanda Rojas, UBC

HLA identical kidney transplant after graft loss due to Post-transplant lymphoproliferative disorder

Background: Renal transplantation remains the treatment of choice for patients with end-stage renal disease (ESRD). One of the most feared complications is Post-transplant lymphoproliferative disorder (PTLD), which can result in graft loss. Retransplantation in the context of PTLD remains a topic of debate.

Case Presentation: 71 year old female diagnosed with chronic kidney disease (CKD) in 2000, secondary to ANCA MPO vasculitis. She received treatment with cyclophosphamide and steroids for approximately three years and later underwent a preemptive living donor kidney transplant from her brother. She was Cytomegalovirus (CMV) and Epstein Barr (EBV) reactive, HLA mismatch was 5/6, and she received induction therapy with Basiliximab. Her maintenance immunosuppressive regimen included Tacrolimus, mycophenolate mofetil, and prednisone. In 2018 was diagnosed with primary central nervous system lymphoma which was managed with reduction in immunosuppressive therapy and regular follow-up imaging.

Between 2019 and 2022, her kidney function progressively declined, and began peritoneal dialysis in 2022. In March 2025 she received a HLA identical kidney transplant, immunosuppression regimen of choice was Basiliximab with calcineurin inhibitors which were promptly switched to Everolimus, in addition to prednisone, without antimetabolites. She had immediate graft function and so far her post transplant course has been uneventful.

Conclusion: As reported in French and North American cohorts, retransplantation following PTLD diagnosis in the first transplant appears to be safe regarding recurrence as well as patient and graft survival. Immunosuppressive treatment may trigger hematological relapse and there is no consensus on the optimal management. Our case is unique in that it allowed for minimal immunosuppression, given the HLA-identical donor.

ID#107

Matthew Kadatz, University of British Columbia

Impact of Preemptive Versus Non-Preemptive Transplantation on Outcomes in Living Donor Kidney and Simultaneous Pancreas-Kidney Recipients with Type I Diabetes

Background:

Kidney transplant candidates with type I diabetes and end-stage kidney disease, both simultaneous pancreas-kidney (SPK) transplant and living donor kidney transplant (LDKT) followed by a potential pancreas transplant are viable options. However, it is unclear which approach offers superior outcomes, particularly when accounting for timing relative to dialysis initiation. This uncertainty complicates patient counseling and may hamper enthusiasm for pursuing LDKT.

Methods:

We conducted a retrospective cohort study using the Scientific Registry of Transplant Recipients, including adults aged 18–55 who received either an SPK or LDKT from January 1, 2000, onward. Patients were stratified by transplant timing: preemptive (before or within 6 months of dialysis initiation) vs. non-preemptive (>6 months after dialysis initiation). Outcomes included time to kidney transplant failure, time to death, and, for LDKT recipients, time to pancreas after kidney transplant (PAK).

Results:

The cohort included 12,059 SPK recipients (3,212 preemptive; 8,847 non-preemptive) and 4,394 LDKT recipients (2,069 preemptive; 2,325 non-preemptive). LDKT recipients had a lower cumulative incidence of kidney transplant failure than SPK recipients (Figure 1); however, this difference was not significant in multivariable models. Preemptive transplant recipients had lower graft failure risk across both groups. Notably, non-preemptive LDKT recipients had a significantly higher risk of death compared to all other groups, including in adjusted analyses (Figure 2). Among LDKT recipients, those who received a non-preemptive transplant were less likely to undergo a subsequent PAK (Figure 3).

Conclusion:

Time on dialysis is associated with worse post-transplant outcomes for patients with type I diabetes. Early referral and preemptive transplantation, particularly in the context of living donor kidney transplantation, are critical. Limited access to pancreas after kidney transplant may further contribute to excess mortality among non-preemptive LDKT recipients.

ID#108

Benjamin Kopman, Ajmera Transplant Center, Division of Nephrology, University Health Network

efficient screening for anxiety symptoms among kidney and kidney-pancreas transplant recipients

Anxiety is associated with poor outcomes among Kidney and Kidney-Pancreas transplant recipients (KTR, KPTR). Systematic screening using patient-reported outcome measures may identify individuals needing further assessment. We assessed the accuracy and efficiency of two-step screening approaches to identify potentially clinically relevant anxiety symptoms.

Adult, stable KTR, and KPTR in Toronto, Canada completed the Patient-Reported Outcomes Measurement Information System – Anxiety (PROMIS-A) Computer Adaptive Test, and Generalized Anxiety Disorder-7 (GAD7) questionnaires. Anxiety was defined as GAD7 ≥10. We simulated two-step screening scenarios, as if participants first completed an ultra-brief pre-screener (GAD2; or PROMIS-A screener) followed by PROMIS-A if pre-screened positive. Different pre-screener cut-offs (GAD2 2 and 3; PROMIS-A screener ≥ 1), and PROMIS-A cut-offs (PROMIS-A 55-60) were evaluated. Screening performance was assessed using sensitivity, specificity (>80% benchmark). Item burden was assessed for each scenario.

Among 283 participants (241 K, and 42 KP), mean(SD) age was 53(12) years; 58% male; GAD7 ≥10 in 13%. The GAD-2 ≥2 followed by PROMIS-A ≥55 scenario yielded the best performance (sensitivity 0.89, specificity 0.86). The PROMIS-A screener ≥1 followed by PROMIS-A ≥58 also performed well (sensitivity 0.86, specificity 0.75). GAD7 had the highest item burden, with 1,981 items completed (7/person). For PROMIS-A, participants completed 1,415 items (5/per person). PROMIS-A screener followed by PROMIS-A reduced burden (876 items completed, 3/person) by 56% and 38%, compared to GAD7 and PROMIS-A, respectively. The GAD2 ≥3 followed by PROMIS-A scenario reduced burden (709 items completed, 3/person) by 64% and 50%, compared to GAD7 and PROMIS-A, respectively.

The proposed two-step screening scenarios demonstrated acceptable screening performance with low item burden. Patients who screen positive will need clinical assessment. These results need to be confirmed using clinical diagnosis as the referent – the overlap between GAD2 and GAD7 may have inflated the results of the scenarios including GAD2.

ID#109

George Dugbartey, University of Western Ontario

Sodium thiosulfate administration ameliorates acute kidney injury induced by renal ischemia-reperfusion injury

Background: Renal ischemia-reperfusion injury (IRI) is the leading cause of acute kidney injury (AKI). It is associated with reduced blood flow as encountered in vascular surgery, including aortic aneurysm repair and kidney transplantation. In this study, we investigated whether pre-or post-administration of sodium thiosulfate (STS), an FDA-approved hydrogen sulfide donor drug, attenuates AKI in rats.

Methods: AKI was induced in male rats by clamping both renal arteries for 60 minutes. At 30 minutes before clamping, and/or after 30 minutes of reperfusion, STS was administered at a weigh-based dose to achieve a circulating concentration of 150μM, after which the rats were kept in metabolic cages for urine and blood collection on postoperative days (POD) 3, 5 and 7. Rats were sacrificed on POD3, POD5 and POD7, and kidneys were harvested for analysis. Sham-operated rats received no treatment.

Results: AKI was evidenced by markedly higher acute tubular necrosis score, and renal protein and gene expression of KIM-1, MPO, TUNEL and NGAL. While significant incremental improvement was observed in the expression of these injury markers in pre-treatment only and post-treatment only groups over POD3-7 observation period compared to untreated control group (p Conclusions: STS significantly improved IRI-induced AKI, with a potential therapeutic application in vascular surgery, including aortic aneurysm repair and kidney transplantation.

ID#110

Aditi Singh, School of Physical and Occupational Therapy, McGill University; Research Institute of the McGill University Health Centre (RI-MUHC)

Acceptability and Usability of GETonTRAK: A Web-Based Self-Management Guide for Kidney Transplant Recipients

Introduction: While kidney transplantation improves survival and well-being, kidney transplant recipients (KTRs) continue to face substantial challenges, including physical and mental health complications and the risk of organ rejection. Self-management is crucial for improving their quality of life by addressing these specific needs. However, existing educational resources in Canadian transplant centers primarily focus on medication adherence and infection prevention, often neglecting areas such as mobility, physical activity, energy levels, and mental health. This lack of comprehensive support hinders long-term recovery. To address this gap, we developed the GETonTRAK (Getting on with your life after a Transplanted Kidney), a comprehensive online guide (https://getontrak.org/) designed to support recovery and long-term health in KTRs. The objective of this study was to assess the acceptability and usability of this guide.

Methods: We conducted a pre-post mixed-methods study. Twenty adult KTRs across Canada were recruited using convenience sampling through the Canadian Donation and Transplant Research Program and the Transplant Ambassadors Program. This abstract presents data on the Modified System Usability Scale (M-SUS) and Acceptability E-scale, which participants completed after using the website for 2 weeks.

Result: At the time of abstract submission, 22 participants had enrolled. Of these, 8 (5 male, 3 female) completed the study, 4 withdrew, and the remainder were actively using the website. The mean age was 65.3 years, with an average of 3.9 years since transplant. Most participants reported hypertension as a comorbidity. Usability was rated highly, with a mean score of 79.1 ± 10.3 on the M-SUS (100-point scale), and a mean score of 4.29 ± 0.58 on the Acceptability E-scale (5-point scale), indicating excellent usability and high user satisfaction with the website.

Conclusion: Early findings suggest that GETonTRAK is both user-friendly and well-received by kidney transplant recipients. These results support its potential as a valuable tool in post-transplant recovery and self-management initiatives.

ID#111

Amy Thachil, BC Children's Hospital Research Institute

Investigating the association between HLAMatchmaker and PIRCHE-II mismatch scores with graft survival in pediatric kidney transplantation

Background: Recent advances in HLA genotyping can now provide high resolution structural insights that can better quantify recipient risk of rejection and graft loss. We sought to determine which method(s) more precisely accounts for that risk, comparing mismatch scores as Predicted Indirectly ReCognizable HLA Epitopes presented by recipient HLA class II (PIRCHE-II), total HLAMatchmaker (HLAMM) eplet and single-molecule eplet mismatch, in a cohort of BC pediatric kidney transplant recipients. Methods: A retrospective cohort of pediatric renal transplants was selected from BC Children's Hospital, Vancouver. HLAMatchmaker 2.2 was used to determine eplet mismatches between recipients and donors, expressed as total or single molecule mismatch scores (maximum eplet mismatches/HLA haplotype). PIRCHE-II scores were computed using the PRICHE II algorithm. Cox proportional hazards was used to explore the features with best fit (AIC, BIC) to model death-censored graft failure, considering DRB1 & DQB1 alone or together, with adjustment for clinical covariates (recipient/donor age, sex, previous transplant and donor type). Results: 162 recipient/donor pairs were included and were predominantly male (59.9%) with a first transplant (88.9%), aged 11.4±.3 years, with 54.3% deceased donors aged 34.7±10.7 years. 35 recipients experienced graft failure and the median time to graft failure was 18.4 months (Figure 1). Models of each mismatch parameter that included both DR and DQ consistently outperformed models with either feature alone (Table 1). The poorest model fit was obtained with measures of sum HLAMM eplet mismatch. The optimal model of time to death-censored graft failure incorporated the single molecule DRB1/DQB1 mismatch (AIC 192.4, BIC: 199.5). Conclusion: This data suggests that single molecule HLA mismatch scoring is superior for modelling pediatric kidney transplant graft survival, incorporating molecular eplet mismatch features from both the DRB1 and DQB1 haplotypes. Additional investigation is warranted to determine how this information may be used for better prognostication, risk stratification and for optimization utility of HLA matching in donor allocation decision-making.

ID#112

Amy Thachil, BC Children's Hospital Research Institute

Investigating serum metabolite profiles associated with graft functional decline in pediatric kidney transplant recipients

Background: Metabolite expression in the pre-transplant period provides insight into the metabolic and immunological milieu into which kidney transplant engraftment will occur, and the predisposition towards transplant tolerance versus rejection. In this work, we aimed to characterize the pre-transplant serum metabolome to identify patterns related to graft functional decline and inflammation within the first-year post-transplant in pediatric kidney transplant recipients.

Methods: Pre-transplant serum samples were assayed using quantitative mass spectrometry was used to detect concentrations of 630 unique metabolite analytes. Graft functional decline was calculated for each patient using the 12 to 1-month glomerular filtration rate (GFR) ratio. A binary outcome of >25% graft functional decline versus ≤25% decline was modelled by constructing partial least squares discriminant analysis (PLSDA) classifiers using metabolomics data. Patient age and sex were included in the modelling as independent predictors of graft outcomes. The optimal model was selected based on leave one out cross validated (LOOCV) area under the receiver operating curve (AUROC).

Results: Pre-transplant serum samples were obtained from 123 pediatric kidney transplant recipients with a minimum of 1 year of follow-up data available (Table 1). 20 patients experienced >25% graft functional decline (cases, GFR ratio Conclusion: These results suggest that pre-transplant serum metabolite patterns exist which are associated with early graft outcomes in pediatric kidney transplantation, specifically graft functional decline within the first-year post-transplant. Further analysis is required to validate these findings in a larger cohort as well as to assess pre-transplant metabolite patterns in association with inflammation levels during the first year-post transplant.

ID#113

Marie-Michele Gaudreault-Tremblay, Montreal Children's Hospital

Renal Transplant After Desensitization in a Pediatric Recipient

Background: Children become sensitized after a first kidney transplant, resulting in a longer waiting time on dialysis. Canadian Blood Services data indicate 300000 match runs are needed to receive a HLA matched kidney with 95% probability. Desensitization strategies are needed to improve access to organ procurement 1,2.

Case description: A 14-year-old boy with a primary diagnosis of obstructive uropathy became highly sensitized (calculated panel reactive antibody of 99.7%) after he lost his first renal allograft from combined T cell and antibody mediated rejection. Thereafter, he remained on hemodialysis for 12 years unable to find a compatible donor. He received an offer from a donor after circulatory death with a haplotype match. He had donor specific antibodies (DSA) against B50, Cw6 and DR13 antigens. His initial flow crossmatch was positive with a median channel shift (MCS) of 425 for T and 400 for B lymphocytes. He received an accelerated desensitization protocol combining three plasmaphereses, intravenous immunoglobulin (IVIG) and Rituximab over 1 week. The MCS decreased to 236 and 233 for T and B lymphocytes, respectively. The DSA B50 remained positive at a low MFI of 2631, post desensitization. Induction included Alemtuzumab and methylprednisolone. The maintenance regimen was tacrolimus, mycophenolate mofetil and prednisone. He received additional doses of IVIG and Rituximab on day 7 and 30 post-transplant, respectively.

Results: Although he had slow graft function, his GFR was 56ml/min/1.73m2 by day 40 post-transplant. Protocol biopsy at 2 months post-transplant did not show evidence of rejection. His DSAs became negative, except for B50 which was below the positivity threshold. The patient developed BK viremia 3 months post-transplant. His immunosuppression was adjusted.

Conclusion: This case demonstrated the success of a kidney transplantation following an accelerated desensitization protocol. The approach allowed to decrease DSA to an acceptable MFI to proceed with urgent kidney transplantation.

ID#114

Jana Abi Rafeh, Department of Experimental Medicine, McGill University; Research Institute of the McGill University Health Center

Heterogeneity in humoral and adaptive cellular immunity following SARS-CoV-2 XBB.1.5 mRNA vaccination: A single-cell analysis of BCR and TCR repertoires and associated Memory-Cell transcriptomics in kidney transplant recipients

Background

Kidney transplant recipients (KTRs) remain at a disproportionately high-risk for severe SARS-CoV-2 infections. Despite repeated vaccination, KTRs exhibit impaired humoral responses. Little is known about the adaptive cellular immune response following XBB.1.5 SARS-CoV-2 mRNA vaccination and its association with neutralizing antibodies in KTRs.

Methods

We studied 20 KTRs (40% female, age range 35-80 years, spanning 51±14 months post-transplant) who received 4 to 7 mRNA vaccines, including an XBB.1.5 booster. A protein-based surrogate neutralization ELISA (snELISA) measured neutralization efficiency against the Omicron XBB.1.5 variant. Anti-NP and anti-spike antibodies (induced by SARS-CoV-2 infection versus by either infection or vaccination, respectively) were measured using a high-throughput direct chemiluminescent ELISA assay. Peripheral blood mononuclear cells were analyzed using single-cell RNA sequencing (scRNA-seq) with paired T-cell receptor (TCR) and B-cell receptor (BCR) profiling on the 10x Genomics Chromium platform.

Results

Neutralization responses against XBB.1.5 were observed in 16 KTRs, while 4 KTRs demonstrated no neutralization. Neutralization response was more robust in patients who experienced infection, in addition to receiving multiple COVID-19 booster doses, including XBB.1.5. BCR profiling across participants demonstrating neutralization responses revealed spike (S) protein-specific naïve, mature and memory B-cells. In contrast, spike-specific T-cell clonotypes demonstrated limited expansion. TCR responses were highly

diverse, with most participants exhibiting T-cell reactivity to non-spike antigens, particularly ORF1ab, ORF7b, and nucleocapsid. Effector memory and cytotoxic CD8+ subsets were enriched for viral replicase and structural proteins.

Conclusion

We find variability in KTRs' capacity to mount a protective immune response following XBB.1.5 vaccines. While spike-specific B cell responses may be informed by vaccination in addition to SARS-CoV-2 infection, KTRs exhibited highly diverse, infection-skewed T-cell repertoires. Our findings underscore the importance of repeated COVID-19 mRNA boosters for KTRs capable of mounting a neutralizing response. However, persistent non-responders may derive limited benefit from additional boosters and instead require alternative therapeutic strategies.

ID#116

Marie-Michele Gaudreault-Tremblay, Montreal Children's Hospital

A single-center experience regarding the role of Tocilizumab in managing antibody-mediated rejection following the failure of standard care

Background: In kidney transplant recipients, chronic rejection remains one of the leading causes of allograft loss. Managing these patients is challenging. Standard management is often insufficient to stabilize kidney function and improve outcomes.

Method : This is a single-center experience reporting five pediatric and young adult kidney transplant recipients who developed an antibody-mediated rejection (ABMR) not improving after 6 months of standard management. They were treated with Tocilizumab every four weeks, in addition to their maintenance immunosuppression regimens. They were monitored until their last clinic visit, or transfer to adult care. One patient discontinued Tocilizumab after a year, while the remaining patients are still currently on treatment. Mean follow-up is four years after starting Tocilizumab. Mean estimated glomerular filtration rate (eGFR) was assessed before and yearly after starting treatment. Chronic histopathological changes on transplant biopsies were assessed using BANFF score. Donor specific antibodies (DSA) were measured before and yearly after starting treatment. Infectious complications and other Tocilizumab side effects were documented.

Results: All patients had functional renal allograft at the last follow-up. Figure 1 shows the variation in graft function for each patient. The mean eGFR at time of starting Tocilizumab was 74 ml/min/1.74m2 and at 4 years was 60 ml/min/1.73 m^2. Allograft biopsy findings were heterogeneous. DSAs disappeared in two patients but increased in one. Neutropenia was reported in one patient. Three patients had low-grade viremia from BK, EBV, and/or CMV prior to treatment. The titers did not increase while on Tocilizumab. No malignant complications were reported.

Conclusion: Managing ABMR is challenging. This small study reports that Tocilizumab can be used safely to slow down the decline of allograft function. The effect of Tocilizumab on histopathological changes and DSA is not conclusive. In kidney transplant recipients not responding to standard management, Tocilizumab could be considered.

ID#117

Ahmed Menaouar, CHUM (Centre Hospitalier de l'Université de Montréal)

Should porcine DCD lungs procured after heart resuscitation with thoraco-abdominal normothermic regional perfusion be transplanted?

Background. Thoraco-abdominal normothermic regional perfusion (TA-NRP) is used to resuscitate hearts from DCD donors, but its impact on lung viability remains under investigation. This study in an animal model evaluates ex-vivo lung perfusion (EVLP) outcomes in lungs procured after DCD heart resuscitation with TA-NRP following increasing durations of warm ischemic time.

Methods. After hypoxic cardiac arrest, pigs were assigned to four groups based on warm ischemia time duration (15, 30, or 45 min), followed by 60 min of TA-NRP and 30 min of in-situ evaluation after cardiopulmonary bypass weaning. A control group underwent direct lung procurement (DP) after 30 min of WIT. Lungs were procured, stored at 4°C for 1 hour, and evaluated for transplant suitability using EVLP.

Results. Cardiac resuscitation was successful after 15 and 30 min-WIT, but not after 45 min. The delays in resuscitation and mostly unsuccessful resuscitation affected lung function evaluated after 4 hour-EVLP. Pulmonary vascular resistance and lung weight gain increased with longer WIT (DP: 484±60, WIT15: 535±160, WIT30: 534±75, WIT45: 673±95 dyn.s.cm^{-5}, p=0.06) and (DP: -2±4%; WIT15: 2±8%; WIT30: 7±6%; WIT45: 17±13%, p=0.028), while lung compliance decreased (DP: 48±7; WIT15: 43±10; WIT30: 38±6; WIT45: 29±2 ml/cmH2O, p=0.018). Perfusate inflammatory cytokines increased (IL-18, p=0.035; IL-10, p=0.043; IL-6, p=0.034) mostly in the WIT45 group, and this inflammatory profile was confirmed by tissue histologic analysis. However, the metabolic profile (glucose consumption, lactate production), the bronchoscopy findings, and the gas exchange capacity (PO2/FiO2 > 500 mmHg in all groups) were not affected.

Conclusion. Successful DCD heart resuscitation with TA-NRP following a short period of WIT does not compromise lung graft transplantability based on EVLP assessment criteria. However, prolonged WIT in combination with unsuccessful heart resuscitation may negatively affect lung function. Further research is needed to elucidate the best strategy on how to safely use DCD hearts without compromising lung transplant.

ID#118

Jed Gross, University Health Network

Ex Situ Organ Perfusion Technology: Ethical, Legal, and Policy Challenges

Background: Ex situ organ perfusion (ESOP), also known as ex vivo organ perfusion, represents one strategy for assessing donated organs outside a human body and optimizing them for clinical transplantation. Existing articles describe a range of potential benefits flowing from the use of ESOP and identify some unresolved ethical, logistical, and policy questions surrounding adoption.

Methods: Our group has conducted a review of published literature on ESOP, scoping out these perceived challenges. On the basis of this review and other sources of information such as conference presentations, we have systematically characterized major ethical, legal, and policy challenges that will likely have to be navigated to realize the full benefits of ESOP. We offer a preliminary analysis and suggest veins for further inquiry.

Results: Ethical, legal, and policy controversies relating to ESOP and alternatives typically involve tensions between competing values or objectives. A few such challenges have been posed in relation to specific organs; others are cross-cutting. Major concerns in the literature include balancing the cost and utility of ESOP, ESOP's potential impact on access to the benefits of transplantation, and the respective roles of ESOP and regional perfusion. Other issues warranting attention, in light of experience in similar domains, include donor authorization, translational benchmarking and recipient consent, animal welfare, and public accountability and trust.

Conclusion: Judicious expansion of ESOP, especially in conjunction with techniques for reconditioning organs, could pave new ground for improved transplant outcomes, increased organ utilization, and wider access to the benefits of transplant medicine. However, these benefits may come at an economic cost, and spotty deployment of ESOP could conceivably increase undesired disparities in access or create new ones. Choices of physical and policy architecture will be key to negotiating the normative challenges of ESOP in publicly accountable, ethically and legally defensible ways.

ID#119

Emma Bartlett, University of British Columbia

Improving team processes to address transition milestones and increase youth transition readiness in the multi-organ transplant transition clinic

Background (Purpose): Youth in the multi-organ transplant (MOT) clinic are medically and psychosocially complex, requiring a multidisciplinary team to support their transition to adult care. When transition milestones are not adequately addressed, this can delay transition, increase risk of poor clinical outcomes, and increase stress for youth, caregivers and team members.

Aim: By June 2025, we aim to increase transition readiness scores on the ON-TRAC patient assessment for youth with a kidney transplant in the MOT transition clinic by 25% by their third transition clinic appointment.

Methods: This quality improvement project is conducted in a MOT transition clinic, a multidisciplinary clinic for youth with a kidney transplant focused on transitioning to adult care. Our current state analysis, which included clinic observation, chart audits, and interviews with youth, caregivers, and healthcare providers (HCPs), identified barriers and facilitators to addressing transition milestones. Transition readiness was measured with "Am I ON TRAC? For Adult Care" validated surveys for youth and caregivers, and a "stage of readiness" scale assessed by youth, caregivers, and HCPs. Additional measures include tracking transition milestones discussed at each appointment.

Results: We identified a decreased capacity to address transition milestones due to team members experiencing competing clinical demands and fluctuating roles. Primary drivers to improve the team's ability to address transition milestones are team consistency, communication, and education. In our first PDSA cycle, we implemented standardized documentation templates with defined team roles. Preliminary data shows variable youth readiness scores with a mild increase in early data, and an increased number of transition topics discussed during appointments following the intervention.

Conclusion: Transition to adult care is a complex and individual process. By defining team roles and standardizing documentation, the MOT transition clinic is addressing

communication barriers and diffusion of responsibility to increase youth transition readiness through effective and efficient care delivery.

ID#120

Jad Fadlallah, University Health Network

Using PROMIS® Physical Function scores to identify delayed physical function recovery after solid organ transplantation

Background:

Solid organ transplant recipients (SOTr) with delayed recovery of physical function (PF) post-transplant may benefit from early rehabilitation support. We aimed to identify patterns of PF recovery using supervised cluster analysis of longitudinally obtained Patient Reported Outcome Measurement System (PROMIS) PF scores.

Methods:

Longitudinal convenience sample of adult SOTr who completed PROMIS-PF Computer Adaptive Test (CAT) (higher=better PF) within ~1 week post-transplant and biweekly over 2 months. We stratified participants by baseline PROMIS-PF T-score (>30 vs. ≤30) and by T-score change between baseline and week 2 (≥2 vs Results:

Of 104 participants, 8(8%) were in CL1 , 28(27%) in CL2, 56(54%) in CL3, and 22(21%) in CL4. Age, organ type, socioeconomic status, and ethnicity were similar across clusters. CL1 had a higher proportion of females and had significantly worse baseline PROMIS fatigue, pain interference and shortness of breath scores, compared to CL2. Baseline PROMIS scores showed a qualitatively similar pattern for CL3 vs CL4.

At 2 months, mean(95% CI) PROMIS-PF scores were: CL1: 29(25–33) vs CL2: 41(39–43)(p Conclusion:

Baseline PROMIS-PF scores and early change in scores identified patients with delayed recovery among SOTr.

ID#121

Chengliang Yang, Centre for Heart Lung Innovation, Providence Research, St Paul's Hospital, Department of Medicine, University of British Columbia

Identification of early risk factors associated with the development of cardiac allograft vasculopathy

Background Cardiac allograft vasculopathy (CAV) remains a leading cause of long-term graft failure following heart transplantation. Its detection often relies on invasive coronary angiography, while early identification remains elusive due to the absence of validated non-invasive biomarkers. Although several omics-based models have shown promise, routine clinical parameters remain more accessible for global implementation. Improved risk stratification using early post-transplant variables could guide personalized surveillance and immunosuppression strategies.

Methods We conducted a longitudinal analysis of 41 adult heart transplant recipients from the HEARTBiT cohort (ClinicalTrials.gov: NCT03575910) at St. Paul's Hospital, Vancouver. CAV was confirmed by coronary angiography one-year post-transplant. Clinical and laboratory data from the early post-transplant period were analyzed using linear mixed-effects models, stratified t-tests, and multivariable logistic regression. Model performance was assessed using receiver operating characteristic (ROC) analysis.

Results In this cohort study, we identified 11 heart transplant recipients diagnosed with CAV and compared them to 30 recipients without CAV as control. Linear mixed effects (LME) modeling was applied to assess temporal trends and group differences across variables, including hemoglobin, hematocrit, white blood cell count, creatinine, eGFR, and tacrolimus levels. Multivariable logistic regression identified six independent predictors of early CAV development: donor age >35 years ($p = 0.012$), pre-transplant peripheral artery disease ($p = 0.035$), early prednisone withdrawal after heart transplantation days ($p = 0.041$), history of atrial fibrillation ($p = 0.011$), elevated monocyte count ($p = 0.025$) and lower hemoglobin level ($p = 0.048$). The multivariable model demonstrated excellent discriminative performance (AUC = 0.96). Subgroup analyses reinforced the robustness of these associations across clinically relevant strata.

Conclusion Our findings highlight the prognostic utility of standard early post-transplant variables in predicting CAV development. These markers, readily obtainable in clinical practice, may serve as complementary tools alongside molecular biomarkers to enhance early detection and personalized management of heart transplant recipients.

ID#122

Fatima Saqib, Max Rady College of Medicine, University of Manitoba

A retrospective study: Detection and management of latent tuberculosis infection in kidney transplant candidates and recipients

BACKGROUND:

Mycobacterium tuberculosis (TB) remains a major global health concern, with latent TB infection (LTBI) affecting about one-third of the global population. Solid organ transplant (SOT) recipients, including kidney transplant patients, are particularly vulnerable, facing a 74-fold increased risk of developing active TB due to immunosuppression. Manitoba reports the highest rate of TB amongst provinces in Canada. LTBI screening in transplant candidates typically involves a two-step tuberculin skin test (TST), or the interferon gamma release assay (IGRA), and treatment is conducted with either Isoniazid (INH) or Rifampin (RIF). LTBI screening and treatment efficacy in the kidney transplant population remains under-researched.

METHODS:

Retrospective cohort study of adult kidney transplant candidates in Manitoba in 2018 without active TB. Descriptive analysis was used to evaluate clinical outcomes.

RESULTS:

In 2018, 147 transplant candidates were assessed, 146 were screened for LTBI, primarily using TST (95%). LTBI was diagnosed in 33 patients (22.6%); 88% via TST, and 12% using TST followed by IGRA. Of these, 32 received treatment: 13 with INH and 19 with RIF. Image 1 summarizes the treatment course. Treatment completion rates were higher with RIF (74%) than with INH (46%), with INH patients more frequently discontinuing due to side effects. Common adverse effects included hepatotoxicity (23% INH vs. 5% RIF), nausea/vomiting, and rash. Five patients who completed LTBI treatment subsequently received kidney transplants, and none developed active TB post-transplant.

CONCLUSION:

While TST remains the dominant screening tool, RIF is better tolerated for LTBI treatment in the adult renal transplant population. These findings highlight the need for tailored LTBI management strategies in kidney transplant candidates and contributes to the limited literature in this area. This study is ongoing, with data from 2018-2023 being analyzed with the aim to support LTBI treatment guidelines in kidney transplant candidates and to improve post-transplant TB outcomes.

ID#124

Harrison Joron, Ajmera Transplant Centre and Division of Nephrology, University Health Network, University of Toronto

Sleep disturbance and physical function among kidney transplant recipients

Background: Sleep disturbance (SLD) and impaired physical function (PF) are common symptoms among kidney transplant recipients (KTRs) and are associated with lower health-related quality of life. However, the relationship between these symptoms remains poorly understood.

Methods: Cross-sectional analysis of a convenience sample of adult KTRs. Patient-Reported Outcomes Measurement Information System (PROMIS) item banks were used to assess SLD and PF. Spearman's rank correlation evaluated the association between SLD (PROMIS T-score ≥ 60) and impaired PF (PROMIS T-score < 40). Univariable and multivariable regression models further assessed this relationship, adjusting for sociodemographic (age, sex, racialized status, immigrant status, material deprivation), clinical (hemoglobin, albumin, estimated glomerular filtration rate, comorbidity, time since transplant), and symptom (depression, pain interference, fatigue) covariates. Multiple imputation handled missing data.

Results: Among 396 participants, mean(SD) age was 52(15) years; 59% were male, 58% were white. The mean(SD) SLD T-score was 49(9); 14% reported SLD. The mean(SD) PF T-score was 47(10); 26% reported impaired PF. SLD and PF were negatively correlated, $\rho = -0.31$, $p < .001$. This association remained significant after adjusting for sociodemographic and clinical variables, and after controlling for either depression or pain interference, but not for fatigue or when all three symptoms were included. Participants with SLD had over twice the odds of reporting impaired PF (odds ratio = 2.71, 95% CI [1.50, 4.90], $p = .001$). This association remained significant after adjusting for sociodemographic and clinical factors, and after further adjustment for depression, but not for pain interference, fatigue, or all symptoms together.

Conclusion: Higher SLD is associated with lower PF in adult KTRs. This relationship may be partly mediated by symptoms, particularly pain and fatigue. Further research is needed to determine whether targeted interventions for SLD can significantly impact PF in this population.

ID#125

Janice Borg, UBC

Is timing key? Complement factor normalization as a strategy to prevent C3GN recurrence post-kidney transplant – a case report

Background:

C3 glomerulonephritis (C3GN) is a rare complement-mediated kidney disease with over 50% risk of recurrence after transplantation. Identifying factors influencing recurrence is crucial to improving outcomes.

Case Description:

We report a case of a 33-year-old female with native C3GN and advanced chronic kidney disease who underwent genetic testing revealing homozygous deletions of CFHR1 and CFHR3, classified as variants of unknown significance. Complement testing showed elevated membrane attack complex (C5b-9), low C3 and properdin, consistent with active complement dysregulation; no autoantibodies were detected. Due to biopsy-confirmed chronic damage, no initial treatment was given. She underwent a pre-emptive living donor kidney transplant from her mother. Complement factors remained abnormal peri-transplant.

At three months post-transplant, she developed graft dysfunction and proteinuria. Biopsy confirmed C3GN recurrence with strong anti-membrane attack complex (MAC) staining with persistently abnormal complement factors. Treatment with pulse methylprednisolone and eculizumab was initiated but yielded only partial response. Serial biopsies over 13 months revealed persistent C3GN activity with evolving chronicity though anti-MAC staining decreased. Despite therapy, graft function declined, leading to failure after 32 months and return to dialysis. Complement levels normalized around three years post allograft failure.

Following approval of Iptacopan, a complement factor B inhibitor, she received a second deceased kidney transplant seven years later. Protocol biopsies have shown no evidence of

C3GN recurrence to date (12 months post-transplant) and the patient has not required Iptacopan.

Discussion:

This case suggests complement factor normalization may signal disease quiescence and reduced recurrence risk post-transplant. The prolonged interval between graft failure and retransplantation, coinciding with normalized complement activity, raises the hypothesis that basing timing of transplantation on complement status could improve outcomes in C3GN. Larger studies are needed to validate complement monitoring as a biomarker and optimize transplant timing.

ID#126

Tanroop Aujla, University Health Network

Donor lung storage at 10°C reduces ferroptosis and improves metabolic activity - evidence from a cell culture model of lung preservation.

Background: Storage of human donor lungs at 10°C has been shown to safely prolong cold preservation compared to traditional ice/4°C storage. However, the underlying molecular mechanism(s) of 10°C protection remain unclear. Using a cell culture model of cold lung preservation and warm reperfusion, we aimed to investigate whether 10°C cytoprotection is mediated by a reduction in ferroptosis and an increase in metabolic activity. Methods: Human pulmonary vascular endothelial cells and bronchiolar epithelial cells were incubated in low-potassium dextran solution at 4°C and 10°C for varying lengths to simulate cold-ischemic time (CIT). After cold storage, cells were reintroduced to warm serum-containing culture medium and incubated at 37°C for 4h to simulate warm reperfusion (R). Measurements related to cell viability, metabolic activity, and ferroptosis were obtained either at the end of CIT or 4h R. Results: Cell death, including apoptotic and necrotic cell populations, was significantly reduced in epithelial cells stored at 10°C compared to 4°C after 24h and 48h CIT. In both cell lines, metabolic activity was significantly elevated at varying lengths of CIT and 4h R. Cellular ATP concentration was also increased in epithelial cells stored at 10°C. Intracellular iron, the upstream mediator of ferroptosis, was significantly reduced in epithelial cells stored at 10°C. Storage at 10°C also enhanced anti-ferroptosis pathways, including GSH production and GPX4 activity. Lipid peroxidation, the endpoint of ferroptosis, was significantly reduced in epithelial cells after 24h and 48h CIT. Membrane protection was confirmed by LDH release, which was significantly reduced in both cell types after 48h CIT with and without 4h R. Conclusion: These results demonstrate that ferroptosis may mediate 10°C cytoprotection. Understanding these mechanisms of protection may help guide therapeutic interventions to further protect against cold preservation injury.

ID#127

Kieran Manion, University Health Network

Altered glomerular complement deposition and tubulointerstitial protein metabolism are causally implicated in graft loss in the setting of DSA+ antibody-mediated rejection

Background: While transplantation is the best treatment for end-stage kidney disease, >50% of kidney grafts ultimately fail, due mainly to antibody-mediated rejection (AMR), where recipient donor-specific antibodies (DSA) may drive tissue injury; however, 30-60% of DSA+ individuals do not develop AMR. We aim to identify kidney proteins dysregulated in AMR to improve prediction of rejection and graft loss.

Methods: Glomeruli and tubulointerstitium from 116 for-cause kidney allograft biopsies were extracted using laser-capture microdissection, and analyzed using liquid chromatography-tandem mass spectrometry (Fig1). MaxQuant and Perseus were used for protein identification and analysis. Differentially expressed proteins (DEPs) were identified by one-way ANOVA (p Results: 1606 tubulointerstitial and 690 glomerular proteins were quantified by mass spectrometry, from which we identified 389 tubulointerstitial and 127 glomerular DEPs between groups (Fig2). Tubulointerstitial DEPs were enriched in amino ($q=3.7x10^{-25}$) and fatty acid metabolism ($q=1.2x10^{-10}$), while glomerular DEPs were enriched in complement ($q=5.2x10^{-9}$) and integrin pathways ($q=9.7x10^{-8}$). When total proteins were analyzed for relation to graft loss, SLIDE devised an accurate model for each compartment (tubulointerstitium, AUC=0.86; glomeruli, AUC=0.89) wherein latent factors comprised of proteins increased/decreased in graft loss distinguished all AMR patients by graft loss status. Remarkably, tubulointerstitial proteins driving graft loss were also enriched for amino acid metabolism ($q=9.5x10^{-3}$), while those in glomeruli were enriched in complement ($q=4.2x10^{-4}$). Collective expression of these proteins was significantly upregulated in AMR patients with graft loss and correlated positively with serum creatinine levels (Fig3).

Conclusions: Our results suggest that AMR and graft loss following kidney transplantation is defined by compartment-specific disruptions in immune and metabolic processes. Future studies will determine how top proteins drive graft loss and identify similar changes in patient urine/serum for predictive biomarkers.

ID#128

Inès Issa Richard, Montreal University

Impact of warm ischemia duration on cardiac function and recovery following thoracoabdominal normothermic regional perfusion (TA-NRP) in DCD porcine hearts

Background. Warm ischemic time (WIT) is detrimental for myocardial integrity. We aimed to investigate the impact of increasing durations of warm ischemia on cardiac recovery in a porcine model of donation after circulatory death (DCD) using thoracoabdominal normothermic regional perfusion (TA-NRP).

Methods. Sixteen pigs were randomly allocated to four WIT groups: 15, 30, or 45 minutes (n = 4 each). After hypoxic cardiac arrest and a 5-minute stand-off, central TA-NRP was maintained for 60 minutes. Cardiac function (hemodynamic, echocardiography) was assessed at baseline and 30 minutes after NRP weaning. Myocardial injury in left and right ventricles was evaluated using a histologic score (0 to 4) from biopsies during cardiac procurement.

Results. Cardiac resuscitation was successful, and pigs were weaned from NRP in the WIT15 and WIT30 groups but not in the WIT45 group. Left ventricular ejection fraction (LVEF) was restored in WIT15 (56.7 ± 3.8 to 67.7 ± 11.6%, p = 0.43) and WIT30 (50.0 ± 3.1 to 64.0 ± 6.0%, p = 0.09), but not in WIT45. Left ventricular internal diameter (LVIDd) was maintained in WIT15 (41.8 ± 3.8 to 43.5 ± 3.2 mm, p = 0.95), consistent with preserved diastolic filling, while it decreased in WIT30 (43.7 ± 1.3 to 31.1 ± 6.6 mm, p = 0.27), suggesting altered preload. Cardiac output was restored in WIT15 (5.8 ± 0.8 to 6.8 ± 0.9 L/min, p = 0.062), but slightly declined in WIT30 (5.0 ± 0.5 to 4.7 ± 0.2 L/min, p = 0.568), and with no cardiac activity in WIT45. Systolic arterial pressure (SAP) remained stable in WIT15 (75 ± 3 mmHg to 72 ± 4 mmHg, p = 0.8), declined in WIT30 (93 ± 9 to 56 ± 9 mmHg, p = 0.06), and was unmeasurable in WIT45. Histological injury score was low in WIT15 (LV: 0.25±0.25; RV: 0.25±0.25), mild in WIT30 (LV: 1.67±0.88; RV: 2.00±0.58), and moderate in WIT45 (LV: 2.25±0.25; RV: 2.50±0.29).

Conclusion. These findings demonstrate that cardiac DCD with TA-NRP is feasible and reproducible in a pig model. Myocardial function declines rapidly beyond 30 minutes, and strategies mitigating myocardial damage are needed to expand WIT.

ID#130

Christie Rampersad, University of Toronto

Evaluating Racial Differences in Mortality Risk Stratification Using the Estimated Post-Transplant Survival Score in Kidney Transplantation

Background:

The Estimated Post-Transplant Survival (EPTS) score is widely used to predict survival in kidney transplant recipients and guide high-longevity kidney allocation. Prior studies identified racial disparities in access to high-longevity kidneys under this system, but EPTS performance across racial groups has not been directly evaluated. We evaluated EPTS model performance across racial groups.

Methods:

This retrospective cohort study included adult deceased donor kidney transplant recipients from the U.S. Scientific Registry of Transplant Recipients (2013–2023). Cox proportional hazards models estimated mortality using Raw EPTS, with an interaction term for race. Hazard ratios per unit EPTS were calculated for each race group. To visualize effect modification, Kaplan-Meier curves were generated by EPTS quintile for White and Black recipients. Discrimination was assessed using Harrell's C-index and compared with DeLong's test. Calibration was evaluated at 1, 3, and 5-years using calibration plots.

Results:

Among 135,250 recipients, 75,551 (56%) were White and 46,372 (34%) were Black. A significant interaction between EPTS and race was observed (p Discussion:

The EPTS-mortality association differed by race, with a stronger effect in White recipients. Survival advantages shifted across EPTS strata. Despite modestly lower discrimination or Black recipients, calibration was consistent, supporting continued EPTS use while underscoring the need for ongoing performance monitoring and equity-focused improvements.