Lay Summary Abstracts of the 2023 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. This year's meeting brought together members of the Banff Foundation for Allograft Pathology and the Canadian Society of Transplantation for a hybrid event, combining both in-person and virtual experiences, and helping us reach an even wider audience. **The 2023 CST Annual Scientific Meeting was held at the Fairmont Winnipeg and ONLINE, October 16-20, 2023.** With over 300 Canadian and International delegates attending, the 2023 CST ASM received outstanding educational programming, but also rare opportunities to connect with Transplantation professionals from all over the world**.**

ID#1

A New treatment for preventing immune rejection in transplantation--circular RNA silenced Dendritic cells

Xiufen Zheng, Western University

Long-term patient and graft survival has been achieved in organ transplantation but at the expense of toxic side effects that are associated with long-term use of nonspecific immunosuppressive drugs. Discovering new regulators is important for developing a new treatment to prevent immune rejection. Recent studies have shown a new type of RNA known as circular RNA (circRNA), involved in immune responses. One of the circRNA named circMAP2K2 was up-regulated in mature dendritic cells (DCs)-an important type of immune cells. This study aims to investigate the effect of this RNA on our immune system and on immune rejection in organ transplantation. Bone marrow-derived DCs were cultured in vitro. The expression of circMAP2K2 was determined and DCs were manipulated to reduce the level of circMAP2k2. The effects of circMAP2K2-silenced DC on preventing immune rejection were assessed in a mouse heart transplantation model. We found that the reduction of CircMAP2K2 prevented DC development and induced immune suppressive cells. Treatment with those circMAP2K2-silenced-DCs prolonged transplanted heart survival and reduced immune rejection, highlighting a promising therapeutic approach.

ID#2

A Canadian real-world treatment analysis of adult patients with chronic GVHD

Erika Robinson, Drug Intelligence

Graft-versus-Host Disease (GVHD) is an immune-related syndrome that occurs in patients after receiving a stem cell transplant from a donor. Chronic GVHD (cGVHD) typically presents with complications affecting the skin, liver, gastrointestinal tract, eyes, mouth, and/or lungs. cGVHD is a debilitating disease severely impacting patient quality of life. The first treatment given to cGVHD patients is corticosteroids. Subsequent treatment choices depend on the complication and severity; however, it is unclear which treatments are received after corticosteroids and how many treatments patients will need to resolve cGVHD complications. This study examined adult patients in Canada who received a transplant >18 months prior to the study and who received treatment for cGVHD. Nearly all cGVHD patients received corticosteroids as an initial treatment, 28 of which were still receiving them at the time of the study. Ruxolitinib was the most used treatment in second line after corticosteroids, received by over a third of patients, followed by mycophenolate in 17% of patients. About 40% of cGVHD patients and 77% of patients with scleroderma, a severe skin-related cGVHD complication, received >2 treatments. This emphasizes the need for more effective cGVHD treatment options when early treatments fail to resolve complications.

ID#3

Reevaluating the 6-month rule prior to liver transplant: A clinical practice guideline

Joanna Dionne, McMaster University

Until recently, a patient with alcohol related liver disease (ALD) was required to abstain from alcohol for 6-months before undergoing liver transplant (LT) ("the 6-month rule"); this rule has been called into question from, specifically from an ethical and legal perspective evidence. We developed clinical practice guideline (CPG) is to help guide assessment and management of ALD and LT. We recommend: 1) Not using the six-month rule as a sole criterion for liver transplant, 2) The definition of relapse should distinguish between: 1. non harmful relapse 2. harmful drinking and relapse monitored by biochemical markers when available, 3. During liver transplant workup, assessment of risk factor associated with post-transplant relapse and protective factors should be part of the assessment to allow for early intervention to mitigate risk factors, 4) The use of validated screening scoring systems and biomarkers for screening post-transplant relapse, 5) Integrated multidisciplinary teams with psychiatrists, addiction services to prevent relapse pre and post-transplant. Best practice statements include: 1) Listed and transplanted ALD patients should be intermittently screened for relapse, 2) We suggest a holistic assessment for patients being evaluated for LT, that not only consider risk factors or other screening modalities, but a multidisciplinary approach.

ID#4

Impact of graft selection on short- and long-term outcomes of liver transplantation in recipients with Non-Alcoholic Steatohepatitis (NASH)

Samrat Ray, University Health Network / Toronto General Hospital

There has been a rise in the prevalence of Non-Alcoholic steatohepatitis (NASH) globally, making it one of the leading indications of liver transplantation in North America and worldwide. The high morbidity associated with cardiovascular and metabolic abnormalities accompanying NASH makes these patients fall under a high-risk category of liver transplantation recipients. There is however, a paucity of available literature on the impact of NASH in the recipient on the short and long-term outcome of liver transplantation (both living and deceased donor) and also, on the impact of graft selection (based on donor age, body mass index or type of donor) on the outcome of transplantation in these patients with underlying NASH. We, therefore aimed to summarise our recent experience on the comparison of the outcome of deceased donor (Brain death and cardiac death) and living related liver transplantation in patients with and without NASH from a high volume Canadian centre. The results of our study suggested that patients with underlying NASH have comparable outcomes of liver transplantation with those without NASH (in terms of immediate post-operative outcomes and long-term graft and patient survival rates), although an associated advanced donor age could be a potential deterrent while donor selection for these patients and should be taken into consideration during organ allocation for them.

ID#5

Patient and Provider Gender and Kidney Transplant Referral in Canada: A Survey of Canadian Healthcare Providers

Amanda Vinson, Nova Scotia Health Authority

Studies have shown that women are referred for kidney transplant less often then men. The reasons for this are unknown, but may relate to healthcare providers having unintentional bias against referring women. In this study, we created a series of 25 hypothetical patient cases and using the Canadian Transplant Society and Canadian Society of Nephrology email registries, we asked nearly 100 healthcare providers involved in kidney transplant referral across Canada whether they would refer the patient in the case for transplant or not. The gender of the patient in the case was reversed in half the cases (e.g., changed from male and male pronouns to female and female pronouns, or vice versa). The cases were otherwise identical. We assessed if, after accounting for other factors, the gender of the patient in the case was associated with transplant referral. We showed that overall, there was no difference in referral rates for kidney transplant based on the gender of the patient in the case. Overall, male and female survey respondents were similarily likely to refer patients for transplant, however male respondents were less likely to refer frail patients and female respondents were less likely to refer medically complex patients.

ID#6

Working in harmony - joining hands and data without exchanging data within the NephroCAGE consortium

Marcel Naik, Charite University Medicine

Kidney transplantation is the best therapy for kidney failure. Short-term survival has improved over the last decades, but long-term survival has remained stagnant. Two Canadian and one German transplant center founded NephroCAGE. We aim to detect and predict individual patients' risk for kidney transplant loss using existing data from participating centers. Usually, data from all centers need to be shared centrally in order to develop such models. Sensitive to risk to patient privacy when sharing data centrally as well as and legal barriers to data sharing across countries in the form of data protection laws, NephroCAGE investigators designed a study that ensures that data from different centers is handled locally to yield similarly defined variables across centres and models predicting transplant survival or failure are also developed locally. Rather than the data, the models are then shared with the partner transplant centers. Here we describe initial efforts to manage the data to develop standardized variables across participating centers prior to developing prediction models. These efforts highlight similarities and differences between the Canadian and German centers related to patient and donor contexts that are likely to influence transplant outcomes, and, consequently, are important to appreciate in advance of developing prediction models.

ID#7

Comorbidity and Multimorbidity Burden in Living Kidney Donors

Ngan Lam, University of Calgary

Living kidney donors undergo an invasive procedure to help people with kidney failure live longer and better. It is important to understand their long-term outcomes to better inform current and future donors about the risk of living kidney donation. We studied 979 living kidney donors who donated between 1994-2019 to see how many donors developed heart and kidney disease. We also looked at how many donors had more than one medical problem. We found that 31% of donors had hypertension, 7% developed diabetes, and 5% of donors had both. Overall, almost 3 out of 4 donors had at least 1 medical condition, with the proportion of donors with 2 or more medical conditions rising with increasing age. Our results could inform long-term follow-up care of living kidney donors by identifying those who may benefit most from periodic health reviews.

ID#8

Impact of hemoglobin level in ex vivo heart perfusion on donation after circulatory death hearts: A juvenile porcine experimental model.

Yasuyuki Kobayashi, The Hospital for Sick Children

Heart transplantation (HTx) is the gold standard treatment for advanced heart failure, however the demand for HTx chronically exceeds the donor supply. Although donation after circulatory death (DCD) organ retrieval has aimed to narrow this gap, DCD hearts experience a significant damage due to accumulated ischemic metabolites followed by reperfusion injury. Ex-vivo heart perfusion (EVHP) not only enables a safe long-distance procurement but provides assessment of donor's viability regarding metabolism or cardiac function. EVHP for DCD hearts has become a predominant strategy in adults, however collecting sufficient blood volume from the heart donor is an essential component of EVHP to maintain adequate oxygen delivery, and this is where the small volume of blood in a pediatric patient becomes the biggest challenge of applying EVHP in this population.

The heart donors were allocated into two groups (Low-hemoglobin [Hb] and Normal-Hb group) and assessed metabolism, cardiac function and cell damage.

As a result, Low-Hb group showed higher lactate level and worse cardiac function. However, myocardial tissue damage caused by Low-Hb EVHP was not profound, and the reversibility of myocardial function is yet to be determined in future studies. Refining the EVHP perfusate to optimize organ protection while minimizing blood requirements necessitates further investigation.

ID#9

Effect of recipient body mass index (BMI) on outcome of pancreas transplantation: a single-centre 20-year experience

Samrat Ray, University Health Network / Toronto General Hospital

Pancreas transplantation has revolutionized the treatment of type 1 Diabetes mellitus, and in conjunction with kidney transplantation, it has become the standard of care in patients with end stage diabetic nephropathies. The worldwide prevalence of obesity has been continuously rising in recent years. The surgical population is similarly affected, and whether high Body mass index (BMI) is a risk factor for surgical morbidity is a matter of debate and is likely to depend on the type of surgery. In kidney and liver transplant surgery, recipient obesity has been associated with increased morbidity but is not considered a contraindication to transplantation. The current study targetted the following questions: Is there an effect of recipient BMI on the overall outcome of pancreas transplantation? and Does recipient BMI affect the graft and overall survival of patients undergoing pancreas (+/- Kidney) transplantation? We found no significant difference in the short- and long-term outcomes and survival of pancreas transplantation between recipients with and without obesity. Therefore, we concluded that obesity alone does not affect graft and overall survival in pancreas transplant recipients and should not be an exclusion criterion for pancreas transplantation. The predicted risk should be weighed by appropriately balancing the other peri-operative factors between the donor and the recipient.

ID#10

The Impact of a Platform Sharing Creative Writing by Kidney Transplant Patients, Transplant Candidates and Living Donors: A Mixed Methods Study

Marie-Chantal Fortin, Université de Montréal

Kidney transplant recipients, transplant candidates and living donors face numerous challenges associated with transplantation. Creative writing has been described as a therapeutic tool for patients with chronic disease. Since 2020, patients have been invited to participate in creative writing workshops. Participants who agreed to it had the opportunity to post their creative writing on a web platform (lorganon.ca). The objective of this study was to assess the impact and capture the experiences of patients who visited this platform that shares creative writing by patients.

We surveyed 66 participants and interviewed 22 participants who visited the platform. Our results show that a web platform with creative writing is useful and that participants identified with the content of the creative writing. Creative writing was described as a source of emotions, identification with others, reassurance, a therapeutic tool and a way to encourage reflection on organ donation and transplantation.

Our results showed that a web platform sharing creative writing by patients could be a useful tool for other patients.

ID#12

A Summary of Pre-Solid Organ Transplant Screening at Canadian Transplant Sites

Melissa Phuong, University of Ottawa

Background: Individuals who undergo solid organ transplants take anti-rejection medications which reduce their immune system to protect the new organ. Therefore, they are at greater risk for infections. Transplant programs use standard protocols to detect and manage infection risk in patients, and these protocols are specific to each transplant site across Canada. The aim of this work was to review pre-transplant screening protocols from different programs to identify any differences and potential needs for improvement or standardization.
Methods: We acquired pre-transplant screening protocols from Canadian adult transplant centres. Comparisons between these protocols were then made.
Results: Protocols included transplant program documents and informal descriptions received from transplant coordinators. We noted differences with screening for all types of infectious agents, but especially for viruses and parasites pre-transplant.
Conclusions: A lack of standardization across different Canadian transplant centres for screening protocols was found, highlighting the importance for Canadian best practice recommendations.

ID#13

A Summary of Pre- and Post-Transplant Immunization Protocols at Canadian Transplant Sites

Melissa Phuong, University of Ottawa

Background: Individuals who undergo solid organ transplants take anti-rejection medications which reduce their immune system to protect the new organ. Therefore, they are at greater risk for infections and may have a reduced immune response to vaccines. Transplant programs use standard protocols to detect and manage infection risk in patients, and these protocols are specific to each transplant site across Canada. The aim of this work was to review vaccination protocols from different programs to identify any differences and potential needs for improvement or standardization.
Methods: We acquired pre- and post-transplant vaccination protocols from Canadian adult transplant centres. Comparisons between these protocols were then made.
Results: Protocols included transplant program documents and informal descriptions received from transplant coordinators. We noted various gaps in pre-transplant vaccination protocols between programs. Most institutions had updated their protocols to include COVID-19 vaccinations, although the number of recommended doses differed.
Conclusions: A lack of standardization across different Canadian transplant centres vaccination protocols was found. This highlights the need for Canadian best practice recommendations and for advocating for vaccine access for transplant recipients.

ID#14

Effect of subcutaneous drains on wound infections in kidney transplantation

Michael Moser, University of Saskatchewan

The incision used for a kidney transplant is one of the poorest healing incisions in all surgery. After a kidney transplant, the tissues swell up with fluid, and the medications used to bring down the immune system interfere with healing. An infection in this type of wound can take up to three months of daily dressing changes until the skin heals completely. After all kidney transplants, surgeons place a soft plastic tube (drain) near the kidney to drain fluid for the first week after surgery. We studied whether placing an additional drain just under the skin might prevent wound infections in kidney transplant recipients. The group that received the extra drain had more risk factors for poor wound healing, such as obesity, use of a powerful immune suppression medication, and diabetes. Yet, only one of 36 of these patients had a wound infection (3%), compared to 13 out of 76 who did not have the extra drain placed (17%). Leaving an extra drain under the skin may be a simple and inexpensive way of reducing the risk of wound problems in kidney transplant patients.

ID#16

Home based resistance exerciSe program resulTs in significant impROvements in muscle streNGth and function in post-Liver Transplant Children (STRONG TRIAL).

Diana Mager, Department of Agricultural, Food and Nutritional Sciences, University of Alberta

Resistance exercise has been shown to be helpful in the treatment of sarcopenia (reduced muscle mass, muscle strength/function) in adults after liver transplantation (LTx). Sarcopenia can occur up to 10 years after a LTx in children which can made it harder for children who have had a liver transplant to perform activities of daily life and participate in physical activity (PA). We developed a home-based exercise program using elastic bands (STRONG videos) that can be performed by children and their families at home to help treat sarcopenia in children post-LTx. Post liver transpalnt children and age-match children who have not undergone a LTx (6-18 years) particpated in a 12 week resistance exercise (RE) video-based program using elastic bands at home. RE resulted in significant improvements in some measures of body composition (visceral adipose tissue, skeletal muscle mass), muscle function, fatigue in post LTx youth. The RE program also resulted in significant improvements in their parents perceptions about the ability of their child to participate in routine PA. RE can help children and youth who have had a liver transplant to feel less fatigue associated with PA, improve their body composition and overall ability to perform routine activities of daily life.

ID#17

Favorable kidney transplant outcomes following longer machine cold perfusion pump times: A retrospective analysis of donor-matched kidney transplants

Michael Moser, University of Saskatchewan

For decades, preserving a kidney for transplantation involved flushing it with special solutions to get the blood out and keeping it cool at 4C. This way, the kidney can be preserved for up to 24 hours. A pump that circulates the preservation solution and maintains a constant 4C temperature has been used for over a decade. It was assumed for many years that the less time a kidney is outside the body (or on the pump), the less injury it will have when it is transplanted. A study published in 2016 showed that when two kidneys were removed from one donor, the kidney that was transplanted second (and had a longer time outside the body) appeared to do slightly better than the kidney that was transplanted first. Because this result was unexpected, we repeated this study and confirmed that the second kidney had, on average, less rejection and functioned earlier. Our study has confirmed this surprising result a second time; this should motivate further research studies to determine why a slightly longer time on the pump is beneficial.

ID#18

THE INTERPLAY BETWEEN HLA ANTIBODY PROFILE AND COVID-19 VACCINATION IN RENAL TRANSPLANT PATIENTS

Yayuan Zhao, USASK

The study aims to understand how COVID-19 vaccines affect the production of antibodies that can cause problems in people waiting for a kidney transplant. Certain events like an organ transplant, pregnancy, and infections can cause the body to produce HLA antibodies, which can lead to complications in transplantation. The study monitored HLA antibodies in 63 kidney transplant patients before and after they received the COVID-19 vaccine.

The results showed that the majority of patients had an increase in HLA antibodies after vaccination. Patients with a history of COVID-19 infection, never giving birth before, and having high blood pressure were likelier to have higher levels of HLA antibodies. The study suggests that transplant centers should monitor patients for HLA antibodies after vaccination and adjust treatment accordingly

This study investigates the impact of COVID-19 vaccination on HLA antibodies in kidney transplant patients. Monitoring 63 waitlisted individuals, we found that COVID-19 vaccination induced HLA antibodies in the majority of patients. Factors such as a history of COVID-19 infection, nulliparity, and hypertension were associated with higher levels of HLA antibodies. The study emphasizes the importance of monitoring HLA antibodies post-vaccination in kidney transplant patients and adjusting immunosuppression therapy as necessary to safeguard transplant outcomes.

ID#19

Non-HLA Antibodies in Kidney Transplantation

Abubaker M. Sidahmed, University Hospital - London Health Sciences Centre, Western Ontario University

Despite growing research in this area, the link between non-HLA antibodies and kidney transplantation outcomes is still weak and debated. Many past studies used in-house laboratory assays to test for non-HLA antibodies, leading to inconsistent results. Our preliminary aimed to elucidate this relationship. We hypothesized that broad sensitization against non-HLA targets is associated with poor kidney transplantation outcomes with antibodies against AT1R, Perlecan, VM, and Agrin being of particular interest

ID#20

Understanding Compassion Fatigue and Burnout in Organ Donation Coordinators in Brazil: A Mixed-Method Study

Alessandra dos Santos Minervini, Federal University of São Paulo

Background: In Brazil organ donation programs run with two different models. One includes a nurse in hospitals supporting donation and the other is of nurses in organ donation organizations that go to hospitals to support the donation processes as needed. These nurses work in a very stressful environment as they have to support families in a difficult time of their lives, in addition to the complex and fast turnaround of donation cases, which can lead them to become burned out. There is little known about burnout among coordinators worldwide, and a Canadian research group has initiated scientific studies to understand more about this and to find solutions. We have partnered with this group to conduct the same study in Brazil. For that, we will need to translate two survey tools used in Canadian studies. Methods: we will use a comprehensive method to ensure the tool is reliable and the steps include translation, synthesis, back translation, review by an expert committee, pretest, validation and reliability. Expected results: Two survey tools translated to Brazilian Portuguese. Conclusion: The results will allow us to conduct the Canadian study in Brazilian coordinators, which will help us understand how Brazilian coordinators are affected by work stress.

ID#21

Cultural considerations to promote living donor kidney transplantation (LDKT) among the Chinese Canadian community

Rebecca Starkman, Ajmera Transplant Centre, University Health Network and Division of Nephrology, University of Toronto, Toronto

Chinese Canadian communities have a higher risk of kidney disease and failure, compared to white communities, but have less access to a kidney transplant from a living donor, which is considered the best medical treatment. Providing culturally tailored education about kidney health and treatments may increase access to needed treatments. It is unknown what content, messengers, and mediums of delivery would improve education to Chinese Canadian communities. This qualitative study interviewed 31 adults who self-identified as Chinese, both with and without lived experience with kidney disease and treatments. The interviews were conducted one-on-one, virtually, and in the participant's language of choice (English, Mandarin, or Cantonese). Interviews explored perspectives surrounding kidney health and disease, and treatment options. Results suggest three important factors may optimize kidney health education for Chinese communities. First, content should include culturally appropriate preventive and general kidney health materials. Second, the key people to promote kidney health are Chinese people with lived experience and community leaders. Third, education efforts should utilize both Chinese traditional media and social media platforms. Incorporating these elements into kidney health education may improve awareness of kidney health and increase consideration of living donor transplants as a treatment option in Chinese communities.

ID#22

Art-based interventions for pediatric solid organ transplant patients: a scoping review

Neslie Nsingi, University of Manitoba

Children and adolescents waiting for or who have undergone a solid organ transplant (e.g., heart, kidney, lung, liver, or pancreas) face many challenges in their everyday life. The disease and treatment they endure can affect their emotions, behaviours, education and relationships with others. Using art interventions to support them may promote these young people's health and well-being. In addition, these programs can also be helpful for the children and adolescents' family members who accompany them through their medical journey. Indeed, art engagement has benefits that can arise from the therapeutic effect inherent to art, even without the intervention of a trained art therapist. However, the scientific literature on this topic is still poor. This paper aims to clarify the state of the research on art interventions for young people before or after solid organ transplantation and their families. By searching scientific databases online, some art interventions could already be identified. These programs had various objectives like developing resilience, a sense of control or self-expression for the patients and their families. The results of this research will inform healthcare professionals about possible ways to promote health and well-being with art in this population.

ID#26

Post-kidney transplant initiation of dialysis

Tony Fang, University of Toronto

Kidney transplantation is the best treatment for end-stage renal disease. However, it is a limited resource restricted by the longevity of the kidney transplant. Unfortunately, patients must often return to dialysis. This study sought to find the optimal criteria for dialysis re-initiation in the adult population with a failing kidney transplant.

We searched for an exhaustive list of literature in databases including OVID Medline, EMBASE, Cochrane library, CINAHL and PsychInfo from the year 1983 to 2022. 2627 articles were screened and 13 studies were included.

Specific criteria for when to initiate dialysis in patients with a failing allograft were not well described in the literature. Several biomarkers and clinical features such as elevated CRP, worsening graft function and blood pressure, and elevated serum creatinine were associated with poorer survival post-kidney transplant failure. In contrast, lower bicarbonate levels, higher serum albumin and private-only insurance were associated with improved outcomes after dialysis initiation.

This systematic review highlights the need to further explore evidence to guide providers how to approach dialysis initiation post-kidney transplant failure as it becomes a growing cause for kidney failure.

ID#27

Genetically engineered donor organs to improve transplantation outcomes

Kumi Mesaki, University Health Network

Graft rejection remains an ongoing challenge in lung transplantation, limiting post-transplant outcomes and requiring the need for lifelong medication to prevent the body from rejecting the organ. In this study, we tested new genetic engineering techniques to modify donor lungs in an effort to make them less likely to produce an unwanted immune response once transplanted. This strategy included gene delivery to create a short-term anti-inflammatory response, in combination with new genome editing technologies that changes the DNA sequence of the lung to create a longer-lasting effect. Together, these strategies aim to increase the production of a helpful protein called “IL-10” in the donor lung. We first developed novel genome editing vectors and demonstrated their functionality in cultured cells. Towards clinical application, we assessed this approach in human donor lungs preserved outside of the body, or “ex vivo”, thus simulating pre-implantation conditions. The treated lungs exhibited stable oxygen capability and an increase in IL-10 levels after vector delivery, supporting the clinical applicability of this approach that may produce positive therapeutic benefits. Our study opens a new door to donor organ engineering and transform patient care in transplantation.

ID#28

Supplementation of UW solution with hydrogen sulfide donor, AP39, improves renal graft structure and function in an ex vivo porcine model of DCD kidney transplantation

George Dugbartey, University of Western Ontario

The global donor kidney shortage crisis has necessitated the use of kidneys from donors after cardiac death (DCD). However, such kidneys have poor post-transplant outcome due to prolonged cessation of blood supply during procurement. The present study investigates whether addition of AP39, a hydrogen sulfide donor, to organ preservation solution improves donor kidney quality in a pig model of DCD kidney transplantation.

Renal blood vessels of pigs were clamped for 30 minutes to mimic the clinical version of DCD. Next, both left and right kidneys were removed, flushed with and stored in organ preservation solution with or without AP39 at 4°C for 4 hours followed by restoration of blood supply to the kidneys for 4 hours at 37°C using pumping machine. Urine and blood samples were collected hourly, tissue oxygenation and urine productionwere recorded. Blood parameters were also measured hourly for 4 hours after which the kidneys were collected for analysis.

Kidneys that were stored in preservation solution supplemented with AP39 showed higher oxygen content, better structure and function than those stored in preservation solution without AP39 supplementation.

This finding could lay the foundation for improved donor kidney preservation and reduce the increasingly poor outcome associated with DCD kidney transplantation.

ID#35

Relationships between nutrition risk and frailty in candidates for lung transplant

Brooke Stewart, University Health Network

Lung transplantation is a life-saving treatment for some people with end-stage lung disease. Transplant healthcare teams work to identify and improve modifiable factors in candidates to help them achieve the best outcomes before and after transplant. Previous research suggests that frailty is related to transplant outcomes, and that poor nutrition is an important contributor to frailty. This study included 62 adult lung transplant candidates and examined associations between nutrition risk, measured using a questionnaire called Seniors in the Community: Risk Evaluation and Nutrition (SCREEN-14), and frailty, assessed using two methods: physical frailty with the Fried frailty index (FFI) and multidimensional frailty using a cumulative deficits frailty index (CDFI). It found that most candidates were at high nutrition risk. Higher nutrition risk was associated with increased physical frailty, and those at high nutrition risk were more likely to be physically pre-frail or frail. These findings highlight the importance of nutrition care as part of lung transplant candidate care. Nutrition risk screening may help the dietitian to identify candidates who would most benefit from nutrition care and to target their nutrition interventions. Future studies should investigate how to best identify nutrition risk, and whether interventions that reduce this risk also decrease frailty.

ID#36

Young people with chronic kidney disease & their siblings: An ecomap approach to exploring familial relationships

Mateo Nallim, University of Manitoba

The diagnosis and treatment of pediatric chronic kidney disease (CKD) causes significant changes to the lives and daily routines of young people and their families. To date there has been limited research conducted on relationships within these families, particularly from the perspective of young people with CKD. The objective of this pilot study was to explore the perspectives of these young people and their siblings concerning their family relationships using a case study approach. Inclusion criteria for families consisted of at least one young person with CKD and a sibling between the 8 and 17 years of age, and at least one caregiver willing to participate. Two families were recruited; one included two adolescent brothers, while the second included four siblings ranging in age from 8 to 16 years. During semi-structured interviews, young people constructed ecomaps to describe their support networks. Coding utilizing thematic analysis identified three themes: Significant Relationships, Being Present, and Changes. Results provided insight into sources and types of support for young people with CKD and their siblings, and were discussed within resilience and family systems frameworks. Our findings have important implications for healthcare and allied health professionals who support these families.

ID#37

Pre-transplant multidisciplinary assessment on medication adherence and transplant outcomes (PLATO)

Marianna Leung, St. Paul's Hospital, Providence Healthcare

Medication non-adherence is a major cause of transplant failure. We want to determine if assessing risk factors for non-adherence before transplant and using a medication adherence plan based on these findings, would improve medication adherence and transplant outcomes after transplant.

Usual care was provided to one group of kidney transplant recipients (control). Another group (intervention) pre-transplant received a trial with placebo (sugar pills) kept in bottles that can monitor adherence and surveys on health literacy (ability to understand health information), self-efficacy (confidence in medication taking under various life circumstances), and cognition. Based on these findings, medication management plans were created and reviewed with the patients. After their transplants, medication adherence was captured in both groups.

Although not significant, the proportion of tacrolimus doses taken as prescribed and self-reported adherence score were higher in the intervention compared to the control group. There was no difference in tacrolimus concentrations and rejection episodes between the groups.

A tailored medication management plan based on pre-transplant assessment was readily implementable and accepted by patients but this study was not able to show a difference in outcomes. Future studies targeting potential transplant candidates at high risk of nonadherence are warranted to better align limited healthcare resources.

ID#38

Utilization of kidney transplant ultrasounds in hospitalized patients: a review of current clinical practice

Jason Bau, Ajmera Transplant Centre, University of Toronto

Kidney transplant recipients routinely require the use of medical services, including hospital admissions, for complications following transplantation. Aside from basic laboratory investigations, routine radiographic tests in the form of ultrasounds are also utilized. The clinical information derived from these tests are of unclear value and have associated capital resource costs. Additionally, inappropriate use of diagnostic tests could have unintended effects for patient care, including delaying discharge, or procedures such as kidney biopsies. The purpose of our study was to understand how ultrasonography is used as a diagnostic tool in kidney transplant patients who are admitted to hospital. We found that most patients admitted to hospital received a kidney ultrasound which did not ultimately change the overall management or care of the patient. In our study population, and more selective use of imaging tests could result in an appreciable reduction and resource management in the care for organ transplant recipients.

ID#39

Unbiased proteomics analysis reveals distinct graft protein expression in DSA+ kidney transplant recipients with and without Antibody-Mediated Rejection

Kieran Manion, University Health Network

Rationale: Almost 50,000 Canadians have kidneys that no longer function. The best treatment for this is transplantation of a new kidney from a healthy donor. Unfortunately, half of transplanted kidneys fail within 10 years. This is mainly because of a process called antibody-mediated rejection, where the patient's immune system damages the donor kidney. We aim to discover how an individual's immune system interacts with the transplanted kidney to cause rejection.

Methods: We obtained archived kidney tissue from 45 kidney transplant recipients, who had a kidney transplant biopsy as part of their clinical care. One group had antibody-mediated rejection and the other group had no rejection. We measured and compared proteins (molecular actors) in the transplanted kidneys of patients with and without rejection, then studied which actions these proteins may perform in the kidney.

Discovery: We found over 300 proteins that were present at different levels in the transplanted kidneys of patients with versus without rejection. These proteins were linked to early actions of the immune system and to processes controlling kidney structure and function.

Impact: This study will help us to better understand rejection, and may in the future allow for earlier intervention and better treatments for transplant rejection.

ID#40

Identifying the environmental impacts of kidney transplantation and hemodialysis through lifecycle assessment

Saba Saleem, The University of British Columbia

The clinical and economic impacts of kidney replacement therapies for patients with acute kidney failure are well established. While comparing these therapies, Kidney transplantation is the most cost-effective and has several clinical benefits than the dialysis used for end-stage kidney diseases, but their environmental impacts have yet to be explored. Kidney transplantation can be classified into two main categories: deceased donor kidney transplantation and living donor kidney transplantation. Each modality has its specific cost and environmental impacts that should be incorporated before recommendation as a suitable treatment option. This study used a life cycle assessment approach to address the environmental impact of hemodialysis and kidney transplantation to select a suitable option with minimum environmental impact. Using these results in conjunction with existing clinical and economic data, practitioners and decision-makers will be able to enhance the provision of kidney replacement therapy in a sustainable manner.

ID#41

Feasibility of creating an up-to-date, transplant-focused counselling AI chatbot

Rohit Malyala, University of British Columbia

Patients, donors, and family members can have many questions throughout the donation and transplant process. However, it can be difficult to provide personalized, timely, and accurate information to patients, given time limitations on providers and given how data is constantly evolving in this field. We've made an open-source chatbot that can be hosted on a personal website for free, based using OpenAI's ChatGPT model. The chatbot is able to provide personalized and accurate information that it was not actually originally trained on. When users ask it questions, a special algorithm feeds the chatbot relevant information behind-the-scenes from a vast array of up-to-date facts. The chatbot is also able to decline irrelevant or harmful questions or requests. Next steps for the chatbot include to get feedback from patients and clinicians, and to formally evaluate the chatbot's outputs.

ID#42

Impact of induction on acute rejection in kidney transplant recipients with class II eplet mismatches

Yoojin Choi, University of British Columbia

Induction therapy is a powerful immunosuppressant given at the time of kidney transplantation. The more potent induction (ATG) decreases the risk of rejection compared with the milder agent (BAS) but it is more likely to lead to infectious complications and cancer. Currently, there are limited tools to help physicians decide on the choice of induction for each patient. In this study, our objective was to determine if the degree of immune incompatibility (eplet mismatches) between patients and their donors in addition to the type of induction the patient received would have a combined effect on their risk of developing rejection. Our results identified three immune risk groups. We found that patients with high mismatches taking BAS induction were at the greatest risk of rejection. This was followed by patients with high mismatches taking ATG and those with low mismatches taking BAS where both had an intermediate risk. Lastly, patients with low mismatches taking ATG had the lowest risk of rejection. These results suggest that the degree of eplet mismatches may be used to identify patients more likely to experience rejection and help physicians personalize the choice of induction therapy.

ID#43

Influence of First-Transplant Characteristics on Graft Survival in Subsequent Kidney Transplants

Ali Sherazi, Dalhousie University School of Medicine

Our research aimed to understand the key factors influencing the success of a second kidney transplant. By filling in this knowledge gap, we can work toward improving management for people receiving re-transplants.

We studied data from over 17,000 patients who had received a second kidney transplant. We looked specifically at how certain aspects of their first transplant may influence the outcomes of the second one.

Our findings revealed that the length of time a patient spends on dialysis before re-transplant, how long the first transplant survived, and the body's immune response and antibody levels prior to the first transplant all play an important role in the survival of the second transplant. Interestingly, the patient's age when they had their first transplant and how well matched the first transplant was to the patient did not seemingly affect the success of a second transplant.

This research provides valuable insights for the transplant community, including researchers and doctors. It can help them better predict the outcomes of a second kidney transplant and fine-tune their treatment strategies accordingly.

ID#44

Serial urinary CXCL10 monitoring to identify varied sources of allograft inflammation and indicate biopsy for subclinical rejection

Ella Chan, University of British Columbia

Kidney transplant recipients require careful monitoring for signs of transplant rejection, where the patient's body creates an immune response against their new organ. If undetected, rejection can cause issues for the patient -- potentially leading to kidney failure.

One method used to monitor for kidney transplant rejection is a marker in the blood called creatinine – which increases with decreased kidney function. However, creatinine may only show changes at high levels of organ damage. This means that we often catch rejection after the damage has already been done.

A urine test for a compound called CXCL10 can detect kidney rejection, sometimes before creatinine can. However, rejection is not the only thing that can change CXCL10 levels, as many causes of kidney inflammation have been linked to increased CXCL10 levels. This study helped explore if looking at trends in CXCL10 is more valuable to predicting rejection than looking at a single result.

We found that using a second CXCL10 test after the first positive test was important to identify other potential causes of high CXCL10 and to identify who might need a biopsy when it remained high on the second test to rule out kidney rejection

ID#45

Kidney Storage below Zero Degree Temperature is Safe for Porcine Kidney Auto-Transplantation: A world first in-vivo study

Francisco Calderon Novoa, Ajmera Transplant Program, University Health Network, Toronto General Hospital.

Kidney storage and shipping is greatly hindered by the limitations in storage methods. As of current practice, the only available methods for storage are static storage at 4 °C or cold perfusion/ However, there is ongoing damage to the graft in spite of these methods. Sub-zero preservation may provide a way to further prolonge storage times by almost stopping metabolism and thus, celullar damage. In this study, we show the results of a short porcine kidney storage at -2C using new cooling and flushing technologies to prevent ice crystal formation, followed by autotransplantation of said kidney. This new method was compared to the standard practice (i.e. static storage on ice). All kidneys stored at -2 C had inmediate urine production after transplanted, and after a 7 day follow up had kidney function p[arameters comparable to those stored the convetional manner, and near baseline values. This study is importante because it shows that subzero storage of kidneys is both feasible and shows good kidney function. Further studies will determine the beneficial effects of subzero storage after longer storage periods.

ID#46

Predicting Delayed Graft Function, Death-censored Graft Loss and All-cause Graft Loss in Transplant Patients with Obesity

Roxaneh Zaminpeyma, Dallhousie University

Obesity prevalence is rising amongst patients on the kidney transplant waitlist. Often, obesity is based on Body Mass Index (BMI), however, other measures such as Body Surface Area (BSA) may also be important. Our project aims to study if using both BMI and BSA to identify risk related to obesity is better at predicting patients at risk for complications after transplant than using either measure alone. Our study included 238, 221 patients. We found that 23% of the time a patient might be labeled as obese by one measure (ie. BMI) but not the other (ie. BSA). Kidney transplant survival was lowest for patients who had obesity based on both BMI and BSA, than when the had obesity based on one measure but not the other.

Currently, only BMI is part of the kidney transplant work-up, but our study shows that considering both BMI and BSA is better for predicting risk after transplant. Maybe then, combined BMI-BSA obesity measurements should also be considered when working patients up for kidney transplant.

ID#47

Deceased donor system performance in a jurisdiction with early communication between transplant and OPO professionals

Jagbir Gill, St. Paul's Hospital

Globally, many organs that are donated are not ultimately transplanted, often due to concerns about the safety of using these kidneys. However, the decision about which organs can be used is sometimes not consistent and is often delayed, meaning donation has already occurred but the organ was then discareded and not transplanted. In British Columbia, we have a system whereby all donor referrals are reviewed with a small group of transplant doctors early after referral to see if the organs are usable or not. In this study we reviewed all of our donor referrals in BC between 2016 and 2019 to see if this approach led to reduced discard of organs in BC. We found that less than 1% of kidneys in BC were discarded and all patients who received kidneys had good outcomes similar to other centers. We conclude that a system in which there is early involvement of transplant doctors allows for timely identification of medically unsuitable donors and can reduce the number of donated organs that are discarded.

ID#48

Improving cultural safety of deceased donation consent: Results from Multi-ethnic interviews and focus groups

Jagbir Gill, St. Paul's Hospital

Some studies have suggested that consent rates for deceased organ donation is low among members of racialized communities. In this study, we hypothesized that there is a lack of cultural safety in the process through which families of the deceased are approached for organ donation and sought ways to understand how to improve this process. We conducted focus groups with a multi-ethnic group of participants in B.C. including people from Indigenous, African/Caribbean/Black, South Asian, East Asian, South East Asian, Middle Eastern, Caucasian, and mixed race Canadians with a mean age of 41.6 years. Community members felt that the donation consent process lacks cultural relevance and safety and highlighted a potential mistrust of healthcare system and concerns about bias, racism, discrimination, and stereotyping which may impact decision making, particularly if families feel coerced. The suggested that including someone from the same culture as the family in the donation consent process may help make communication more culturally safe and felt that there is a need for more culturally, religiously, and linguistically relevant educational and support resources to help families make their decision. These findings can help improve the cultural safety of the donation process and possibly improve donation rates.

ID#49

Perceived Systemic Racism and Discrimination Among Indigenous Kidney Transplant Recipients and Donors

Jagbir Gill, St. Paul's Hospital

Access to kidney transplantation has been shown to be lower among First Nation, Inuit, and Metis populations in Canada and we conducted a study to better understand the factors that contribute to this. We conducted interviews and focus groups with a total of 37 Indigenous patients with kidney failure, living kidney donors, and Elders in BC. We found that living donation was consistent with Indigenous values, but there was a lack of general knowledge about donation and transplantation in communities. Many raised concerns about systemic racism and discrimination, with some feeling "forgotten" in the process. Mistrust and fear of medical institutions was reported and frustration with stereotypes within the health care system was highlighted. Overall, it was felt that there was a lack of cultural safety and Indigenous representation in health care and that transplant educational materials were unhelpful, with recommendations to develop educational materials that apply Indigenous ways of knowing, such as storytelling. Geographic and financial challenges in navigating the transplant process was also highlighted, with many advocating for navigation and support services. These findings are being used to implement new changes in the transplant process in BC for Indigenous patients.

ID#50

Title: Efficacy of Evusheld (Tixagevimab/Cilgavimab) Preventing Breakthrough COVID-19 Infection among Vaccinated Kidney Transplant Patients.

Arezou Shahmoradi, Queen's University

To evaluate the effectiveness of the new monoclonal antibody Evusheld (Tixagevimab/cilgavimab) in preventing breakthrough COVID-19 infections among renal transplant patients, a retrospective single-center study was conducted. Numerous studies conducted to date have demonstrated the effectiveness of Evusheld in preventing breakthrough infections in solid organ transplant recipients. In our study, we administered a 300 mg intramuscular dose of Evusheld to 127 patients. However, our data did not show significant efficacy in preventing breakthrough infections between the group that received Evusheld injections and their counterparts who did not. Both groups had similar rates of vaccination and time interval between their previous vaccine doses. Studies with higher doses of Evusheld and further COVID-19 vaccination are still required to prevent breakthrough COVID-19 infection among transplant patients.

ID#51

Environmental performance of kidney replacement therapies: comparative lifecycle assessment of kidney transplantation and dialysis

Saba Saleem, The University of British Columbia

The clinical and economic impacts of kidney replacement therapies for patients with acute kidney failure are well established. While kidney transplantation is a cost-effective and clinically beneficial approach for end-stage kidney diseases, its environmental impacts have not been thoroughly investigated. This study used a life cycle assessment approach to address the environmental impact of kidney transplantation, particularly deceased donor kidney transplantation, in-centre hemodialysis and automated peritoneal dialysis, to select a suitable option with minimum environmental impact. According to the findings, receiving a kidney transplant from a deceased donor causes the least harm to the environment, while undergoing hemodialysis and peritoneal dialysis have the most significant impact on the environment. Based on the results, kidney transplantation is a viable and sustainable option for kidney care and should be considered whenever feasible. Using these results in conjunction with existing clinical and economic data, practitioners and decision-makers will be able to enhance the provision of kidney replacement therapy in a sustainable manner.

ID#52

REGIONAL OUTCOMES OF PAEDIATRIC RENAL TRANSPLANTATION IN THE UK. A MACHINE LEARNING ANALYSIS

Hemant sharma, Royal Liverpool University Hospital

Superior outcomes of pediatric renal transplantation were reported from high-volume centers and transplants done

after the year 2010. Immunologically well-matched kidneys and low Cold Ischemia time (CIT) predict better survival.

ID#54

Anatomical Aberrancy & Variation of the Kidney

Abdulrahman Alomar, College of Medicine, King Saud bin Abdulaziz University for Health Sciences

Differences in human anatomy do exist. Not all bodies are identical in the exact structure and layout. These variations occur to a different degrees in different populations. It is important to know them especially for cases in which organs will be harvested from a deceased donor, as the surgeon usually lacks preoperative imaging. It is also of benefit for educational purposes, such as in training residents and students. We observed cases of variant location of the kidney, variant arterial supply, and variant venous drainage.

ID#55

Epidemiology of Epstein Barr Virus chronic high viral load in kidney transplant recipients

Christie Rampersad, University of Manitoba

Epstein Barr virus (EBV) is highly prevalent in the general population, where it typically causes mild disease. Following kidney transplantation, EBV viremia may cause tissue-invasive disease or be associated with early post-transplant lymphoproliferative disorder (PTLD). EBV chronic high viral load (CHVL) is defined by sustained high viral load based on studies in pediatric solid organ transplantation. This is the first study to describe EBV CHVL phenotype in adult kidney transplant recipients.

We studied 560 kidney transplant recipients from a single-center who were transplanted 2010-2021 and maintained on modern immunosuppression. Recipients were categorized by degree of EBV viremia to describe prevalence of CHVL. Secondary outcomes included recipient demographics, viremia kinetics, and PTLD in recipients with EBV CHVL compared to low-grade viremia or no viremia. We found that EBV CHVL occurred in 2.6% of recipients. EBV CHVL was more common in recipients who were Caucasian, younger, received any induction immunosuppression at time of transplant, and had high-risk donor-recipient EBV serologic mismatch. Despite persistent EBV viremia in those with CHVL, PTLD prevalence was similar in recipients with CHVL or low-grade viremia. Future studies should explore optimal monitoring and management of EBV viremia as potentially modifiable risk factors for PTLD development.

ID#56

Exposure to renin-angiotensin system inhibitors before kidney transplantation is associated with a decreased risk of delayed graft function

Heloise Cardinal, Centre de Recherche du Centre Hospitalier de l'Université de Montréal

Some medications called blockers of the renin-angiotensin system (RAS blockers) are used to control high blood pressure in patients on dialysis. Transplant doctors often stop them at the time of transplantation because they can increase the potassium level in the blood or worsen kidney function when the patient is dehydrated. However some studies in animals suggest that RAS blockers can protect the kidney or heart when it lacks some blood for a while, just like what happens in transplantation.

We exmined a group of 902 patients who received a kidney transplantation in 2 centers. We found that when patients were using RAS blockers at the time of admission for the transplantation, there was a lower risk of needing dialysis in the first week after transplantation. This is important because when patients need dialysis in the week following transplantation, the longer duration of function of the kidney can be shorter. Future studies that examine whether it can be useful to give these medications to more patients who are waiting for a transplant are needed.

ID#57

Acceptability of the pilot randomized controlled trial of the Multidisciplinary Support To Access living donor Kidney Transplant (MuST AKT) intervention: A qualitative study with transplant candidates and their friends and family

Anne-Marie Selzler, Alberta Health Services

Living donor kidney transplantation (LDKT) is the most effective treatment for eligible people with kidney failure. The goal of MuST AKT (Multidisciplinary Support To Access living donor Kidney Transplant) is to increase Living Kidney Donors (LKD) by providing education and support to patients to overcome their individual barriers and share their needs for a LKD with their social network. A small "pilot or feasibility study" was done to find out about the participants views and experiences. We interviewed 11 transplant candidates and 16 of their friends and family members. Participants had a positive experience and thought MuST AKT was important to continue. Transplant candidates said that MuST AKT helped them process their circumstances and share their needs with friends and family members. Many transplant candidates thought that they would find a LKD after participating in MuST AKT. Friends and family members felt comfortable discussing a sensitive topic and encouraged to be a donor advocate, with some feeling encouraged to be a donor. MuST AKT was considered beneficial. Importantly, it enabled communication between patients and their friends and family members. The next step is to do a larger study and see if MuST AKT helps increase LDKTs.

ID#58

Description of an outbreak of donor-derived bartonellosis in kidney transplant recipients from unhoused donors in Alberta

Efrat Orenbuch-Harroch, University of Alberta

Bacillary angiomatosis (BA) is an uncommon manifestation of Bartonella quintana (BQ) infection in immunocompromised persons and rarely reported to be transmitted through organ transplant.

We describe 4 cases of bacillary angiomatosis in 3 kidney transplant recipients and 1 simultaneous kidney-pancreas transplant recipient from 3 donors. All patients had characteristic skin lesions and ¾ had fever. Diagnosis was confirmed by skin pathology which was compatible with BA in 3 biopsies, and BQ- PCR which was positive from tissue. BQ serology was positive in ¾ of the recipients, and blood BQ-PCR was positive in 1. All patients had favorable response to doxycycline treatment with resolution of fever and nearly complete resolution of skin lesions after 1 month of therapy, and Azithromycin was added in 1 case for 4 weeks due to persistent fever.

All donors were unhoused and had a history of substance use disorder. Retrospectively, BQ serology was tested and reported positive in 2/3 (1 donor serum was unavailable). Recipients of other organs from same donors remain asymptomatic, despite positive serology in one mate kidney recipient.

This outbreak highlights the potential for unexpected donor transmitted infections.

ID#59

Feasibility and fidelity of the Multidisciplinary Support To Access living donor Kidney Transplant (MuST AKT) intervention: A pilot randomized controlled trial

Anne-Marie Selzler, Alberta Health Services

We developed the Multidisciplinary Support To Access living donor Kidney Transplant (MuST AKT) program to increase living donor kidney transplantation (LDKT). MuST AKT helps transplant candidates talk to their friends and family about their need for a living kidney donor and provides education about living kidney donation. It includes four 60–90-minute virtual sessions across 12 weeks. We did a small "pilot or feasibility study" to see if the program is practical to continue. Of the people we contacted, 61% were eligible and agreed to take part in the study (38 people total). 19 people were randomly selected to continue with the usual care and 18 received the MuST AKT program (1 found a living donor before starting). The percentage of people who completed the sessions were: 100% session 1, 94% session 2, 83% session 3, and 56% session 4. 25% of sessions were rescheduled and sessions were completed in a reasonable time (71 days). Most in-session activities were completed, except for session 2. Overall, MuST AKT is practical to continue. We made changes so that more people complete the sessions and in-session activities. We will evaluate these changes in a future study and see if MuST AKT increases LDKT.

ID#60

Islet Isolation after Normothermic Ex Vivo Machine Perfusion of 2 Discarded Human Pancreas Allografts: A Proof of Concept Study

Catherine Parmentier, University Health Network / Toronto General Hospital

Pancreas and islet transplantation are therapeutic options for people with complicated diabetes but unfortunately, the number of available pancreas grafts is inadequate to cover the growing demand. Normothermic ex vivo perfusion (NEVP) is a method that can potentially assess and repair organs. The aim of this study was to evaluate the feasibility of islet isolation after normothermic perfusion of the pancreas. Grafts were prepared in the standard fashion and placed on the machine for 4 hours. After the perfusion, organs were immediately processed for islet isolation. Both organs were successfully perfused and islets effectively isolated. A glucose stimulation test was performed on the islets for assessment, with adequate response in both cases. Islet isolation after normothermic perfusion is feasible using the standard procedure. To our knowledge, this is the first study reporting islet isolation after normothermic machine perfusion on discarded human grafts.

ID#61

Daytime transplants: An effective province-wide quality improvement project to improve outcomes.

Peter Kim, Vancouver General Hospital and University of British Columbia

Solid organ transplants are some of the most complex operations performed. Due to the logistical challenges in the health care system, they have been performed at night time, arguably the least optimal time to perform such complex operations from patient outcomes and transplant team well being perspective. This quality improvement study was performed to engage the stakeholders involved in the entire transplant process to increase the rate of day time transplants to make the transplant safer and more sustainable for the transplant team members. Through engagment of the stake holders, we have demonstrated a significant increase in the day time transplants in our jurisdiction.

ID#62

Comparison of rapid Nanopore HLA typing kits for deceased donor typing

Sarah Reiling, MUHC HLA Lab

Chronic kidney disease affects about 10% of the population and is fatal if not treated when the disease advances to end stage. The only treatment options are life-long hemodialysis or a kidney transplant. While a transplant is preferred, the immunogenetic matching of the Human Leukocyte Antigens (HLA) influences post-transplant graft function, and the deceased donor HLA needs to be typed prior to transplantation. The current practices in clinical HLA typing laboratories have two main drawbacks: (1) Long organ allocation time of deceased donors resulting in delayed graft function; (2) Suboptimal matching due to the low resolution tissue typing resulting in premature graft rejection. A rapid Nanopore sequencing based high-resolution typing method is a promising solution for better matching of deceased organ donors with potential transplant recipients. Our data using raping Nanopore sequencing show the feasibility to obtain accurate high-resolution HLA typing results within an acceptable turnaround time after blood sample reception.

ID#63

The Efficacy and Safety of SGLT2 inhibitors and GLP1 receptor agonists in Kidney Transplant Recipients

Vikas Sridhar, University Health Network

Kidney transplant recipients (KTR) are at high risk of death from heart disease after transplantation, as well as graft failure, where the kidney transplant no longer works and dialysis or another kidney transplant is required. New drugs called sodium-glucose cotransporter 2 inhibitors (SGLT2i) and glucagon-like peptide 1 receptor agonists (GLP1RA) originally developed for diabetes, have been shown to lower blood pressure, weight and protein in the urine, and when used in combination, the beneficial effects are enhanced. These drugs also decrease the risk of heart attack, kidney failure or dying from heart or kidney disease. It is unknown if these drugs have the same effects in KTR. The objective of this study was to determine if SGLT2i and GLP1RA combination therapy is safe and effective in KTR. We performed a chart review of our hospital medical records to identify 227 KTR started on SGLT2i and/or GLP1RA - 78 were on SGLT2i monotherapy, 79 on GLP1RA monotherapy and 70 on combination therapy. We concluded that SGLT2i, GLP-1RA and combination therapy appear to be safe in KTR, however drug discontinuation is relatively common. The short-term effects of SGLT2i on kidney function suggests that potentially beneficial mechanisms are intact in this unique population.

ID#64

Liver Transplant Waitlist Mortality Risk Prediction Using Machine Learning in Patients with Primary Sclerosing Cholangitis

Xun Zhao, University of Toronto

Liver transplantation is the proven treatment for primary sclerosing cholangits, however current allocation system based on MELD score, which was validated initially in patients with hepatitis C, does not accurately reflect the complicatations and severity of this cholestatic disease associated with recurrent cholangitis, pruritis, and risk of maligancy.

Machine Learning is a branch of artificial intelligence that leverages hidden patterns and interrelationships in large datasets to provide more accurate predictions than conventional biostatistics. We therefore aimed to build an ML model that incorporates PSC specific data from LT recipients forecasting PSC trajectory from the time of listing.

We performed a retrospective review of 4,666 PSC patients from Scientific Registry of Transplant Recipients (SRTR) and 144 PSC patients listed for LT at UHN. We then built 3 ML algorithms that predicted mortality, drop-out from waitlist and transplantation trained and validated on these databases.

Finally we selected the best performing ML model fine tuned using our database and compared it to MELD-Na and MELD 3.0. Our model greatly outperformed both these conventional models used for listing.

ID#65

Review of solid organ donation and transplantation registries globally

Christie Rampersad, University of Manitoba

Clinical registries serve important functions including epidemiologic description of diseases, elucidation of real-world clinical practice and quality assurance, hypothesis-generation for future trials, and facilitating health systems initiatives to inform funding and infrastructure planning. The current landscape of solid organ donation and transplantation (ODT) registries is not well established. This review sought to identify ODT registries globally and characterize their operational features, as well as types of donor and recipient data captured.

We conducted a literature and web search and identified 128 ODT registries including 88 national, 24 international, 10 international multicenter, 5 multicenter, and 1 regional registry. Solid organ and tissue types included: kidney (n=99), pancreas (n=32), liver (n=43), heart (n=35), lung (n=30), intestine (n=15), and islet cell (n=5).

Donor data was captured in 114 registries, largely limited to donor type and demographics.

Recipient data was captured in 116 registries, with a majority capturing demographics, cause of organ failure, and post-transplant outcomes. Few registries captured elements of the referral or assessment process.

There is marked heterogeneity in ODT registries operation and data capture, highlighting a need to establish minimum standards for registries for quality assurance and inter-registry collaboration.

ID#66

Outcomes of extended criteria donor kidney transplantation in a contemporary cohortBackground: To better understand the long-term outcomes of extended criteria donor (ECD) kidney transplant recipients, we analyzed our institution's experience over a ten-y

Jason Bau, Ajmera Transplant Centre, University of Toronto

Kidney transplantation remains the definitive cure for patients with end-stage kidney disease (ESKD). To increase the number of available organs for transplantation, donors with potentially higher risk factors may be utilized, termed 'expanded criteria donors' (ECD). In certain populations of ESKD patients, accepting an ECD organ may benefit by offering earlier access to transplantation where living donation is not an option and risks of mortality on dialysis remain high, however, this is not without measurable risks. Risks that have been reported in patients receiving ECD organs include higher rates of delayed graft function and acute rejection, in addition to reduced long-term allograft survival. These findings were based on historical cohorts of patients where both the definition of ECD and immunosuppression regimens were inconsistent with more contemporary practices. Thus, a more updated review of ECD organ transplants is required to determine if these findings remain clinically relevant. In analyzing patients who received ECD organs from 2010 to 2020 at our centre, we show that long-term allograft survival is comparable to previously reported rates in literature, although rates of acute rejection may be higher within the first year from transplant. Future research will be needed to examine whether the risks of accepting an ECD organ sooner outweigh risks of remaining on dialysis.

ID#67

Two pediatric cases of graft salvage following renal allograft torsion with timely laparotomy and mesh-bag nephropexy technique

Kayla Young, University of Calgary Pediatric Nephrology

In rare cases, transplanted kidneys can twist within the body, otherwise known as “allograft torsion.” Torsion can lead to obstruction of blood supply to the transplant kidney and in most cases, irreversible kidney failure. These poor outcomes may be mitigated by early surgical intervention, however most are diagnosed too late. We present two cases of allograft torsion in small children. Both cases presented differently and imaging techniques employed did not consistently detect kidney mobility. Despite this, a high index of suspicion allowed for timely surgical intervention and thus near complete recovery of kidney function in both patients. Further episodes of twisting were successfully prevented by fixing the kidney to the abdominal wall and wrapping the kidney in a surgical mesh to definitively secure it in place. This paper highlights the lack of reliability in common imaging techniques to make this diagnosis, and thus the importance of having a high index of suspicion in higher risk patients. Timely surgical exploration is critical and should not be deferred when the diagnosis is suspected but not confirmed by imaging. We also highlight the success of a mesh-nephropexy technique in preventing future twisting, and as a potentially prophylactic measure at the time of transplantation.