
# 2022 Banff-CST Joint Meeting Abstract Study Lay Summaries

## September 19-23, 2022, Banff, Alberta, Canada

ID: 1

Name: Raymond Heilman

Abstract Title: Preimplantation Biopsy in Deceased Donor Kidney Transplantation (DDKT)

Lay Summary

We studied the potential value of using preimplant biopsy of deceased donor kidneys for decision making before transplant. We collected data on all preimplant biopsies and the outcomes from all deceased donor transplants done over a 2-year period. The results show that the kidneys from donors that were biopsied had inferior donor quality compared to the transplants done without biopsy. The patient and graft survival were similar in the biopsy group even though several other indicators of donor quality were inferior. These results suggest that biopsy utilization in marginal donors is helpful to guide clinical decision making specific to donor-recipient selection and to better maximize post-transplant outcomes.

ID: 2

Name: Louisa Edwards

Abstract Title: Epitope Compatibility to Guide Deceased Donor Kidney Allocation: Recommendations from a Pan-Canadian Online Public Deliberation

Lay Summary

Background: With increasing demand for kidneys and a scarce supply, finding ways to reduce rejection and improve transplantation are needed. Longer-lasting kidneys might result from greater genomic compatibility. Public input is critical as policymakers decide how best to allocate kidneys fairly, while balancing transplant outcomes.

Methods: Postal invitations were sent to 35,000 Canadian households. Diversity of socio-demographic characteristics guided participant selection. Five two-hour online sessions were held from November-December 2021. Participants first received an information booklet and heard from experts. Participants then discussed, generated, and voted on recommendations about how genomic compatibility could be implemented fairly and governance issues. Finally, kidney donation and allocation policymakers engaged with participants regarding the recommendations.

Results: Thirty-three participants (18 female, 15 male) generated nine recommendations. There was support for adding genomic compatibility to the deceased donor allocation criteria. However, participants wanted safeguards and flexibility around this. They specified that a transition period was needed before implementation, which included an ongoing comprehensive public education program. Participants recommended regular monitoring of transplant outcomes, with public sharing.

Conclusion: Participants supported adding genomic compatibility to kidney allocation criteria, but with safeguards and flexibility. These recommendations can provide guidance to policymakers regarding including genomic-based deceased donor allocation criteria.

ID: 3

Name: Petra Hruba

Abstract Title: ATN-like ABMR transcriptome is similar to acute active ABMR in early post-transplant period

Lay Summary

Banff classification describes ATN-like ABMR as an active ABMR with C4d depositions, presence of circulating DSA, and ATN-like minimal inflammation. Transcriptional profiling of this category and comparison to other ATN categories or active ABMR with morphologic evidence of tissue injury as glomerulitis, peritubular capillaritis, or intimal arteritis may help clinicians with appropriate therapy decision making.

Using RNA sequencing, we compared 8 kidney biopsies with ATN-like ABMR, 8 with active ABMR and 16 with pure ATN (either DSA positive (n=8) or negative (n=8)). All biopsies were performed at median 8 days after transplantation in patients who received T cell depletive induction treatment to eliminate the effect of time and treatment on gene expression.

Transcriptome profile of ATN-like ABMR is similar to active ABMR in early post-transplant period. In ATN-like ABMR, gene set enrichment analysis showed less activation of adaptive immune response, B cells and no activation of innate immune response compared to active ABMR. As differences between ATN-like ABMR and active ABMR are minor, discrimination of these categories would require larger sample size.

ID: 5

Name: Tristan de Nattes

Abstract Title: The reverse transcriptase multiplex ligation-dependent probe amplification (RT-MLPA) assay as a simple molecular tool for diagnosis and classification of rejection in formalin-fixed paraffin-embedded kidney transplant biopsies.

Lay Summary

To diagnose kidney transplant rejection, molecular assessment of kidney transplant biopsy is now included in the Banff consortium recommendations. However, implementation of molecular tools in clinical practice is still limited, partly due to the required expertise and financial investment.

The aim of this study was to develop and validate a simple, rapid (results in less than 24h) and inexpensive assay which can be used on kidney biopsy blocks for the diagnosis and classification of rejection. Based on a multicentric cohort, we developed and validated an automatized classifier which correctly predict the diagnosis in 83% of cases.

This assay presents characteristics required for its implementation in routine practice, providing clinicians with an apprehensible molecular tool to diagnose kidney transplant rejection.

ID: 6

Name: Stephanie Beland

Abstract Title: HLA-II subclasses behave differently between themselves and between humans: cues to understand alloreactivity

Lay Summary

Antibody-mediated rejection happens when the recipient' antibodies recognize the graft as threatening and tries to destroy it. Anti-HLA antibodies have long been associated with rejection but some patients with those antibodies can escape rejection by an unknown mechanism. In order to resolve this issue, our project focuses on the relationship between anti-HLA antibodies and the expression of their associated ligands on the graft endothelium, HLA antigens.

Endothelial cells were generated from white cells isolated from the blood of transplant recipients and healthy volunteers of our biobank. Cells were then treated to stimulate the expression of HLA class II antigens. Subsequently, HLA antigen expression (class I and II; subclasses DR, DP and DQ) was measured by flow cytometry.

The results showed a large variability between HLA-II subclasses and between individuals with HLA-DQ being the most variable. This observation was similar for other cell types from the same patient. In HLA-II subclasses, patients with specific HLA-DQ genes were also found to be associated with chronic damage inside the graft.

These results could help to understand the immunological sequence of events leading to rejection in order to improve the patient's survival and life quality.

ID: 11

Name: Alison Gareau

Abstract Title: HLA TYPING USING NANOPORE TECHNOLOGY: A BETA TESTING STUDY

Lay Summary

We looked at the benefits of DNA sequencing using a novel technology to help type organs from deceased donors more quickly and give a more informative result. This would allow for quicker, better organ matching for patients with high levels of antibody that usually have to wait longer for transplants. We tested 99 samples and found results that were similar when we compared them with our existing methods. Some improvements need to be made to this technology to make it acceptable for routine use in clinical labs, but work is ongoing to make these improvements.

ID: 12

Name: Imane Kaci

Abstract Title: Apoptotic exosome-like vesicles mediate immune response dysregulation and kidney dysfunction following ischemia-reperfusion injury

Lay Summary

Kidneys clean the blood and dispose of the waste produced by the body's cells in the urine. They have abundant blood vessels providing them with oxygen and nutrients to function. Kidney function decreases when injuring its smallest blood vessels, especially in old people. We showed that damaging these vessels during transplantation causes kidney graft to fail. We discovered that injured vessels release pieces of cell, called 'ApoExo', in the blood. ApoExo activate the immune system to produce antibodies attacking damaged kidneys. We found these antibodies in the blood of kidney recipients with poor graft function. We now study how ApoExo alter immune response causing renal failure and graft rejection. We used mice with injured kidneys mimicking what transplant procedure causes in patients. We collected kidney and blood to measure ApoExo, immune response, and kidney damage. We found that injured kidney releases more ApoExo with age, which increases immune system activation. This induces more antibodies and white blood cells to attack kidneys' smallest vessels. It then perpetuates ApoExo release and worsens kidney function. Our study gives a new vision of immunological mechanisms causing renal graft impairment. It will help to better preserve donor's kidney and make it last longer in patients.

ID: 13

Name: Amina Silva

Abstract Title: Organ Donation Following Medical Assistance in Dying: A Scoping Review

Lay Summary

Organ donation after Medical Assistance in Dying (MAiD), also known as euthanasia, is only allowed in Canada, the Netherlands, Belgium and most recently Spain. Since this practice is still relatively new, we reviewed the current international literature on the existing processes, outcomes and ethical debates regarding organ donation following MAiD. We used a scoping review methodology to search for published and unpublished literature. After a rigorous screening and review process, which was done by at least two independent researchers, we had a total of 121 included in our review.

The reports were written in English, Dutch and French; majority from Canada, The Netherlands, and Belgium, and published between 2019-2021. We could identify major discussions in the literature, including: main processes and procedures involved in organ donation after MAiD in the hospital and at home; main clinical processes followed; ethical dilemmas involved; healthcare professionals' roles and perceptions; impacts on the organ donation system; transplant outcomes; public perceptions; safety processes and tools in place; educational strategies for healthcare professionals involved; and suggestions for future research to address knowledge gaps.

The results of this review provide important directions for improvements in the current organ donation after MAiD and transplantation system.

ID: 16

Name: Parmjeet Randhawa

Abstract Title: Evaluation of pediatric kidney biopsies with chronic active (ca) mixed T-cell (TCMR) and antibody mediated rejection (ABMR) by gene expression profiling

Lay Summary

Molecular analysis of biopsy tissue has the potential to complement conventional pathology readings by recognizing injury that is not appreciated by light microscopy, It also offers prospects of quantifying disease more accurately than is possible by the human eye. This study illustrates some of the caveats of molecular technology, and the necessity of always correlating it with the clinical picture and standard biopsy findings. Specifically, the chronic active T-cell mediated component of mixed antibody and T-cell mediated rejection is not well diagnosed by a commercially available assay known as the MMDx® system. This diagnostic system excises only a small 3mm portion of the biopsied tissue, preserves it in a special fixative, and performs molecular analyses for the purposes of diagnosing disease. The data presented shows that molecular scores for some disease lesions such as tubulitis and inflammation can be underestimates of the true disease burden. Emerging technologies such as Nanostring nCounter, RNAseq, and Digital Spatial Profiling, which can analyse the whole biopsy core are expected to help alleviate this shortcoming. These technologies also allow evaluation of routine formalin fixed biopsies without the need for special RNA preservation methods, which can be logistically difficult to implement in the clinical setting.

ID: 17

Name: Heiko Blaser

Abstract Title: Time to First Cytomegalovirus Viremia Clearance in Transplant Recipients with Refractory Cytomegalovirus Infection With or Without Resistance Receiving Maribavir Versus Investigator-Assigned Therapy: Subgroup Analyses of a Phase 3 Trial

Lay Summary

Cytomegalovirus (CMV) infection can cause serious issues after transplantation. The risk of disease and death is significantly increased, particularly among transplant recipients that don't respond to conventional therapies that treat CMV infection. Currently available treatments for these patients aren't optimal, primarily because of safety issues. Maribavir is a new anti-CMV treatment that was studied in stem cell and solid organ transplant recipients who did not respond to one or more conventional anti-CMV therapies. In this study, maribavir was superior in comparison to four conventional anti-CMV therapies such as valganciclovir/ganciclovir, foscarnet, or cidofovir. Two times as many patients showed no CMV in their blood at week 8 and also maintained CMV clearance plus symptom control from week 8 to week 16 when they had been treated with maribavir vs. the conventional anti-CMV therapies. Further analyses showed that maribavir could also clear CMV quicker than conventional anti-CMV therapies, independent of whether the patient was or was not infected with CMV that had genetic mutations that made the virus resistant to prior anti-CMV therapy. Based on the clinical data available, maribavir may be a solution for patients that no longer respond to conventional anti-CMV therapies.

ID: 18

Name: Jose Torrealba

Abstract Title: Regulatory Gene Pathways in Quilty Lesions Are Associated With Cardiac Allograft Acceptance

Lay Summary

Inflammatory infiltrates in the heart transplant not associated with rejection may actually be involved in acceptance of the transplanted organ. These infiltrates, known as quilty lesions, express markers of regulation of the immune system that prevent the organ from rejection by the recipient's immune system.

ID: 21

Name: Anisha Dhalla

Abstract Title: Risk factors for developing low eGFR and albuminuria in living kidney donors

Lay Summary

For patients with end-stage kidney disease, kidney transplant is often their best treatment option. Although we think that kidney donation is generally safe, we wanted to learn about how common it is for donors to have poor kidney function in the future. We also wanted to determine what makes some donors more likely to develop poor kidney function compared to others.

We looked back on data from 590 living kidney donors who donated between 2001-2017 and found that 47 of them (8%) eventually developed poor kidney function. Kidney donors with lower kidney function or high blood pressure before donation were more likely to have poor kidney function after donation. Poor kidney function was also more common amongst patients who developed diabetes after donation.

Overall, we found that only a small proportion of kidney donors will go on to have poor kidney function after they donate a kidney. Donors who are more likely to develop kidney issues down the line should be followed by doctors more closely.

ID: 22

Name: Catherine Parmentier

Abstract Title: Does a higher CO2 concentration during normothermic machine perfusion of the pancreas improve the results?

Lay Summary

Pancreas transplantation is a life saving procedure for people who live with complicated diabetes. Unfortunately, organs available for transplantation are scarce and the waiting list increases every year. Normothermic machine perfusion of the pancreas is feasible and safe as previously proven by our lab. In this study, we wanted to see if we could decrease the intravascular resistance of the pancreas by increasing the CO2 concentration during perfusion. For this purpose, we increased the CO2 concentration from 5% to 9% and perfused the organs for 3 hours. Intravascular resistance was significantly lower in the higher CO2 concentration cases, proving our hypothesis.

ID: 23

Name: Romy du Long

Abstract Title: Clinicopathological and molecular characteristics of plasma cell rich rejection in renal transplant biopsies

Lay Summary

Plasma cell rich rejection (PCRR) is a rare, ill-defined type of rejection in kidney transplants. Not much is known about this rejection based on the current research, which suggest this type of rejection has often leads to loss of the kidney function, poor response to classic therapy and higher risk of eventually losing the kidney transplant. In this study we looked at 280 biopsies of patients with a kidney transplant to determine damage to the kidney tissue, expression of different genes and the kidney function and survival of the graft of PCRR and compared it to other known types of rejection. PCRR showed expression of specific sets of genes that were different from genes we found in the other types of rejection and activation of different types of immune cells. Although there is more chronic damage to the kidney graft in patients with PCRR, the kidney function or survival of their kidney transplant is not worse compared to other rejections. The results of our study suggest PCRR might be a different type of rejection compared to other types of rejection, help understand this type of rejection better and eventually lead to better treatment.

ID: 24

Name: VINITA AGRAWAL

Abstract Title: CD163+ M2 Macrophages in Antibody-Mediated Renal Allograft Rejection

Lay Summary

Macrophages play an important role in regulating kidney injury and repair. They differentiate into different subsets (M1/M2) in a microenvironment-dependent manner. M2 macrophages are activated by exposure to cytokines as compared to M1 macrophages that are classically-activated. CD163 is a marker of M2 macrophages. We evaluated M2 macrophage infiltration in renal allograft biopsies diagnosed as active antibody-mediated rejection (ABMR) and compared it with levels of urinary soluble CD163. Twenty renal allograft recipients with indication graft biopsies were included. Ten patients were diagnosed as ABMR and ten as no evidence of rejection (NER) on graft biopsies. CD163+ cells were demonstrated by immunohistochemistry on renal allograft biopsies. Quantitative analysis for CD163+ M2 macrophage infiltration in glomeruli and tubulointerstitial compartment was performed. Urinary sCD163 levels was estimated by ELISA. We found that graft biopsies with ABMR had higher glomerular and tubulointerstitial infiltration of CD163+ macrophages as compared to NER. The degree of tissue macrophage infiltration significantly correlated with urinary sCD163 levels. We have thus demonstrated significant activation of alternatively-activated M2 macrophages in ABMR, suggesting that macrophage-targeted therapy may hold potential in ABMR. Further studies are required to understand the prognostic significance of M2 macrophage infiltration in ABMR.

ID: 26

Name: Jordan Wadden

Abstract Title: Exploring the ethical considerations of direct contact in pediatric organ transplantation: A qualitative study

Lay Summary

Non-anonymized contact between organ recipients and donor families has been explored in the adult context. However, there is limited discussion about whether this should extend to pediatric and adolescent recipients and donor families. Typically, discussions about this topic are met with clinician and researcher concern for the potential harms to pediatric patients. This study focuses on interviews with pediatric recipients, their families, and organ donor families to determine whether such a program would be desired by this community.

Twenty-nine individuals participated from three of the major organ systems: kidney, heart, and liver. These participants expressed that they believe direct contact would have more benefits than harms. Interestingly, most participants focused more on the harms it could cause others rather than the harms it could cause themselves. Likewise, most participants focused more on the benefits it could have for others than the benefits for themselves. These results indicate that current practices in pediatric organ transplant may overextend beyond what are reasonable protective measures for patients.

ID: 29

Name: Bastian Engel

Abstract Title: Distinct molecular signatures of TCMR and ABMR after liver transplantation

Lay Summary

Graft fibrosis and chronic dysfunction affect up to 1/3 of liver transplant recipients. The relevance of antibody-mediated rejection (ABRM) as a cause of graft injury has been questioned recently. We aimed to decipher a molecular signature for possible ABMR analyzing the RNA of the liver tissue from liver transplant recipients. We had 71 liver biopsies from 60 patients to analyze. Differnt forms of apparent graft injury (T cell mediated rejection: TCMR, ABMR) or subclinical graft injury (subTCMR) were defined by histopathological assesment and compared to patients with normal liver graft function (NGF).

The main finding was, that we found a molecular signature for possible ABMR that was different to that of clinical TCMR thereby differentiating those two entities. Both were clearly separated from subTCMR and NGF. The molecular signals of possible ABMR and TCMR could be linked to molecular pathways that have been linked to the respective rejection entities.

By identifying a distinct gene signature for possible ABMR we clearly demonstrate it being distinct from clinical TCMR underscoring the potential importance of chronic ABMR in graft inflammation.

ID: 31

Name: Yayuan Zhao

Abstract Title: SARS-COV2 Vaccination could induce HLA antibodies and impact the renal transplant

Lay Summary

Kidney transplantation is the gold standard treatment for patients with end-stage kidney disease and has been shown to increase life expectancy compared to dialysis. Not every patient with end-stage renal disease is a candidate for kidney transplantation due to a limited number of matched donors. The immune system protects the body against viruses, and bacteria by providing antibodies that can kill them. These antibodies will stay in the body for a number of months to years to protect us from the same virus in the future. This means our immune system gets 'sensitized' to those viruses.

Patients can make antibodies against a foreign kidney transplanted into their body and in this situation, the kidney won't be a match and can be rejected. COVID-19 vaccination is foreign material injected into our body, so the immune system will develop antibodies against the virus particles in the vaccine. We have seen in some patients waiting for kidney transplantation that the COVID-19 vaccination can also develop some antibodies against some of the prospective kidney donors. This will result in limiting the pool of kidney donors and increase the wait time for kidney patients. This study will provide better guidance for transplant physicians.

ID: 32

Name: Rohit Malyala

Abstract Title: A machine learning time series analysis strategy for informing goal-directed anesthesia in renal transplantation

Lay Summary

Kidney transplant is an incredible option for those with end-stage kidney disease, but is a complex process with several decisions made along the way that can influence the lifespan of donated kidneys. One underexplored aspect of the process is the decisions made during anesthesia for the transplant surgery. We aimed to identify certain anesthetic protocols and parameters to the incidence of delayed graft function (DGF), where despite a completed surgery, the recipient requires dialysis within one week of the transplant.

We have obtained anesthesia records for 306 patients, where dozens of medications and vital signs were recorded at 5 minute intervals throughout every patient's transplant operation, as well as whether the patient had DGF. Conventional statistical methods are less feasible with large numbers of variables, but certain machine learning models do well with such "wide" data. We built an ML model able to predict DGF, and then interrogated the model. The model suggested that perioperative hemodynamics, especially low operative blood pressures had an outsized effect on DGF incidence, even compared to more well-recognized DGF risk factors. Blood pressures can be controlled by early-operation IV fluids, which in our model appeared to improve BP and reduce DGF. This is a step towards improving transplant outcomes surgically.

ID: 33

Name: Rohit Malyala

Abstract Title: Characterizing intraoperative hemodynamics and anesthesia-controlled patient factors in renal transplants: an anesthesia course time-series analysis

Lay Summary

Kidney transplantation is considered a treatment of choice for those with end-stage renal disease. However, donor kidneys are scarce, resulting in a need to maximize the lifespan of each individual kidney. The transplant process affords many opportunities to optimize donated kidney health, and one underexplored part of the process is the decisions made during anesthesia for the transplant surgery. There is evidence to suggest that the use of intravenous fluids during the surgery or blood pressure (BP) increasing medications during an operation can improve blood flow to a newly transplanted, vulnerable kidney.

In this work, we have collated a detailed time-series anesthesia dataset with 306 patients, including several groups of medications, times of administration, doses, and the vital signs of recipients throughout their operations, including heart rate, BP, and more. We then graphed these time courses to formally illustrate how BP and other vitals change during a kidney transplant, to inform when fluids or vasoactive drugs might be most necessary in operations. We also demonstrate that in our group lower BP overall tend to associate with delayed graft function, which is a marker for kidney injury. This data is a step towards optimizing transplants from the surgical perspective.

ID: 34

Name: Frederic Toulza

Abstract Title: Histological features in a prospective cohort of transplant patients with screening for development of donor-specific antibodies

Lay Summary

After a Kidney transplant, some patients develop antibodies against the donor's kidney (DSA). In some cases, these antibodies cause tissue damage to the transplant (“rejection”) leading to loss of function.

In this study we follow a cohort of 570 consecutive kidney transplanted patients, with systematic blood analysis for DSA (at 1, 2, 3, 6, 12 months and then every year), to monitor for DSA. Once DSA has been detected, a biopsy is offered to the patient to measure the tissue damage and direct treatment.

Of the 570 patients, 82 developed DSA and 52 had a biopsy. 47% of these biopsies didn’t show any tissue damage specific to rejection, 30% showed features of antibody-Mediated Rejection, and 16% showed features of  T cell-mediated rejection.

In conclusion, this study has shown that 53% of patients who develop DSA shortly after transplantation have histological features of rejection, but that the type of rejection is variable. This means the treatment patients with a DSA might need depends on biopsy findings. We will next investigate the expression of genes associated with rejection in these biopsies, to see if it improves the detection of early rejection.

ID: 35

Name: Jack Beadle

Abstract Title: Discovery, validation and application of antibody-mediated rejection transcripts in a continuous retrospective cohort or kidney transplant biopsies.

Lay Summary

Kidney transplant biopsy is required for the diagnosis of antibody-mediated rejection (AMR). In addition to the current histological criteria, and the presence of a circulating donor-specific antibody, the Banff Consortium for Allograft Pathology have permitted the use of characteristic molecular signatures. The majority of biopsies taken for histological diagnosis are formalin-fixed and paraffin embedded (FFPE), which makes gene expression analysis challenging.

In those biopsies that fail to meet the full histological or serological criteria for antibody-mediated rejection, gene expression analysis is a potential adjunct to diagnosis. The aim of this study was to identify and validate a set of genes in FFPE transplant biopsies, using NanoString technology which could help classify those with incomplete features of AMR.

In a cohort of 350 indication ('for cause') transplant biopsies, we developed and validated a 7-gene signature that was able to classify biopsies with features of AMR, and was able to improve the prediction of transplant loss beyond the current histological criteria.

ID: 36

Name: Marie-Chantal Fortin

Abstract Title: Exploring the possibility of developing an advanced and voucher donation program in kidney transplantation in Canada: Transplant professionals' perspectives on ethical and logistical issues

Lay Summary

Allowing living donors to donate at the most appropriate time for them can increase the number of living donor kidney transplantations performed. The development of an advanced and voucher donation program could allow a potential donor to give a voucher to a relative so that he/she could receive a kidney if needed in the future. The objective of this study was to gather transplant professionals' perspectives on ethical and logistical issues involved with developing an advanced and voucher donation in kidney transplantation in Canada. Our results show that Canadian transplant professionals were open to the development of this program even though they identified some ethical and logistical issues such as informed consent and the uncertainty inherent to this type of living donation. Our results provide empirical data to inform the future development and implementation of an advanced and voucher donation in Canada.

ID: 38

Name: Tania Janaudis-Ferreira

Abstract Title: Acceptability and feasibility of the Kidney Transplant Physical Activity and Social Club (KEeP ACTIVe Club)

Lay Summary

We developed the “Kidney Transplant Physical Activity and Social Club” (KEeP ACTIVe Club) to offer support for kidney transplant recipients (KTRs) to improve their levels of physical activity (PA) and to break the isolation and loneliness they may feel after transplantation.

The KEeP ACTIVe Club was a virtual intervention that lasted six months and offered one educational session about benefits of PA and knowledge of cardiovascular disease, online social networking (via a Facebook closed group), and virtual exercises classes led by a kinesiologist. Acceptability and feasibility were measured by the proportion of KTRs approached who participated and the number who completed the intervention. Well known scales for physical activity, comfort with exercise and social support were used.

One hundred twenty-one KTRs were approached (43 initially interested and eligible; 78 refused) and 18 participated in the study (average age 50.5 years, 50% women, and7 months to 24 years post-transplant). Eleven KTRs finished. The level and comfort with PA improved and social support remained stable.

The KEeP ACTIVe Club is feasible. Acceptability was low (possibly influenced by the pandemic), however, self-efficacy for PA and level of PA improved in those who participated in the intervention.

ID: 39

Name: Ngan Lam

Abstract Title: Progression of kidney disease in kidney transplant recipients with a failing graft: A matched cohort study

Lay Summary

Kidney transplantation is the best treatment for people with kidney failure. Unfortunately, most transplants do not last forever and eventually they can fail. When a kidney transplant fails, the patient may need to re-start dialysis or get another transplant. In our study, we compared recipients with a transplant that was failing to non-transplant controls who had native kidneys that were failing. We looked at how fast the kidney transplant failed compared to native kidneys. Our study included 575 transplant recipients and 575 non-transplant controls from Alberta, Canada followed for almost 8 years. Kidney transplant recipients were at higher risk of kidney failure and death compared to non-transplant controls. Interestingly, the kidney transplants failed in the recipients at the same rate as the native kidneys in the non-transplant controls. The loss of kidney function was about 2% per year over time in both groups. So, even though transplants fail at the same rate as native kidneys, recipients are at higher risk of starting dialysis. This means that there are other important reasons why recipients start dialysis that need to be addressed.

ID: 43

Name: Hyunyun Kim

Abstract Title: Autophagy inhibition aggravates ischemia-reperfusion injury-induced microvascular injury

Lay Summary

A kidney transplant is a surgery to place a healthy kidney into a person whose kidneys no longer function properly. Donor kidney undergoes poor nutrients and low oxygen during the surgery followed by kidney damage caused when blood supply returns to tissue. This is a common cause of kidney injury in transplants with over 20% of kidney transplanted patients impacted. Thus, it is important to understand how kidney injury develops during a transplant. We discovered that preventing cell death mechanism protects kidney blood vessels after surgery. However, the role of autophagy, which plays a vital role in the survival mechanism of blood vessels remains unclear. Here, we explore the role of autophagy in the response to kidney injury. We induced kidney injury in mice to mimic a kidney transplant and used chloroquine, a drug used to prevent survival mechanism. We collected kidneys and blood to measure the activation of survival mechanism and kidney damage. We found that an injured kidney induces survival mechanism, which was blocked by the drug. The drug deteriorated kidney function and damage. We found that regulating the survival pathway might be a potential therapeutic strategy to insure blood vessel protection during a kidney transplant.

ID: 44

Name: Marie-Chantal Fortin

Abstract Title: Kidney transplant recipients', kidney transplant candidates and living donors' perspectives on the ethical and logistical issues related to the possibility of an advanced and voucher donation program in kidney transplantation in Canada

Lay Summary

Living donor renal transplantation is the best replacement therapy for patients with end-stage renal disease. Advanced and voucher donation allow one to circumvent the need for chronological compatibility. For example, the donor's voucher holder could receive an organ in the future in case they need a kidney transplantation. This type of living donation program, however, raises numerous ethical issues. We conducted interviews with 17 Canadian kidney transplant recipients, kidney transplant candidates and donors to discuss the ethical and logistical issues associated with this type of donation program. Overall, participants were open about advanced and voucher donation and felt that it could be an incentive for future living kidney donors. However, they raised issues of justice between voucher holders and transplant candidates and mentioned logistical issues that should be addressed before implementing this type of donation program. The research results will help with developing a fair and ethically acceptable advanced and voucher donation program in Canada.

ID: 45

Name: Marie-Chantal Fortin

Abstract Title: KeEP ACTIVe CLUB Study: Transplant recipients' experience and perspectives on a physical activity club project supported by a private group on an online platform

Lay Summary

Being active physically is of critical importance for the success of a kidney transplant. However, it can be difficult for transplant patients to exercise by their own. We developed the KeEP ACTIVe club, a club where patients had access to a kinesiologist and a patient partner to help them to be physically active during a 6-month online intervention. We conducted interviews with 11 participants to the KeEP ACTIVe club. Overall, participants appreciated and benefited from the intervention. They would recommend a similar club to other transplant recipients and feel that it would be a great avenue to offer in post-transplant care. Their critics had a lot to do with the small number of participants in the club. A larger group could allow for more schedules and different intensity of exercises. The private Facebook group that accompanied the club allowed people to chat with a network of transplant patients, which was very much appreciated. In conclusion, this pilot project seems to be a very interesting avenue to offer to transplant patients to help them find exercises adapted to their reality as kidney transplant recipients. Future studies are needed to better document the impact of this intervention.

ID: 47

Name: Marie-Chantal Fortin

Abstract Title: Kidney Transplant Candidates' Perspectives on the Implementation of a Canadian Willingness to Cross Program: a Strategy to Increase Access to Kidney Transplantation for Highly Sensitized Patients

Lay Summary

Patients who have a high number of antibodies against a large proportion of the deceased donor population are difficult to match, wait longer for a transplant and have increased mortality on the waiting list. These patients are designed highly sensitized patients. This study is trying to develop and implement a unique Willingness to Cross (WTC) program as a strategy to increase the chances of receiving a kidney for patients who are highly sensitized. This program aims to transplant patients in presence of antibodies directed against the donor in a safe way and increase the odds of finding donors for highly sensitized patients.

The objective of our study was to gather transplant candidates' perspectives on the WTC program. We conducted individual interviews with 14 kidney transplant candidates. Our results showed that patients are open-minded to WTC and viewed this as a source of hope. The major concerns expressed where increasing waiting time for some patients and the possibility of losing kidneys which could be rejected if allocated through the WTC. The results of our study will inform the future implementation of a WTC program.

ID: 48

Name: Julie Strong

Abstract Title: Coping with COVID: A Qualitative Investigation of the Perspectives of Parents of Pediatric Kidney Transplant Patients Concerning Their Pandemic Experiences

Lay Summary

This study looked at the pandemic experiences of parents / caregivers of children who have had, or are waiting for, a kidney transplant. The parents/ caregivers talked about seven main concerns. The concerns included: 1) family life, 2) work, 3) school, 4) health care, 5) mental health, and 6) community. Although good and bad parts of the pandemic were mentioned, most of the experiences shared were hard for parents/ caregivers and their children. Our results showed that families did not have enough help during the pandemic especially for mental health problems. We recommend that more help be given to families to recover from the pandemic.

ID: 49

Name: Sarah Hamada

Abstract Title: Inhibition of calcineurin and mtor pathways synergizes to prevent missing self-induced NK cells-mediated rejection

Lay Summary

Antibody-mediated rejection, which is characterized by microvascular inflammation (MVI) on graft biopsy, is recognized as the main cause of late graft loss. Several independent groups have reported that MVI lesions can be found in graft biopsy of patients without DSA. Our group has recently demonstrated that a large fraction of these patients develops antibody-independent MVI because of the inability of donor graft endothelial cells to deliver HLA-I dependent inhibitory signals to circulating recipient NK cells. The objective of the present study was to evaluate the therapeutic impact of two classes of immunosuppressive drugs: calcineurin inhibitor and mTOR inhibitors, on this new type of innate chronic vascular rejection named missing self-induced NK cell-mediated rejection. Convergent results obtained in a reductionist coculture model, and a pilot clinical study suggest that the synergistic combination of these drugs can block missing self-induced NK cell activation, reduce MVI lesions in biopsy and ultimately prolong graft survival.

ID: 50

Name: Maria Abou Taka

Abstract Title: The effect of kidney preservation at 10°C with Hemopure and hydrogen sulfide donor, sodium thiosulfate, in a syngeneic rat renal transplantation model

Lay Summary

Kidney transplantation is the preferred treatment for end-stage renal disease. Yet, the demand for transplantable kidneys outweighs the supply of donor kidneys. The current standard for kidney preservation is 4°C storage. We have shown that other temperatures may be better suited for kidney preservation, especially with hydrogen sulfide donors, which reduce tissue injury during storage. However, temperatures above clinical cold storage require greater oxygen and nutrients to meet kidney metabolic needs. When we added a hydrogen sulfide donor to a blood substitute at 21°C and 37°C, although kidney functional outcomes improved, the experimental setup required significant manpower to meet kidney metabolic demands. While hydrogen sulfide-based organ storage at 4°C demonstrates good results, new evidence reveals that 4°C storage could be contributing to organ injury. Recent studies suggest that organs stored at 10°C do not require extensive oxygen due to reduced organ metabolism at this temperature. Further, preservation of human lungs, liver, and hearts at 10°C improved patient outcomes. Therefore, we propose to use sodium thiosulfate (STS), a clinically-approved hydrogen sulfide donor, to preservation solutions at 10°C and evaluate functional outcomes following transplantation. This work will pave the way for future clinical studies to improve kidney transplant patient outcomes.

ID: 51

Name: Ozge Hurdogan

Abstract Title: A Proposal for Grading Peritubular Capillary Basement Membrane Multilayering

Lay Summary

Peritubular capillary (PTC) basement membrane multilayering by electron microscopy (EM) and its correlation to ABMR have long been investigated and literature data still lack definitive cut-off values for the number of multilayering. Current Banff classification criterion defines ptcml1 as 1 PTC with >7 layers and 2 PTCs with >5 layers for the diagnosis of chronic active ABMR. We aimed to test ptcml1 in our ABMR cases and search for a more sensitive and specific criterion. We retrospectively reevaluated all EM grids and examined a maximum of 10 peritubular capillaries adjacent to a glomerulus, in a clockwise fashion and documented the number of layers in the most severely affected quadrant of the capillary for each single PTC. The mean number of layers in the most severely affected three peritubular capillaries most accurately predicted caABMR and transplant glomerulopathy (including cg1a). Biopsies with ptcml > = 4 layers were highly associated with g>0, ptc> = 2, and cg>0. Ten cases, 9 among which were diagnosed as ABMR, not fulfilling the current Banff ptcml1 definition showed ptcml > = 4 layers. In conclusion, our proposal may be considered as an alternative for ptcml1.

ID: 52

Name: Luckshi Rajendran

Abstract Title: The Toronto management of initially unresectable liver metastases from colorectal cancer in a living donor liver transplant program

Lay Summary

Living donor liver transplantation (LDLT) is an attractive potential option for bilateral, unresectable liver-only colorectal liver metastasis, but this is not currently offered beyond a clinical trial setting. Here we describe our interim experience of LDLT in this patient population at a large transplant and hepatobiliary centre in North America. Our study recruited adult patients receiving chemotherapy, and divided patients into those that received LDLT (n=6), those later deemed resectable and underwent liver resection (n=21), and those who were excluded and referred back for chemotherapy (control, n=51). Data was extracted from study inception in October 2016 to April 2022. Overall survival and recurrence-free survival outcomes were compared.

The median time from initial assessment to liver transplantation was 15.5 months. The control population had significantly worse overall survival, compared to the transplanted population. There were no statistically significant differences in post-operative overall or recurrence-free survival between the transplanted and resected populations, however the resected population had a higher proportion of recurrences.LDLT is a viable treatment option in a highly selected population. Most referred patients are deemed ineligible for study inclusion, however, those deemed eligible experience excellent oncologic outcomes. Future results after trial completion can inform the long-term trial outcomes.

ID: 54

Name: Cindy Luo

Abstract Title: Lung transplant recipients' perspectives on integration of pharmacogenomic testing to transplant care

Lay Summary

Pharmacogenomics is the study of how the variation in a person's DNA can affect drug response, helping to predict how well a drug will work and the potential for side effects. Previous studies show that people who completed PGx testing felt more confident in their prescribed medications and were more likely to take the medications as prescribed. Pharmacogenomic testing is currently not routinely used in the lung transplant program.

Lung transplant recipients who completed an at-home pharmacogenomic test kit were asked to complete two electronic surveys to determine their perspectives on pharmacogenomic testing.

Most of the participants did not know about pharmacogenomic testing prior to the study. After study completion, 96% of participants found the at-home PGx test kit easy to complete, and 79% felt that PGx testing would be helpful to their health care decision making. Greater than 90% of participants would complete another PGx test if it was recommended for another medication, and 96% of participants believed that all transplant recipients should receive pharmacogenomic testing.

Our study shows that lung transplant recipients believe pharmacogenomic testing is a useful tool for their medication prescribing and believe pharmacogenomic testing should be offered to all transplant recipients.

ID: 55

Name: Kumi Mesaki

Abstract Title: Developing a base editing approach to upregulate IL-10 gene for donor lung immunomodulation

Lay Summary

Engineering optimized donor organs holds promise in addressing current challenges in lung transplantation. To reduce the need to suppress the entire body's immune system after lung transplantation, we envisioned using genome editing to make donor lungs less immunogenic. Genome editing could induce long-lasting effects after one-time treatment, by changing DNA sequences in cells that enables specific changes to how the donor lung functions. We seek to increase IL-10, a potent anti-inflammatory cytokine, in the donor lung to provide organ-selective immunomodulation after transplantation. However, a lack of an efficient genome editing approach to activate the IL-10 gene is a primary hurdle. In this study, we developed a novel genome editing strategy to increase IL-10 gene expression using cultured cells. We found that editing the regulatory region by installing base conversions could significantly enhance IL-10 gene expression. Our findings could open a new door to optimizing donor lungs using genetic engineering.

ID: 57

Name: Faissal Tallaa

Abstract Title: Variability in workup and eligibility criteria for adult kidney transplantation among Canadian transplant centers

Lay Summary

The ideal treatment for kidney failure is kidney transplantation for most patients. The evaluation process for a potential transplant recipient requires extensive investigations including lab tests, imaging, and procedures which are necessary to ensure that patients are healthy enough to undergo the surgery and tolerate anti-rejection medications. This process can take several months to complete, is costly, and may be logistically difficult for the potential recipient. We invited all 18 adult transplant centers in Canada to complete an electronic survey on their specific pre-transplant evaluation processes to understand how Canadian centers have interpreted clinical practice guidelines and determine how much variability exists between centers. We found most centers agreed with respect to certain aspects of the evaluation process, but in other aspects there was significant variability between centers in the referral process, lab testing, imaging, and eligibility criteria. We propose that a national consensus be developed with respect to eligibility for kidney transplantation that is person-centered, evidence-based, and transparent, in order to better ensure equitable access to kidney transplantation for all Canadians with end-stage kidney disease.

ID: 59

Name: Helen Mumby

Abstract Title: Challenges in deceased donor kidney transplant listing

Lay Summary

Lay summary of the Study

Kidney transplant offers an improved quality of life and survival rate for people living with end stage kidney disease. . A transplant survival score (TSS) is used in New Zealand as a standard for acceptance onto the deceased donor waiting list. This score estimates the chance of living for at least five years post-transplant. Patients suitable for acceptance onto the deceased donor waiting list need a TSS greater than 70%.

Two years ago, we analysed why we had low numbers of patients on the deceased donor waiting list. The findings at the time identified body mass index (BMI) >40 as the largest contributing factor. Our aim of this study was to determine whether the factors that influenced patient's eligibility for deceased donor waiting list had changed. During this period, patients with a BMI >40 have been referred to the renal dietitian for weight loss.

Our results showed that the main reason for patients being ineligible for transplant work-up continues to be a BMI above 40, though it deceased from 60% to 46% of patients. Further efforts need to be done on this aspect to improve patient eligibility for kidney transplant.

ID: 61

Name: Tanya Dhanoa

Abstract Title: Real world sirolimus prescribing patterns and tolerability after lung transplantation

Lay Summary

Sirolimus is a medication used to suppress the immune system after an organ transplant. It is commonly used in kidney and heart transplants but not in lung transplants. Recently some research has shown sirolimus may be beneficial for lung transplant patients. In this study, medical charts were extensively reviewed to find out who had lung transplants, why they started sirolimus, any side effects of therapy, and if sirolimus had any positive or negative outcomes.

The results showed that most patients started taking sirolimus because of a low level of white blood cells in their bodies, caused by a different immune-suppressing drug that is standardly used. After six and 12 weeks of taking sirolimus, and stopping the other medication, their white blood cell count became normal again. Other reasons patients took sirolimus were because they experienced long-term rejection of their transplanted lung, or for preventing specific skin cancer. There were zero reoccurrences of skin cancer one year after starting sirolimus. This study helps us see what sirolimus was used for, how well it worked, and if patients tolerated its side effects, if any, during treatment. We found out sirolimus can be a substitute to the usual drugs used in lung transplants.

ID: 62

Name: Lachlan McMichael

Abstract Title: Examining post-transplant survival in End-Stage Kidney Disease patients – a multivariable prediction model

Lay Summary

Kidney transplantation remains the best treatment for patients with kidney failure. Despite this, only a small number of patients receiving dialysis treatments are on the kidney transplant waiting list. In our study, we wanted to develop a statistical model which would identify patients who would have a good outcome post-kidney transplantation.

We developed a statistical model which reviewed how long people survived after kidney transplantation. To make our statistical model we used detailed information about patients who had previously received a kidney transplant. The statistical model allowed us to calculate a score that estimated survival post-kidney transplantation. We checked our new model with statistical tests in different groups of patients to ensure it worked well.

We found that older age, lung problems, blood vessel disease, current cigarette smoking and length of time on dialysis was associated with reduced survival after kidney transplantation. We also found that our model worked well when we tested it in different patient groups.

We hope that our statistical model may make it easier for doctors to find patients that should be assessed for kidney transplantation.

ID: 63

Name: Keir Forgie

Abstract Title: Protocol for 24-hour negative pressure ventilation ex-situ lung perfusion with a porcine transplantation model

Lay Summary

Thirty percent of patients awaiting lung transplantation will die before an acceptable set of lungs become available. This is due to an inadequate supply of high-quality donor lungs and very strict organ acceptance criteria. A new method of preserving donor lungs called Ex-Situ Lung Perfusion (ESLP) can increase the number of useable donor lungs by supporting organ health and repairing damaged lungs. After organ donation, the ESLP machine keeps the lungs breathing with a ventilator and flushes the organ with nutrient rich solution to promote lung healing before transplantation. This technology allows lungs to be safely transported over longer durations than previously possible. To date, the longest preservation period of pig lungs in the lab has been 24-hours using a commercial ESLP device with a classic style ventilator. Our device uses a unique ventilator that causes less injury to the lungs over time and may prove to be a better form of ESLP in the long-term. In this study, we present our device results of achieving reliable 24-hours of ESLP using pig lungs with excellent transplant outcomes. Excessive distance between donors and recipients is a barrier to transplant. ESLP of 24-hours can overcome most geographic barriers, thereby maximizing the number of lungs transplanted globally.

ID: 64

Name: Tara Zeitoun

Abstract Title: The association between lifestyle behaviours and mental health indicators over the COVID-19 pandemic in an immunosuppressed population

Lay Summary

Social and physical distancing measures related to the COVID-19 pandemic have adversely affected the mental health of individuals. Growing knowledge indicates that lifestyle behaviors such as sleep duration, sedentary time and physical activity have a strong impact on mental health. Though, little is known on how, in the context of COVID-19 pandemic, these lifestyle behaviors influence mental health in populations who are already immunocompromised. Our aim was to investigate the association between changes in different lifestyle behaviours and mental health predictors in a population of immunocompromised individuals using logistic regressions. Our findings suggest that decreasing physical activity increases distress, anxiety and depressive symptoms. While increasing sedentary time leads to higher stress, distress, anxiety and depressive symptoms. We also found that either an increase or decrease in sleep leads to higher stress, distress and depressive symptoms- while only a decrease of sleep was associated with higher anxiety symptoms. Assessing such a vulnerable population is crucial considering the higher risks of experiencing worsening of the COVID-19 virus symptoms and the stronger confinement requirements for such a population. These results could help anticipate lifestyle modifications during rapid outbreaks of highly infectious diseases, which would have similar confinement enforcements as COVID-19 in highly vulnerable populations.

ID: 65

Name: Anthony Emmott

Abstract Title: Comparison of surgical outcomes with staged versus simultaneous native nephrectomy for autosomal dominant polycystic kidney disease

Lay Summary

Autosomal dominant polycystic kidney disease (ADPKD) can result in kidney failure requiring kidney transplant. A patient's native kidneys are not typically removed at the time of transplantation, however patient's with ADPKD are unique as in some situations the native kidneys require removal around the time of kidney transplant due to significant enlargement of native kidneys or other complications. The ideal timing for removal of native kidneys with respect to kidney transplant however is not clear. We therefore sought to answer the questions of whether surgical outcomes are any different between patients who have their native kidneys removed at the same time as kidney transplant under the same anesthetic, or separately either before or after kidney transplant. We reviewed patient records from 2009 to 2020 at a dual-institution provincial transplant program to answer this question. There was no significant difference in surgical complications or kidney transplant function, however patients who received simultaneous removal of native kidneys at time of kidney transplant had overall shorter cumulative stay in hospital. Our results suggest that simultaneous removal of native kidneys at time of kidney transplant is safe and feasible option for the appropriately chosen patient.

ID: 70

Name: Verena Broecker

Abstract Title: Reproducibility of rejection classification in human uterus transplants

Lay Summary

The first life birth from a woman with a transplanted uterus in 2014 has shown, that uterus transplantation may be a possible treatment for women who do not have a uterus; either from birth or due to operation. Similar to other transplants, tissue biopsies are regularly assessed to detect signs of rejection in order to guide treatment. A grading system how to recognize rejection microscopically has previously been suggested (Molne, J. et al. 2017), but it has never been tested whether this grading system can be reproduced by others.

We conducted a study where 5 pathologists from 4 different centers performing uterus transplantations were asked to independently grade rejection on 145 transplant biopsies according to the proposed grading system. Following group-discussion of controversial cases and identification of histological lesions not currently considered for diagnosis (evidence of cell death, inflammation in small vessels), participants performed a second grading on 48 new cases.

Agreement between pathologists was measured using appropriate statistical tests.

The results showed moderate to good agreement between pathologists for diagnosis of rejection, but additional histological lesions, especially inflammation in small vessels, were badly reproducible. Clear definitions of microscopic lesions and education of pathologists may help to improve agreement.

ID: 72

Name: Jennifer Berry

Abstract Title: Donor Survey to Assess Satisfaction with Living Kidney Donation and Elicit Ideas for Process Improvement

Lay Summary

Live kidney donation (LKD) is important to address the shortage of kidneys for transplantation. In June 2017, we launched a LKD program to improve hospital services through local access to live kidney transplantation. To assess donor satisfaction with the process of becoming a live kidney donor, as well as identify opportunities for improvement, we developed an anonymous survey focusing on education and care provided, including recovery following LKD. The survey was sent to all donors 6-12 weeks following donation from June 2017 to May 2022. 19 of the 32 donors responded to the survey. All donors were satisfied or very satisfied with the education, care and recovery. Two donors felt unprepared for discharge from hospital related to their ability to move following surgery. Both of these donors were older and the spouses of their elderly recipients. Two donors expressed concern about the possibility of their recipient rejecting the transplant and whether they (the donor) would develop kidney failure after donating, but none regretted LKD. Overall our program's survey indicated donor satisfaction with LKD. The main opportunity for improvement involves support of older donors, particularly those who are donating to a spouse.

ID: 73

Name: Emmanuel Nogueira

Abstract Title: Use of Pancaspase inhibitor during Normothermic ex vivo liver perfusion: a strategy to reduce ischemia reperfusion injury in pig liver grafts

Lay Summary

Liver Transplant became the most important treatment for liver diseases. Our study intents to improve liver transplant results using a medication called Emricasan, which can reduce liver cells death and as a consequence decrease liver inflamation after transplant. This inflamation is a important cause of organs lost or even patients death.  We did that experiment in pigs liver. We removed the liver from pig and apply that medication directly in the Liver in a perfusion machine. Perfusion Machine is a equipment used to preserve the organ before transplant. There are many types and the one we used keep the Liver at body's temperature. Our study showed we can reduce Liver's inflamation using Emricasan in the Perfusion Machine.

ID: 74

Name: Aisha Adil

Abstract Title: Ex Vivo Perfusion De- and Recellularization of Rat Hindlimbs for Vascular Composite Allotransplantation

Lay Summary

Patients who experience traumatic injuries and severe tissue loss require surgical reconstruction. While soft tissues can be transplanted from one body part to the injured area, large defects require alternative options. Transplantation of multiple tissues (eg. bone, skin, muscle, vessels, nerves) as a subunit from a donor to recipient can be used however it requires the use of anti-rejection medications to suppress immune reactions from the transplant. This approach results in increased risk for infections, toxicity, and malignancies. Decellularization and recellularization of these transplants are emerging tissue engineering techniques where immune reaction-inducing content is removed from transplants while their tissue structure is preserved. Transplants can be repopulated with tissue-specific cells to create personalized grafts thereby reducing the need for anti-rejection medications. Repopulating with relevant cell types and regenerating grafts to functionality are current challenges in recellularization. In this study, we use a rat hindlimb model to implement de- and recellularization in composite tissues. We examine the decellularized tissues' biological properties and structural integrity. Recellularized tissues are assessed for cell attachment, survival, and proliferation. The results will help establish a model and a foundation for how this bioengineering technique can be used for VCA.

ID: 75

Name: Anna Horton

Abstract Title: Turf Wars: Divisive renal governance in Canada and its consequences for living donor kidney transplantation

Lay Summary

For people who have kidney failure, living donor kidney transplantation (LDKT) is the best treatment. But many people aren't considered for LDKT and end up on dialysis, which doesn't give them a good quality of life. We wanted to know whether the groups in charge of LDKT in Canada – for example, governments and hospitals – make it easy for patients to get LDKT.

To answer this question, we examined 91 interviews with leaders in kidney care, healthcare professionals, patients and donors. We did this to understand the relationships between different groups and how they run LDKT together.

We found that there are three main things that are important to know about how LDKT is led in Canada. Those things are: 1. the groups involved; 2. who pays for it; 3. the attitudes of the people involved.

Overall, we show that there are problems with how LDKT is led in Canada. The groups in charge find it hard to agree on how best to do things. It can also be hard to work out who pays for what. This means that LDKT doesn't run very smoothly. We want to suggest ways this could be improved, so that more patients can access LDKT.

ID: 77

Name: Juliano Chrystian Mello Offerni

Abstract Title: Can we predict graft function and graft survival rate using hypothermic machine perfusion parameters from donors after cardiac death?

Lay Summary

Renal transplant is known to be the most effective method of improving mortality and quality of life in the end-stage renal disease (ESRD) population. Transplantation is also known to be relatively cost-effective compared to the ongoing cost of dialysis. The increasing prevalence of ESRD and increasing stress on the health care system necessitate maximizing available tissue donation.

Since the advent of solid organ donation after cardiac death (DCD), this group of donors has grown to encompass around 20-30% of the deceased donor pool. Although outcomes for DCD renal grafts have improved since the start of their utilization, these grafts are associated with higher rates of delayed graft function primary non-function and higher mortality rate in the first year when compared to those obtained from donation after neurologic determination of death. In this study, as the primary outcome, we analyzed possible parameters of hypothermic machine perfusion to predict short-term outcomes and patient survival rates.

ID: 78

Name: Katrina Sullivan

Abstract Title: COVID-19 hospitalizations and hospital outcomes among transplant recipients in Canada

Lay Summary

Patients who have had an organ transplantation have a higher risk of getting dangerously sick with COVID-19. This study aims to describe what the increased risk is for hospital outcomes with COVID-19 for Canadian transplant patients versus the general population of Canada without transplants. To identify Canadians who have an organ transplant as of December 31, 2020, the Canadian Organ Replacement Register at CIHI was used. Information on hospitalizations between Jan-Dec 2021 for these patients, as well as the general population of Canada without transplants, was then taken from CIHI's Discharge Abstract Database. This information showed that Canadians with an organ transplant were at much higher risk of being hospitalized, being transferred to the ICU, and even dying with COVID-19 than non-transplant Canadians. Patients aged 18 – 49 were almost always at a higher risk than those who were 50 or older, as were patients with a lung transplant. Liver transplant patients had the lowest risk (although risk was still much higher than Canadians without at transplant) (Table 1). This information can be used to plan healthcare for organ transplant patients to try to lower hospitalizations and deaths with COVID-19.

ID: 80

Name: Caitriona McEvoy

Abstract Title: Humoral Responses in the Omicron Era following Three-Dose SARS-CoV-2 Vaccine Series in Kidney Transplant Recipients

Lay Summary

We measured antibodies against COVID-proteins (binding antibodies) and neutralizing antibodies (prevent COVID from infecting and killing cells) in kidney transplant recipients at one and three months follwing their third COVID vccine. The majority of kidney transplant recipients had detectable binding antibodies against COVID-proteins at one and three months following the third vaccine dose. The proportion of patients whose antibody titres were consistent with a robust immune response rose significantly following a booster dose. Those who responded robustly at Month 1 largely maintained that level of response at Month 3. Just over 50% of KTRs lack neutralizing antibodies against the Omicron variant 1 month following a third mRNA-vaccine dose. We define binding antibody levels that may help identify patients lacking neutralizing antibodies against the Omicron variant.

ID: 81

Name: Juliano Chrystian Mello Offerni

Abstract Title: The Canadian Anatomic Kidney Score (CAKS) : quantitative macroscopic assessment versus histological grading in pre-transplant evaluation of donor kidneys

Lay Summary

Although the constant learning in transplant immunology and medications, patients who undergo kidney transplants may have a reduced long-term graft function.

Multiple scoring systems are used to predict graft function and longevity. Part of the current standard of care involves 1) calculating a kidney-donor-profile-index (KDPI) score or kidney-donor-risk-index (KDRI) and 2) performing renal biopsy before transplant. The KDPI/KDRI pre-transplant score involves donor characteristics such as age, creatinine, race, past medical history such as diabetes or hypertension, Hepatitis C infection, and cause of death. A kidney biopsy before the transplant may help understand why a graft may not work and what may impact the long-term outcome. However, a kidney biopsy is not specific for predicting renal function, and results can take hours to become available.

Neither of the scores currently in the standard of care takes into renal anatomic factors. In our study, we aimed to analyze the gross aspect of the kidney before the transplant and compared with pathology. The gross anatomical analysis was scored based on the characteristics of the renal artery, presence of fibrosis, cysts, and scars. The idea was to correlate these findings with short-term outcomes.

ID: 82

Name: Rabindra BHATTACHARJEE

Abstract Title: Development of a simulated ischemia reperfusion injury model to study donor kidney preservation at 22°C

Lay Summary

Over 40,000 Canadians currently suffer from kidney failure. Transplantation remains the best treatment for these individuals, providing a better quality of life and survival when compared to dialysis. However, the damage suffered by organs during the transplant surgery remains a challenge. It causes cell death and inflammation within the organ, leading to poor function after transplant. Our group hopes to find new drug(s) that can prevent this damage, and thus protect the organs and allow them to function longer within the recipient.

We have developed an inexpensive model to test these drugs. We show that this model mimics the behaviour of real organs when exposed to transplant-like conditions, and therefore is a relevant tool with which to address our research goals. Importantly, we also carried out preliminary drug testing to validate the usefulness of this model for screening potential drugs. In the future, this model will be used for a large-scale drug screen study and to investigate these drugs' ability to prevent kidney injury during the transplant process. Ultimately, we hope to improve the quality of kidneys that transplant patients receive.

ID: 83

Name: Katrina Sullivan

Abstract Title: Risk of hospitalization, ICU transfer, and in-hospital death with COVID-19 in dialysis patients compared to kidney transplant recipients: A national cohort study

Lay Summary

COVID-19 causes more serious illness in Canadians who have a kidney transplant or are currently on dialysis to treat their failing kidneys. This study aims to determine if dialysis patients or kidney transplant patients are more at risk of hospitalization, intensive care unit (ICU) transfer, or in-hospital death with COVID-19. The Canadian Organ Replace Register at CIHI was used to identify Canadians who were on dialysis or had an organ transplant as of December 31, 2020. Information on hospitalizations between January and December 2021 for these dialysis and kidney transplant patients was then taken from CIHI's Discharge Abstract Database. This showed that the risk for hospitalizations with COVID-19 and in-hospital death with COVID-19 were similar between dialysis and kidney transplant patients. Kidney transplant patients with COVID-19, however, had up to 1.8 times greater risk of being transferred to the ICU compared to dialysis patients with COVID-19. This information can be used to help Canada's healthcare system to better protect both kidney transplant and dialysis patients against COVID-19 in the future.

ID: 84

Name: Yasemin Ozluk

Abstract Title: Banff Classification for Polyomavirus Nephropathy: A Single Center Experience

Lay Summary

Various classifications for histological grading of PVN are proposed in literature, in order to predict the clinical course. Previous classifications could not be applied in multicenter studies and were not widely accepted. In this study, we applied the PVN classification presented by Banff Working Group in 2018 to our cohort. We also tested the implementation of Banff i-IFTA score into the PVN classes in combination with polyomavirus load (pvl). Our study showed that Banff scores i, ti, i-IFTA, t, and ct gradually increased from class 1 to 3. We have also shown that periodically detected serum creatinine levels were lowest in class 1 and highest in class 3. In addition, graft survival were shown to be highest in class 1 and lowest in class 3. We have shown this significant difference using both the original Banff classification and an alternative model we proposed, consisting of i-IFTA (instead of ci) and pvl. In our alternative model, 7 cases (4 of which had graft loss) were up-classified. Banff 2019 PVN Classification succesfully stratifies patients in terms of clinical presentation, disease progression, and graft survival. We think, an alternative PVN classification comprising i-IFTA+pvl score may help better predict graft survival.

ID: 85

Name: Juliano Chrystian Mello Offerni

Abstract Title: Validation of the Canadian Anatomic Kidney Score (CAKS): Assessment of Reproducibility Among Surgeons and Trainees

Lay Summary

Kidney transplants can promote a better quality of life for patients with end-stage renal disease compared to dialysis; however, it is necessary to find better tools to predict graft and patient survival rates. Our group has previously shown the application of gross anatomical assessment and the correlation with the short-term outcomes when compared to pathological score. The score was called the Canadian anatomical kidney score. Although the simplicity of to score, it was necessary to confirm the reproducibility and reliability of the score in the peer review community. We submitted a survey to transplant surgeons, transplant fellows, and urology residents across Canada. The respondents scored image pairs of six kidneys through Survey Monkey. The score showed to be reproducible independently of the surgical experience of who answered.

ID: 87

Name: Patrick Luke

Abstract Title: Preservation of human kidneys with subnormothermic machine perfusion

Lay Summary

Kidney transplantation is the best treatment option for patients with kidney failure; however, the need for kidneys is greater than the number of acceptable kidneys available from donors. To increase access to transplantation, organs from higher risk donors are being used more frequently. Patients who receive these high-risk kidneys are more likely to experience poor outcomes post-transplantation. Currently, donor organs are stored on ice until the time of transplant, during which the kidney suffers injury from cold temperature and lack of oxygen. Research from our group suggests that providing oxygen to pig kidneys at around room temperature can reduce injury, protect kidneys from inflammation and improve function. This study aims to replicate this finding in human kidneys donated for research. It is a new way to preserve kidneys. If successful, this method will improve the quality of kidney a patient receives and allow for more kidneys to be transplanted.

ID: 88

Name: Christopher Buckland

Abstract Title: Do virtual health appointments impact travel-related greenhouse gas emissions in Solid Organ Transplant patients?

Lay Summary

The healthcare industry is a significant contributor to air pollution (greenhouse gas, GHG emissions) globally. Patient and family travel for medical appointments contributes to pollution, especially in those who require frequent visits, such as patients who have undergone organ transplantation. During the past two years, the COVID-19 pandemic required some in-person appointments to be replaced with virtual appointments. As a result of this change in practice, we wanted to see how patient travel and GHG emissions were impacted in our transplant patients. We reviewed all transplant patient appointments between April 1, 2020 and March 31, 2022. Driving distance, driving time and GHG emissions were estimated using special computer software. Data from 148 patients were retrieved. There were 1035 clinic appointments during the study period, 194 (19%) were held virtually. Virtual appointments reduced travel distance and time by 30% and 28%, respectively. GHG emissions were reduced by 30%. Virtual appointments, when possible, can significantly reduce patient travel and GHG emissions for our patient populations.

ID: 90

Name: Isabelle Doré

Abstract Title: Should transplanted and immunosuppressed individuals keep their pet? Investigating impacts of pet ownership on lifestyle behaviours and mental health

Lay Summary

Many transplanted individuals are recommended to refrain to adopt a  pet to prevent zoonotic infection and potential complications due to their immunosuppression status. However, increasing evidence suggests that pet ownership is associated with healthy lifestyle and mental health but these evidences are very limited in immunosuppressed individuals. Projet Laurent, a pan-Canadian “One-health” research program aims to investigate the risks and benefits of pet ownership in immunosuppressed populations. Using data from the COVID-Immuno Study, a subproject of Projet Laurent, this study aims to examine the associations between pet ownership and 1) movement behaviours (walking, moderate and vigorous intensity physical activity, sedentary time and sleep and 2) mental health indicators of stress, distress, anxiety and depressive symptoms during the COVID-19 pandemic among immunosuppressed individuals and whether these association differ according to age ( < 5 5, 55+). Our results suggest that having at least one dog is a protective factor for healthy movement behaviours in immunosuppressed individuals. However, we found no association between pet ownership and mental health; this might be explained by the increased burden and worry of taking care of a pet in the COVID-19 specific context.  Results from this study will orient the development of tailored interventions and recommendations regarding benefits of pet

ID: 91

Name: Rahul Mainra

Abstract Title: The Case for Disruptive Innovation in Solid Organ Transplantation: Optimizing Organ Utilization in Canada

Lay Summary

Kidney donation benefits patients with end stage kidney failure by improving their life expectancy and quality of life. Unfortunately, some patients never get this treatment option because they wait too long on a waiting list and become too sick for a transplant. Meanwhile, up to 20% of kidneys that are donated are wasted and not used for transplant.

Disruptive innovation brings products to people who normally would not have access to. We are using similar ideas to give patients more access to kidney transplantation by using kidneys that are donated but would otherwise be wasted.

We provided information to participants that included data on kidney discard rates in Canada, a review of kidney outcomes, patient and family perspectives, survey results of kidney specialists on organ acceptance and data from McGill University, where usage rates are higher. With this background knowledge, a virtual forum brought together everyone to develop the framework on how these kidneys can be used and not wasted.

The goal is to determine a way where all organs that are donated are transplanted into a Canadian who needs them. This will be done safely, fairly, and openly.

ID: 92

Name: Vanderlene Kung

Abstract Title: Donor-derived cell-free DNA (dd-cfDNA) for detection of allograft rejection and monitoring treatment response in pediatric kidney transplants

Lay Summary

Donor-derived cell-free DNA (dd-cfDNA) is a powerful non-invasive tool for identifying organ rejection and monitoring treatment in adults, but there is limited data available to guide the use and interpretation of dd-cfDNA in children. To address the need for more studies of dd-cfDNA in children, we identified 18 pediatric kidney transplant patients with rejection, and who had dd-cfDNA as well as tissue biopsies and blood samples collected both during and after treatment of rejection. We found that the utility of dd-cfDNA in identifying rejection and monitoring treatment response may depend on rejection type. dd-cfDNA identified active antibody-mediated rejection (ABMR) and mixed rejection, but only 50% of acute T cell-mediated rejection (TCMR). Post-treatment, dd-cfDNA improvement may indicate resolution of TCMR; however, its uses are less clear in treated ABMR, where both inflammation in small vessels in the kidney tissue and dd-cfDNA persist. More studies are needed to understand differences in test performance between children and adults, and between different types of rejection and response to therapy.

ID: 93

Name: Meriam Berka

Abstract Title: CD34 recipient chimerism is an early and accurate predictor of acute myeloid leukaemia relapse After allogeneic HCT

Lay Summary

Acute myeloid leukemia (AML) is one of the most commonly diagnosed leukemias. Stem cell transplants are the main course of treatment and many patients achieve remission as a result. Unfortunately, about 25% of transplant recipients' cancer will relapse. Relapse is almost always fatal with a 2-year survival rate of less than 20%, this mortality is due in part to late diagnosis. In our study, we tested a chimerism approach that measures the return of cancerous stem cells in the patient's blood. We found that this method is highly sensitive and specific at detecting relapse more than 2 months before clinical relapse. This non-invasive technique could allow for routine post-transplant monitoring of patients. Earlier detection will allow clinicians to treat relapse before it occurs, thus enhancing the efficacy of current and new prevention and treatment strategies so that hopefully one day all AML patients can achieve permanent remission.

ID: 94

Name: Allen Duong

Abstract Title: Discovery of pro-inflammatory and pro-fibrotic macrophage subsets in chronic lung allograft dysfunction using single-cell RNA-sequencing

Lay Summary

Lung transplantation survival is severely limited due to lung transplant chronic rejection through a process called chronic lung allograft dysfunction (CLAD). There are two distinct types of CLAD, an obstructive and restrictive phenotype. The events that lead to CLAD are complex and not clearly defined. One white blood cell population that may play a role are macrophages. Therefore, we used single-cell RNA sequencing to identify unique macrophages specific to CLAD.

Nine CLAD lungs and five control donor lungs were processed into single cells and underwent single cell RNA sequencing. The resulting data was then analysed with bioinformatic software to categorize and characterize each cell and to compare CLAD against control samples.

Through this, we have identified two subtypes of macrophages found only in CLAD lungs: a pro-inflammatory AIF1 macrophages which likely causes attraction of other white blood cells into the lung, and a pro-fibrotic SPP1 macrophage which is involved in lung scarring. We next plan to sort these macrophages out from the lung and characterize them in greater detail. Determining this will allow us to identify new drugs or treatments that target these macrophages, improving the long-term outcomes for patients with CLAD.

ID: 95

Name: Katya Loban

Abstract Title: Perspectives and experiences of patients with kidney transplant failure: systematic review and meta-synthesis

Lay Summary

Background: Many people who receive a kidney transplant lose it within five to ten years. These patients face many difficulties and must restart dialysis. We wanted to get a better understanding of the experiences of these patients and identify the symptoms and challenges that they have.

Methods: This was a literature review of patients' personal experiences after losing their transplanted kidney. We included studies involving individual and group interviews published in academic journals. We combined information from these studies and evaluated their quality.

Results: We looked at 4,214 studies but only kept five. Patients experience the loss of hope associated with a successful transplant, then they adjust to the loss physically and emotionally and learn how to move forward. They experience many challenges and need different types of support from health workers, family and friends. When the person taking care of a patient at home is the one who donated the kidney, things get even more difficult. Patients need more help from health workers to deal with the loss.

Conclusion: There is very little information on what patients who have lost their transplanted kidney experience. Our study is important as it will lead to more research and improvements in care.

ID: 96

Name: Ghazaleh Ahmadzadeh

Abstract Title: “I feel more comfortable this way”:  Relationship between African, Caribbean and Black kidney transplant candidates and recipients and their healthcare providers in living donation - a qualitative analysis

Lay Summary

African, Caribbean, and Black (ACB) patients with kidney failure are much less likely to receive living donor kidney transplant (LDKT) compared to White patients in Canada. The relationship between ACB patients and their care team is important in a patient`s decision about LDKT. In this qualitative study we aimed to understand the nature of this relationship.

We recruited self-identified ACB adult kidney transplant candidates and recipients to participate in semi-structured interviews and asked questions about their ethnocultural identities, and their experiences with the healthcare system, specifically with kidney care.

The central theme of this analysis was the participants’ desire for an open, honest, and respectful relationship with their care team. Several sub-themes were also developed: desire for a person-centered approach from their care teams, desire for judgment-free interactions with their care team. Our analysis suggests that these expectations are more frequently met if the healthcare professional is also from ACB communities. This underlines the need for greater representation and diversity within the healthcare system.

In summary, ACB patients expect a respectful, open, trustworthy, and collaborative relationship with their care team. We will use these results to develop interventions and support to improve access to LDKT for ACB patients.

ID: 97

Name: Princess Okoh

Abstract Title: Stigma as a potential barrier to living donor kidney transplant (LDKT) for African, Caribbean, and Black (ACB) patients in Toronto, Ontario, Canada

Lay Summary

Compared to White patients with kidney failure, African, Caribbean, and Black (ACB) patients are less likely to receive living donor kidney transplantation (LDKT). One factor that may contribute to this disparity is stigma, which is when patients' lifestyles or health practices are associated with their cultural beliefs.

We interviewed self-identified ACB participants (both with and without kidney failure) and health care providers (HCPs) involved in kidney care. We asked participants about their experiences in the health and/or kidney care system and their thoughts and feelings about LDKT.

We found that participants had both expected and experienced stigma. Patients with kidney failure were fearful that their HCPs would make assumptions about their health-related beliefs and behaviours. We also found that participants feared judgement from family, friends, and their community. Stigma added to their hesitancy to discuss topics related to LDKT.

In summary, experienced and anticipated stigma among ACB patients contributes to poor communication regarding LDKT and, as a result, a reduction in the likelihood of successfully finding a potential living donor. We will use these results to develop culturally tailored resources that help to reduce stigma and improve LDKT accessibility.

ID: 98

Name: Jessie Hallett

Abstract Title: Canadian community pharmacists' management of solid organ transplant recipients: a survey-based characterization of confidence and care roles

Lay Summary

Immunosuppressant medications are key in prolonging organ function after a transplant. While studies of pharmacists working in transplant clinics has shown that pharmacist participation in the care of patients is linked with a longer life of the transplanted organ, there is little information on how community pharmacists in Canada contribute to transplant recipient care. A survey was distributed electronically to pharmacists asking them about patient care acitivities specific to solid organ transplant patient care, including how often they perform each activity and how confident they are in doing so. Pharmacists reported providing care to transplant recipients less than monthly. Pharmacists reported being more confident in performing activities that are most similar to those for the general population, such as teaching patients why taking medications regularly and on time is important. They reported being less confident in areas that are more specific to transplant care, such as assessing patients for adverse effects, infections, and vaccine safety. Pharmacists also reported feeling "out of the loop" in regards to changes made in clinic. This study will help in the development of "quick reference" material specific to transplant medications and to help guide transplant clinics in engaging in more communication with their patient's pharmacies.

ID: 99

Name: Sonali de Chickera

Abstract Title: Non-A1 blood group to B/O kidney transplantation: A single centre experience

Lay Summary

In Canada, blood type B kidney transplant candidates waiting to receive a transplant have to wait the longest. Blood group O candidates wait the second longest. Consequently, these patients get transplanted less often. To help B and O candidates receive more transplants, we can give them kidneys from a specific subset of blood group A donors, known as non-A1 donors. Our study analyzed our center's data from non-A1 blood type kidney transplants to B/O recipients to determine what their long-term outcomes were. In total, 81 adult kidney or kidney-pancreas blood group B/O recipients who received organs from non-A1 donors were enrolled. Twelve transplant recipients received living donor organs and the remaining 69 received deceased donor organs. Average wait-time for B and O recipients was 245 and 307 days, respectively. There were 8 cases of antibody mediated rejection and 11 cases of T cell-mediated rejection. Ultimately, longer time on wait-lists increases chances a transplant candidate gets sick or dies while waiting for a an organ. In our study, we found that giving a non-A1 blood group kidney to a B or O transplant candidate was well tolerated in this large cohort, and wait-times were lower than average provincial wait-times in Ontario.

ID: 101

Name: Lauren Arena

Abstract Title: Outcomes In Kidney Transplant Recipients With Allograft Failure Who Return To Dialysis

Lay Summary

Return to dialysis after a kidney transplant failure affects nearly 20% of transplanted patients. Deciding how to manage immunosuppressive medications in these patients remains a challenge. While these drugs help prevent rejection and may help to prevent the formation of antibodies that could prevent kidney transplantation in the future, they are also associated with an increased risk of infection, cancer and cardiovascular disease. We conducted a retrospective study examining 49 patients with kidney transplant failure based on whether their immunosuppressive medications were reduced before or after 6 months following their return to dialysis. We found that there were no differences in the risk of hospitalization, death, infection nor retransplantation rates between the two groups. However, we did note a higher number of catastrophic events (such as disseminated tuberculosis infection and cancer related to immunosuppressed state) in the group who were maintained on full dose immunosuppression for longer than 6 months. These findings suggest that there does not appear to be a clear benefit to prolonged immunosuppression after kidney transplant failure, and potentially a greater risk of complications related to immunosuppressed state.

ID: 102

Name: Aghna Wasim

Abstract Title: Symptom experiences of heart transplant recipients and caregivers

Lay Summary

Heart transplant (HT) recipients often experience physical and emotional symptoms and social difficulties. These challenges are not always supported adequately and may, therefore, affect their quality of life. In this qualitative study, we aimed to better understand these challenges and the impacts they might have on patients' lives.

We interviewed adult HT recipients and their caregivers about the physical, emotional, and social challenges they experienced after their transplant.

We found that patients' physical functioning improved after their heart transplant, but they experienced difficulties in completing tasks that required greater effort such as playing sports. Patients also felt fatigue and muscle weakness, and side effects from their medicines which made everyday activities like taking the stairs and self-care more difficult. Moreover, participants expressed feeling anxious and depressed, being afraid that their transplant would fail, and thinking about the organ donor and their family. Concerns about returning to work and school and resulting financial difficulties were also emphasized. Taken together, these challenges shape patients' overall experience after their transplant.

In summary, this study has identified several physical, emotional, and social challenges of HT recipients. We will use these results to provide better care and support to HT recipients.

ID: 103

Name: Mohammad Shafiee

Abstract Title: Novel Artificial Intelligence Algorithm Using Donor/Recipient Factors Outperforms Existing Methods in Predicting Kidney Transplant Outcome: A Study of 142,971 Transplants from the SRTR

Lay Summary

A new AI system, by using Donor and Recipient transplant factors surpasses the existing system.

Commonly used decision-making tools in organ transplantation use only donor factors only. We introduce an AI system that generates individualized predictions on the outcome of transplantation by learning from donor's and recipient's variables at the same time. Our tool was trained on 142,971 donor-recipient pairs and 472 kidney-related variables in the US kidney transplant dataset from 2000-to 2019 with 5 years of follow-up. The comparison between these tools demonstrated the new tool has significantly higher prediction capability. Ultimately this system leads to better outcomes of transplantation and efficient utilization of organ supplies. Also, this system utilizes donor and recipient variables and analyzes relationships among variables which offers its superiority. Future studies are needed to validate the performance of this tool further.

ID: 104

Name: Olivia Mekhael

Abstract Title: Transcriptomic profiling of small airway epithelium club cells in chronic lung allograft dysfunction

Lay Summary

Lung diseases are the leading cause of death in the world. For patients with end-stage lung diseases from pulmonary fibrosis or emphysema, the only solution is lung transplantation. However, the major barrier to long term survival following lung transplantation is a progressive irreversible scarring which leads to the loss of lung function, termed chronic lung allograft dysfunction (CLAD). Our studies leveraged innovative approaches including the utilization of explanted lungs affected by CLAD and transcriptomic assessments to understand the mechanisms of CLAD. It is currently believed that cumulative inflammatory events lead to repeated injuries to the airway lining cells: this is thought to be a key contributor to CLAD airway scarring. Notably, club cells are airway lining cells that are thought to have protective and anti-inflammatory roles. The loss of club cells have been observed in CLAD. However, it remains unclear how and why club cells are downregulated in CLAD. Our findings show increased cell death and senescence processes and reduced proliferation in CLAD club cells compared to controls. Thus, this study provides insight into potential mechanisms underlying CLAD pathogenesis. Importantly, this knowledge will potentially enable us to develop targeted interventional strategies to restore club cell function, and ultimately mitigate CLAD.

ID: 105

Name: Philip Halloran

Abstract Title: Automated histology lesion interpretation in kidney transplant biopsies –how using strict decision trees differs from practical application of Banff 2019 guidelines

Lay Summary

Disease and transplant rejection are usually diagnosed in kidney transplants by a pathologist viewing biopsies of the kidney using a microscope and following a set of guidelines to describe what they see. Recognition of visual patterns can lead to disagreements between different experts. We created a computer program (updated from an existing program following an older version of the guidelines) that could take biopsy information and strictly apply guidelines to give an automatic diagnosis. We compared these automatic diagnoses with the pathologist's diagnoses assigned to the biopsies, and also to molecular sign-outs for the same biopsies.

We found that the local diagnoses agreed more with the molecular sign-outs than the automatic diagnoses did. Specific patterns in the biopsies led to frequent disagreement when compared to automatic diagnoses. Our new automated algorithm produced fewer disagreements with molecular signs-out compared to our previous algorithm that used an older version of the pathology guidelines.

It is possible to use computer programs to describe disease in kidney transplant biopsies. However, our study suggests that experience and skill of the trained pathologist adds important value to the biopsy interpretation, versus using a computer program that strictly follows the guidelines.

ID: 106

Name: Mohammad Shafiee

Abstract Title: Deep neural network model to determine and rank the predictors of failure time in kidney transplantation in patients younger than 18

Lay Summary

A new Artificial Intelligence model determines the most important transplant donor and recipient factors impacting on rejection time of kidney transplants in patients who are younger than 18 years. The model was trained with numerous datasets related to kidney transplants. Two models were used in this study; the first model predicted the time of kidney failure, and the second model learned the importance of donor-recipient factors before and after transplantation.

These models used a large dataset (10,788 records of recipients and their donors) with artificial intelligence to learn the ordinal pattern of factors affecting graft failure in the younger population. By learning such features, some influential factors can be found which become interesting subjects for future research studies.

ID: 107

Name: Maria Pucci

Abstract Title: Construct validity of the PROMIS® preference-based summary score (PROPr) in patients with liver transplant

Lay Summary

About one in three patients after liver transplantation experience persistent physical symptoms and emotional symptoms (e.g., anxiety, fatigue, sleep disturbance, pain, etc.) and impaired health-related quality of life. The Patient-Reported Outcomes Measurement Information System® (PROMIS®)-Preference (PROPr) Summary Score is calculated from 7 PROMIS domains: depression, physical functioning, sleep disturbance, cognitive function-abilities, ability to participate in social roles, and fatigue. The aim of this study was to assess the validity of PROPr using established questionnaires (EQ-5D-5L and SF-6D®). Our results support the validity of the PROPr score and support the use of PROPr and PROMIS® tools in patients with liver transplant.

ID: 108

Name: Sofia Farkona

Abstract Title: How does anti-Human Leukocyte antigen class I antibody signal in human glomerular endothelial cells to increase LGALS1 expression

Lay Summary

Kidney transplantation is the best treatment for end stage kidney disease. However, most kidneys fail prematurely. The main cause of premature graft loss is antibody mediated rejection (AMR), caused by antibodies against specific proteins expressed by the cells from the transplanted organ, that activate immune cells. Surprisingly, these antibodies only cause rejection in about half of patients who develop them. We recently analyzed how protein levels change in kidneys from patients with AMR. Our data revealed that LGALS1, a protein with immune properties is increased in a specific compartment of AMR kidney, called glomeruli.

Our new goal is to determine the mechanisms that lead to LGALS1 increased levels following exposure of kidney graft cells to these antibodies and identification of specific modifications called phosphorylation on proteins that are known to activate certain cellular mechanisms. We firstly assessed our ability to isolate phosphorylated sites of proteins from kidney graft cells. We isolated proteins from our cells and used a material highly attracted to phosphorylation modification to enrich our samples with phosphorylated protein parts. From our pilot experiment we identified 6000 phosphorylated protein sites. With these encouraging results will now identify modified protein sites of our cells following their exposure these antibodies.

ID: 109

Name: Anne Halpin

Abstract Title: AT1R antibody ELISA assay: Naturally-occurring antibodies as a source of interference

Lay Summary

We sometimes we see organ rejection when no antibodies to donor immune markers are detected. Antibodies to the 'Angiotensin II, Type 1 Receptor' (also called AT1R) have been shown in some studies to be linked to transplant rejection.

It is vital in the clinical laboratory to prove that the tests that we use are providing the correct information. The test used to measure AT1R antibodies appears to sometimes give a positive result due to antibodies that are NOT AT1R antibodies. This is called a false positive. We examined the laboratory method that is widely used to measure AT1R antibodies and found that if we first treated patient blood with tiny particles, we could remove reactivity in this test but we were not sure what was being removed. We tested these tiny particles to confirm they do not remove antibody to the true AT1R target. These particles do have a sugar that humans naturally make antibody against. We think that this sugar is present in the AT1R antibody test resulting in false positive reactions. We could start using these particles to improve this AT1R antibody test and to help us understand if antibodies to the AT1R protein are truly important in transplantation.

ID: 111

Name: David Fung

Abstract Title: Rejection rates of lung transplant patients with reduced renal function on a sirolimus based immunosuppression regimen: A cohort characterization study

Lay Summary

All lung transplant patients require immunosuppression to prevent graft rejection. Calcineurin inhibitors (CNIs), are commonly used for maintenance immunosuppression, but have associated side effects including nephrotoxicity. Sirolimus is used to prevent further renal injury but there is little literature examining adverse event rates of CNI versus sirolimus in the context of a regimen that includes mycophenolate mofetil and prednisone. This study aims to characterize the outcomes of patients switched to a sirolimus-based regimen. We reviewed charts of transplant patients in our instution and identified those on sirolimus. We looked at rejection rates as well as sirolimus' effect on kidney function, urine protein levels, and blood triglyceride levels. WE found that 22% of patients acute rejection and 30% developed chronic graft dysfunction. Long-term kidneyfunction improved in 31% of patients. However, worsening urine protein levels occurred in 47% of patients and worsening blood triglycerides occured in 56% of patients. Overall, improvement in kidney function occurred in 30% of patients after switching to sirolimus, however rates of rejection, worsening proteinuria and triglyceridemia remain substantial and highlight the need for close monitoring of these patients.

ID: 113

Name: John Gill

Abstract Title: Use of cell free DNA to guide immunosuppression minimization in a patient with a donor derived cancer

Lay Summary

Immunosuppressant drugs are essential to prevent rejection but sometimes must be discontinued because of serious side effects or unanticipated patient risk. We describe a case where a cancer from a living donor was transmitted to a recipient in the transplant kidney. This required a dramatic reduction in immunosuppressant medication early after transplantation when the risk of rejection is high to prevent cancer in the recipient. The use of a novel test (cell free DNA) allowed us to monitor for rejection in the recipient after the anti-rejection medicine were withdrawn without the need for biopsy despite significant variations in the patient's kidney function. After 15 months of follow up, the patient has not developed cancer or rejection. The cell free DNA test allowed us to safely withdraw anti-rejection drugs very early after the transplant, without the need for biopsy.

ID: 114

Name: Wajiha Ghazi

Abstract Title: PROMIS physical function scores are associated with health-related quality of life among solid organ transplant recipients

Lay Summary

Many solid organ transplant recipients have low physical function which impacts their ability to perform activities of daily living and engage in social activities. Low physical function is associated with poor quality of life. In this study, we wanted to assess the association of physical function with health-related quality of life among solid organ transplant recipients. Physical function was measured using the Patient Reported Outcomes Measurement Information System (PROMIS) computer adaptive test (CAT). PROMIS CATs are brief and precise, and they personalize the assessment. Health-related quality of life was measured using the EQ-5D-5L questionnaire which covers five domains (mobility, self-care, usual activities, pain or discomfort and depression). We found that solid organ transplant recipients with higher PROMIS physical function scores reported better overall health related quality of life and had no mobility problems. These results support the validity of the PROMIS CAT and help the interpretation of PROMIS physical function scores. We propose that the PROMIS CAT could be considered to monitor physical function among solid organ transplant recipients to identify the need for rehabilitation and to monitor the impact of exercise.

ID: 115

Name: Lauren Westhaver

Abstract Title: Quantitation of mitochondrial damage-associated molecular patterns in perfusate and bile for analysis of donor liver quality during ex-vivo NMP

Lay Summary

Liver disease in Canada is on the rise, and an increasing number of people require a liver transplantation. Unfortunately, there are more people who require a new liver than there are donors to provide them. To expand the pool of available donor livers, suboptimal livers are being transplanted more frequently. These suboptimal livers are more vulnerable to damage during transplantation. A process called normothermic machine perfusion (NMP) is used to protect less-healthy livers from damage, and to preserve them for longer periods before transplantation. This is done by continuously pumping oxygen and nutrient-rich fluid through the liver once it is removed from the donor, until it is transplanted. During NMP, there is an opportunity to measure the function of the liver before it is transplanted, but there is still a need for a universal test that can do this. We designed a test to measure liver damage during NMP by using a technology called qPCR found in many clinical laboratories. This test may allow the health and function of donor livers to be predicted, leading to less livers being discarded that might have otherwise been used for transplantation.

ID: 117

Name: Yulia Vaisbourd

Abstract Title: Differences in Medication Adherence between Preemptive and Post-dialysis Young Kidney Transplant Recipients

Lay Summary

Kidneys transplanted into patients who received the transplant without ever receiving dialysis (termed pre-emptive transplant) last longer than those transplanted into patients who were treated with dialysis before transplant. The reason for this advantage is unknown. We compared 11-24 year-old pre-emptive kidney transplant recipients with recipients who were transplanted after a period of dialysis with respect to how closely they stuck to their prescribed medication regimen. Adherence to the medication regimen was monitored using electronic pillboxes over 15 months. The pillboxes recorded the date and time that every dose was taken. A score of 0%, 50%, or 100% was given for each day depending on whether the patient took none, half, or all prescribed doses.

There were 43 pre-emptive kidney transplant recipients and 103 who were treated with dialysis before transplant. Patients transplanted pre-emptively had higher average daily scores (85%) than those transplanted after dialysis (80%) and had a 76% higher chance of taking their medication as prescribed. Better adherence to the medication regimen among pre-emptive transplant recipients may explain the better kidney transplant survival observed for this group. These findings contribute to our understanding of the importance of medication adherence to kidney transplant survival.

ID: 118

Name: Franz Fenninger

Abstract Title: Comprehensive immune profiling of SARS-CoV-2 infected kidney transplant patients reveals a distinct immunophenotypic signature

Lay Summary

Patients who have had a kidney transplant and are taking immunosuppressive drugs are more likely to have worse outcomes if they get infected with SARS-CoV-2, the virus that causes COVID-19, than a healthy individual.

We looked at the immune system of transplant patients as well as healthy controls during an active SARS-CoV-2 infection and particularly focused on things like their immune cells and antibodies. Transplant recipients had different levels of certain types of immune cells, and are unable to recognize as many different pathogens as an untransplanted individual.

Additionally, people who have had a kidney transplant had lower levels of SARS-CoV-2-specific antibodies and a lower amount of a molecule called MIP-1? (CCL4) in their blood. These are things that are also often observed in patients who contract severe COVID and it helps us to better understand why patients on a kidney transplants have worse COVID-outcomes than the general population.

ID: 119

Name: Pearl Waraich

Abstract Title: Virtual healthcare during the Covid-19 pandemic: are there financial benefits for Solid Organ Transplant families?

Lay Summary

Solid organ transplant (SOT) patients require frequent follow-up and may have to travel great distances to seek healthcare. This may pose a financial burden on families. During the past two years, the COVID-19 pandemic required us to replace some in-person appointments with virtual appointments. As a result of this change in practice, we wanted to see how it affected patient travel costs. All patients currently followed in our transplant program were included in our study and their appointments in the past two years were reviewed. Patient travel costs were estimated using a formula that included car, ferry, hotel, meals, and parking costs, with travel time and distance built into the costing estimates. Data from 148 patients were reviewed. There were 1035 clinic appointments during the study period, 194 (19%) were held virtually. Virtual healthcare visits were associated with reduced travel costs of 70%. Families may spend up to 63% of their income on travel. Our study suggests that virtual healthcare appointments, when possible, significantly reduce family travel costs. This is important given that a high percentage of household income may be spent on travel and that financial support to pay for travel-related costs for some families is necessary.

ID: 120

Name: James Lan

Abstract Title: Impact of a novel ABO-adjusted cPRA metric on access disparity to organ transplantation: a pan-Canadian transplant registry analysis

Lay Summary

The current cPRA metric estimates the proportion of the donor pool that is not compatible with a transplant candidate based on their HLA antibody profile. In this study, we hypothesize that ABO blood group disparity in allocation has persisted because allocation priority is assigned using the conventional HLA cPRA which does not take into account of ABO incompatibility. Here, we developed a novel metric called ABO-adjusted cPRA which simultaneously considers a candidate's immune incompatibility based on both HLA antibodies and ABO blood group. When we applied this novel metric to a pan-Canadian transplant registry dataset, we found that the level of immune incompatibility has been significantly under recognized in blood group O and B candidates using the current cPRA metric. This under-recognition particularly disadvantaged blood group O and B candidates as they were less likely to receive priority for national organ sharing compared to A and AB candidates. In contrast, we showed that application of the novel ABO-adjusted cPRA metric eliminated this disparity by more accurately capturing a candidate's overall immune incompatibility based on both HLA and ABO.

ID: 121

Name: Istvan Mucsi

Abstract Title: Symptom recovery after kidney transplantation – through the PROMIS (®) lens

Lay Summary

Patients awaiting kidney transplant want to know how long it takes before their symptoms (pain, fatigue, anxiety, sleep problems, etc.) and their physical functioning improve after transplant. In this study we asked kidney transplant recipients to complete symptom questionnaires every 2-4 weeks after their transplant.

Participants completed the questionnaires in the hospital on tablet computers, just before discharge and on-line at home thereafter. The scores used in this study are standardized, so that a score of 50 represents the symptom or function level of the U.S. general population.

Our results indicate that emotional and physical symptoms improve to the average level of the US general population in many KTRs by 8-12 weeks after transplant surgery and improve further until week ~20 after transplant. These results will be used to inform patients about the expected time-frame of recovery after transplant.

ID: 122

Name: Manoj Jain

Abstract Title: Histological changes on renal allograft biopsy in patients with recurrent and new onset diabetic nephropathy

Lay Summary

Post-transplant diabetic nephropathy is uncommon cause of graft dysfunction. Recurrent DN patient present earlier as compared to new onset of diabetes after transplantation (NODAT)

ID: 123

Name: Alyssa Yantsis

Abstract Title: Pain and depressive symptoms among solid organ transplant recipients – assessment with PROMIS tools

Lay Summary

Pain is associated with impaired quality of life among solid organ transplant recipients. Patients who report significant pain also report more symptoms of depression; the relationship between pain and depression, however, is complex. In this study we wanted to assess the association between pain intensity and interference among solid organ transplant recipients while also considering depression.

Among adult kidney, kidney-pancreas and liver transplant recipients, depressive symptoms, pain intensity and interference were measured using the Patient Reported Outcomes Measurement Information System (PROMIS) tools. Questionnaires were completed on an electronic data capture platform.

Liver recipients reported higher pain intensity than kidney recipients; however, pain interference was not different between these groups. Transplant recipients with more severe pain reported greater pain interference. Depressive symptoms were more commonly reported among kidney-pancreas and liver compared with kidney recipients. More depressive symptoms were reported by participants with greater pain intensity and interference.

As expected, our results suggest that pain interference is mainly defined by self-reported pain intensity. Depression contributes to the pain experience of solid organ transplant recipients. Our results will be used to design more comprehensive symptom management support for transplant recipients.

ID: 124

Name: Jagbir Gill

Abstract Title: Views on Deemed Consent for Organ Donation from Indigenous and Racialized Communities in Canada: Results from Multi-ethnic Interviews and Focus Groups

Lay Summary

Background: In most of Canada deceased organ donation only happens when a registered organ donor dies or their next of kin has provided consent for donation after death. Deemed consent is a policy used in some places whereby everyone is presumed to be an organ donor unless they have outright declared they do not want to donate their organs. This policy is being considered by several provinces in Canada, but recent public consultation on this issue has been limited, particularly among people from Indigenous and racial and ethnic communities. In this study, we interviewed and did focus groups with multiethnic group of British Columbians to ask them about their views on deemed consent organ donation. Many people were not immediately supportive of deemed consent and were worried that the mandatory aspect of the policy would turn off and may even disadvantage Canadians from certain cultural groups and vulnerable populations. Some of those interviewed compared this policy to COVID-19 mandates during the pandemic and felt that, given the reaction that was seen with COVID-19, this policy may also face resistance. This study highlights the need for more public engagement on deemed consent, especially among Indigenous, racial and ethnic, and vulnerable communities in Canada.

ID: 125

Name: Jagbir Gill

Abstract Title: Gender dynamics among South Asian Living kidney donors and kidney transplant recipients in Canada

Lay Summary

Studies have shown that South Asian Canadians are much less likely to get a living donor kidney transplant, which is the best treatment for patients with kidney failure. We tried to understand how to better support South Asian transplant patients by interviewing South Asian Canadians who had a kidney transplant or who donated one of their kidneys. We also conducted focus groups with South Asian Canadians from the general population to get their views.

We found that, in addition to common barriers to transplant, such as lack of information and the slowness of the transplant workup, South Asian Canadians highlighted extra challenges for South Asian women. Women reported having a harder time finding donors and were sometimes discouraged by family for fear of the impact on their marriage or childbearing prospects. Also, married women who considered donation felt they had to seek approval from their husband and in-laws before donating.

These barriers may make it harder for South Asian women to pursue transplantation and may limit potential donors from donating due to family pressures. This research highlights the need to understand family and gender dynamics in our patients so that we can better support them to get a kidney transplant.

ID: 126

Name: Aisha Memon

Abstract Title: Incidence of Polyomavirus Nephropathy in renal allograft biopsies using clinical and histological parameters and Banff 2019 working group classification to assess clinical outcomes.

Lay Summary

This is an observational study carried out over a period of five years. The incidence of Polyomavirus Nephropathy in our region was found to be around 2%, which is higher than the previously reported incidence in our region, but lower than the internationally published incidence of 5-6% in developed countries. So this study will contribute to establish the incidence of polyomavirus nephropathy in our population. PVN class 1 presented early, was associated with only type 1 viral inclusions and had better clinical outcome as compared to PVN class 2 and 3. One patient of PVN class 2 and One of PVN class 3 expired, while the rest had functional grafts on follow up. In our study, BK viral load in serum was positive in only 50% of cases, however characteristic viral inclusions and SV40 immunohistochemistry was positive in all 6 cases. Banff 2019 working group classification for Polyomavirus nephroapthy can be useful for diagnostic communications with clinicians and in assessment of clinical outcomes.

ID: 127

Name: Aisha Memon

Abstract Title: A 5-year retrospective study of spectrum of histological diagnoses in Renal allograft biopsies from a tertiary care hospital

Lay Summary

This is an observational study based on retrospective analysis done over a period of 5 years to see the frequency of various etiologies responsible for renal graft dysfunction. There is only limited data reported on the spectrum of renal allograft biopsy diagnoses from our region. TCMR still remains the most common cause of renal allografts dysfunction followed by ABMR and IFTA. Clinical presentations cannot reliably assess the cause for renal allograft dysfunction and all the causes of graft dysfunction require different therapeutic approaches. Renal allograft biopsy remains the gold standard for diagnosis and optimal management. Apart from establishing the cause for renal dysfunction, Banff scoring system is also useful in determining the prognosis of individual patients and decide individual therapeutic options

ID: 128

Name: Andres Gomez-Aldana

Abstract Title: Treatment of antibody mediated rejection after liver transplantation. A single Canadian centre experience

Lay Summary

The purpose of this study is to describe the treatment response using plasmapheresis and intravenous immunoglobulin in liver transplant patients who developed antibody-mediated rejection (a rare complication in our patients which could cause graft loss in different organs but in the liver is not entirely described) based on clinical criteria unresponsive to conventional immunosuppressive treatments (IV steroids and thymoglobulin). We identified some liver transplant patients who were treated based on abnormal liver function tests and positive donor-specific antibodies with evidence of rejection, obtaining a clinical remission. Based on these results, we are describing a new entity of rejection classified as T-Cell mediated rejection by histology with high DSAs, resistant to steroids and thyroglobulin (C-AMR), which can be successfully treated with different therapies.

ID: 129

Name: Abubaker M. Sidahmed

Abstract Title: POSITIVE FLOW CYTOMETRY CROSSMATCH IN THE ABSENCE OF DONOR-SPECIFIC ANTI-HUMAN LEUKOCYTE ANTIGEN ANTIBODIES: discordant results in 3 kidney transplant recipient cases

Lay Summary

The flow cytometry crossmatching (FCXM) assay is the most sensitive cell-based method to detect donor-specific antigens (DSAs) and its prognostic value in a pre-transplant screening is well established. Solid-phase assays (SPA) are more sensitive for lower titer antibodies and are better at distinguishing between specific HLA antigens. Complimenting FCXM with SPA offers the potential to better discriminate immunologically relevant positive FCXMs from false-positive results. This is key to maximize the number of safe, compatible transplants to occur. There are still challenges, however, in their interpretation. In this report, we present 3 cases of discordant testing results in potential kidney transplant recipients: positive B cell FCXM and lack of detectable DSAs using routine SPA testing.

ID: 130

Name: Nika Kojc

Abstract Title: Thin glomerular basement membranes in zero-time renal transplant biopsies – Two regional renal pathology centers experience

Lay Summary

We investigate thickness of glomerular basement membrane (GBM) in zero-time renal biopsies performed immediately before or after transplantation. The frequency of thin glomerular basement membrane in the general population may be 5-9%. However, a disease due to thin basement membrane nephropathy is clinically diagnosed in 1% of the population. GBM thickness depends on many reasons. It is important for each renal pathology laboratory to determine normal GBM thickness reference span. The aim of this study was to investigate GBM thickness of zero-time biopsies analyzed at two regional European renal pathology centers, compare experience and correlate clinical data at 1-year follow up biopsy. We retrospectively search GBM thickness of 90 and 77 consecutive zero-time biopsies at first and second center, respectively. We have found similar mean of average GBM thickness and prevalence of thin GBM with Incidence of 12.2 % and 10.4% in first and second center, respectively. Zero-time renal biopsy are of great importance for allograft assessment and comparison with consecutive protocol or indication biopsies.

ID: 131

Name: George Dugbartey

Abstract Title: Supplementation of organ preservation solution with sodium thiosulfate prolongs renal graft and recipient survival after syngeneic orthotopic kidney transplantation in rats

Lay Summary

Introduction: Cold storage at 4°C is the gold standard to preserve organs for transplantation. It decreases metabolic demand and minimizes injury of donor organ due to cessation of blood supply. However, prolonged cold storage causes more damage to the donor organ. In this study, performed kidney transplantation in rats to investigate whether addition a sodium thiosulfate (a drug) to standard preservation solution can protect donor kidneys during prolonged preservation. Method: We removed both kidneys from rats and preserved the left kidneys in a standard preservation solution with or without sodium thiosulfate. After 24 hours of preservation at 4°C, we transplanted the kidneys into another set of rats that also had their two kidneys removed. We monitored the transplant recipient rats from the time of transplant to post-transplant day 14 and then sacrificed them and removed the transplanted kidneys for analysis. Result/Discovery: Kidneys that were preserved in standard preservation solution in which sodium thiosulfate was added were better protected, performed better function and the rats survived longer than donor kidneys that were preserved in standard preservation solution alone. Significance: Our finding could lay the foundation for improved graft preservation and minimize the incidence of post-transplant complications in clinical organ transplantation in the future.

ID: 132

Name: Patrick Luke

Abstract Title: COVID-19 Vaccinations and mortality in transplant patients during the OMICRON era: time to shed vaccination mandates?

Lay Summary

This study shows that vaccination against COVID-19 greatly reduced death rates in transplant patients.

ID: 133

Name: Javier Tomas Solera Rallo

Abstract Title: Impact of Early Outpatient Remdesivir on COVID-19 Outcomes in Organ Transplant Recipients During the Omicron BA.2 Wave

Lay Summary

Solid organ transplant recipients (SOTR) are at high risk for severe COVID-19 infection despite being vaccinated. Previous useful therapies are no longer effective against new circulating variants. We determined the effectiveness of remdesivir (an antiviral intravenous treatment) in reducing the severity of the infection during last Omicron wave. This treatment proved to be useful in previous variants, but no studies have been done for Omicron in transplant patients.

We included in the study 194 adult SOTR with diagnosis of COVID-19 between April and May, 2022. We compared two groups: 85 patients received remdesivir as outpatient, and 109 did not. All the patients were followed for at least 30 days after the COVID-19 infection. We found that patients that received remdesivir presented less risk of hospitalization (only 2.4% of the patients with this treatment were admitted, in comparison with 17.4% of those that did not receive it). The treated patients also had a trend toward reduction in the requirement of oxygen (1.2% versus 7.3%). No patients in the remdesivir group required admission to the ICU, intubation, or died due to COVID-19.

In this study, we found that remdesivir is a useful treatment to reduce the severity of Omicron infection in transplant recipients.

ID: 134

Name: Sonya Cressman

Abstract Title: Patient and health systems costs associated with eplet compatibility-informed kidney transplantation.

Lay Summary

Background

New genomic sequencing will soon improve the longevity of kidney transplants, potentially reducing downstream costs to patients and healthcare systems.

Methods

We partnered with patients to analyse the costs that families pay to manage kidney disease, including lost income, informal caregiving and out-of-pocket spending and costs paid by the healthcare system.

Results

Nine patients/family members contributed to the development of a costing methodology using BC renal administrative data, with results incorporated into the KidneyTx-SIM economic model (https://www.youtube.com/watch?v=PQJNqGDK5G8). Every year patients pay up to $58,365 in lost income while on dialysis and up to $11,682 following a transplant. Informal caregiving costs families up to $9,862 annually on dialysis, compared with $1,180 per year after a successful transplant. Approximately $10,870 is paid out-of-pocket for patients to receive a transplant in Vancouver while out-of-pocket spending for patients on dialysis exceeds $10,020, annually despite re-imbursement grants and insurance coverage.

Conclusions

The proportion of costs that patient pay for kidney disease often exceeds the World Health Organization's recommended threshold for protection against catastrophic healthcare spending—an indicator of the performance of healthcare systems. Technology that improves the lifetime of transplanted kidneys could protect patients and families against the high costs of managing kidney disease.

ID: 135

Name: Mohammad Asgharzadeh

Abstract Title: Wait-time distributions for deceased donor kidney transplantation: Simulation model of current allocation criteria versus eplet compatibility-based allocation

Lay Summary

Genomic sequencing offers new ways to improve the lifetime of donated kidneys and the quality of life for organ recipients. The new technology also presents new questions about how to prioritize which patient groups receive a donated kidney when one becomes available. Our purpose was to build a simulation model to support policy decisions with information from genomic sequencing of donated organs and patients who have end stage kidney disease and are waiting for an organ. The model was based on data from over 1000 patients in British Columbia who had end stage kidney disease and have or have not yet received a kidney transplant from deceased donors. It considers how compatible donated kidneys are with the patients and predicts the impact of the new kidney allocation strategy on the wait times of patients. The introduction of the new genomic sequencing would mean that some patients need to wait longer to receive a donated kidney while others will wait less and receive the benefit of reduced chances of losing their kidneys due to immune rejection. Genomic sequencing can improve the efficiency of the kidney donation process, but careful attention is required to assess who gains and who loses from genomics-informed decisions.

ID: 136

Name: Christie Rampersad

Abstract Title: Association of BKV viremia/nephropathy and adverse alloimmune outcomes in kidney transplant recipients

Lay Summary

Reduction of immunosuppression in kidney transplant recipients who develop BK virus (BKV) must be balanced with increased risk of adverse immune events including rejection. We studied 487 kidney transplant recipients from a single-center who were transplanted 2010-2021 and maintained on modern immunosuppression. Recipients were categorized by whether they had BKV in the blood or on biopsy of the transplanted kidney at six months post-transplant, and this was correlated with later adverse immune outcomes including a primary composite outcome of new antibodies against the transplanted kidney, rejection, and graft loss. Secondary outcomes included rejection, new antibodies against the transplanted kidney, and graft loss not due to death. We found that recipients with BKV infection of the transplanted kidney developed adverse immune outcomes earlier and more frequently than those without BKV. This was seen particularly in recipients with greater degree of immune mismatch between the recipient and the transplanted kidney. This suggests that these recipients are less likely to safely tolerate immunosuppression reduction for treatment of BKV. Future studies are needed to optimize immunosuppression reduction strategies for treating BKV infection and should stratify by degree of immune mismatch to monitor for adverse immune events to improve long-term patient and graft outcomes.

ID: 137

Name: Anita Slominska

Abstract Title: MELD policy, evidence based medicine and implications for liver transplant patients.

Lay Summary

My study is an autobiographical work of narrative medicine that explores my sister's wait for a liver transplant that ended in her death. I examine the effects of liver allocation policy in her personal story. Currently, livers are allocated according to MELD (Model-End-Stage-Liver-Disease), an algorithm that calculates three biochemical indicators to predict 3-month mortality risk. MELD identifies which patients have a more medically urgent need for transplantation using evidence-based analysis of objective data to define disease severity systematically and allocate livers according to greatest need.

My examination of MELD in the context of my sister's story demonstrates how generalizable research evidence can be at odds with clinical and patient experience (that "illness as lived" can differ from "the risk state in the evidence-based guideline."). MELD's narrow focus on measuring mortality endpoints also does not consider quality of life for liver transplant candidates - their symptom burden, functional decline, pain and other suffering. I observe how the objectivity and standardization in evidence-based allocation policy contrasts with the variations and uncertainty of lived patient experience. I highlight the way the pursuit of more efficiency can strangle out personal stories and limit understanding of waiting for a liver transplant from the patient's perspective.

ID: 138

Name: Sajad Moshkelgosha

Abstract Title: Functional analysis of alveolar macrophages associated with acute lung allograft dysfunction

Lay Summary

Lung transplantation (LT) is the only definitive treatment for end-stage lung disease, but survival after LT is shorter than after other organ transplants. The LT recipient loses lung function, begins to have breathing difficulty, and can ultimately die of this condition, which is called “chronic lung allograft dysfunction” (CLAD).

After LT, doctors regularly take samples by flooding a small part of the lungs in salt water and collecting the liquid back. We have been able to collect white blood cells in this liquid and analyze the cells using a new technology called “single cell RNA sequancing”. We identified a specific type of cell (CXCL10+ macrophages) that were only present in patients lungs that are doing poorly.

Our preliminary results suggest that these cells may have aunique functional role in development of CLAD. If it confirmes, it may be possible to prevent CLAD by targeting these cells with a drug in the future. To examine this possibility, we will culture CXCL10+ macrophages in the lab to determine how they may be contributing to CLAD development. This study may pave the way for new treatments that will improve the outlook for Canadians with end-stage lung disease facing the prospect of LT.