Schulich School of Medicine & Dentistry

Western University

Department of Medicine Resident Research Day

Friday, May 8, 2026

Best Western Lamplighter Inn

591 Wellington Road South

London, Ontario

This program has no commercial support.

CME INFORMATION

This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada, and approved by Continuing Professional Development, Schulich School of Medicine & Dentistry, Western University. You may claim a maximum of **3.50 hours** (credits are automatically calculated).

Each participant should claim only those hours of credit that he/she actually spent participating in the educational program.

25% of this program is dedicated to participant interaction.

Scan the QR code to complete the **Participant Evaluation** form online.

Or go to: https://uwo.eu.qualtrics.com/jfe/form/SV_5cYa6ij1JIpgOuW

Learning Objectives

Overall Learning Objectives:

By the end of this research day, participants will be able to:

1. Describe new research findings of relevance to Internal Medicine and related subspecialties.
2. Recognize all types of research conducted by trainees in the Department of Medicine.
3. Identify and promote research successes in the Department of Medicine.

Dr. Saman Maleki Learning Objectives:

By the end of this research day, participants will be able to:

1. Explain the role of the gut microbiome in shaping response and toxicity to immune checkpoint inhibitors in cancer patients.
2. Describe emerging microbiome-based therapeutic strategies, including fecal microbiota transplantation (FMT), aimed at improving immunotherapy efficacy while reducing immune-related adverse events.

Dr. Karen Bosma Learning Objectives:

By the end of this research day, participants will be able to:

1. Describe the key operational, regulatory, and logistical challenges involved in conducting a multinational clinical trial, and strategies to overcome them.
2. Evaluate how key methodological decisions - such as patient population selection, control arm design, and timing of intervention - determine the clinical questions a trial can appropriately answer.

Brief Biosketches for Keynote and Faulty Speakers

Keynote Speaker:

Dr. Saman Maleki, PhD

Dr. Saman Maleki is a translational immuno-oncology scientist at the London Health Sciences Research Institute (LHSCRI), Western University, and the Ontario Institute for Cancer Research (OICR) in Canada. Since starting his independent research career at LHSCRI and Western University in 2019, Dr. Maleki has focused on developing novel strategies to sensitize hard-to-treat cancers to immunotherapy with immune checkpoint inhibitors (ICIs).

He has pioneered clinical trials that, for the first time in Canada and internationally, combine fecal microbiota transplantation (FMT) from healthy donors with ICIs in cancer patients—an advancement over previous approaches using patient donors in refractory settings. Dr. Maleki has led the development of multiple phase I/II trials in advanced melanoma (NCT03772899), metastatic renal cell carcinoma (NCT04163289), metastatic lung cancer and melanoma (NCT04951583), and advanced pancreatic cancer (NCT06393400), serving as co-PI and overseeing protocol development, funding acquisition, and all translational aspects.

In addition to interventional trials, Dr. Maleki leads observational studies exploring gut microbiome changes in melanoma and pancreatic cancer patients during treatment. He established the first stool biobank at London Health Sciences Centre and Western University, with the goal of collecting stool, blood, and clinical data from 1,000 cancer patients and healthy donors.

Dr. Maleki has secured over $13 million in competitive funding since 2019. He chairs the Early-Scientist Committee at SITC, is a former SITC Sparkathon awardee, and was named Researcher of the Year at the Schulich School of Medicine at Western University in 2024. He has published numerous high-impact papers in leading journals, including *Nature Medicine, Molecular Therapy, Journal for Immunotherapy of Cancer, Journal of Immunology, Nature Reviews Drug Discovery, Cell Reports Medicine, and JNCI*.

Faculty Speaker:

Dr. Karen Bosma, MD, FRCPC

Dr. Bosma is an Associate Professor of Medicine at Western University, Associate Scientist at the London Health Sciences Centre Research Institute, and full-time critical care attending physician at University Hospital in London, Canada. Her research focus is mechanical ventilation, specifically patient-ventilator interaction and its impact on acute lung injury, respiratory muscle function, sleep, cognition/delirium, and weaning and recovery from critical illness. She has a special interest in proportional modes of ventilation and was co-PI of the multi-national PROMIZING Study (Proportional Assist Ventilation for Minimizing the Duration of Mechanical Ventilation), recently completed and published in the New England Journal of Medicine in 2025. She is the clinical and research director of the Critical Illness Recovery Program at London Health Sciences Centre.

AGENDA

DOM Resident Research Day 2026

Friday, May 8, 2026

Best Western Lamplighter Inn

Schedule of Events			
Start	**End**		
8:00	8:30	**Breakfast**	**Poster Setup** (Crystal Ballroom South)
8:30	8:40	**Welcome & Opening Remarks by Dr. Vipul Jairath** (Crystal Ballroom North)	
8:40	9:40	**Trainee Oral Presentations (6)** (Crystal Ballroom North) *6 min presentations, 3 min Q&A*	
9:40	10:30	**Keynote – Dr. Saman Maleki** **"Harnessing the Microbiome to Improve Cancer Immunotherapy: Enhancing Response While Reducing Toxicity"** (Crystal Ballroom North) *35 min presentation, 10 min Q&A*	
10:30	11:30	**BREAK**	**Poster Presentation and Judging** (Crystal Ballroom South)
11:30	12:45	**Trainee Oral Presentations – (8)** (Crystal Ballroom North) *10 min presentations, 5 min Q&A*	
12:45	13:45	**LUNCH**	**Poster Presentation and Judging** (Crystal Ballroom South)
13:45	14:00	**GROUP PHOTO** **Everyone is invited to gather in the Crystal Ballroom North for a group photo**	
14:00	14:20	**Faculty Presentation - Dr. Karen Bosma** **"Trials and Tribulations: How to Run a Multinational Clinical Trial - Lessons from the PROMIZING Study"** (Crystal Ballroom North) *15 min presentation, 5 min Q&A*	
14:20	14:30	**Presentation of Awards & Final Remarks** (Crystal Ballroom North)	

Online Poster Repository

https://uwoclinpharm.lawsonresearch.ca/poem/research_day/rd_posters.php

Trainee Oral Presentations

Morning

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9:25	Zendo, Yohanna	PGY-2	Dr. Rodrigo Bagur	Optimizing Patient Trajectory to Improve Comprehensive assessment of Coronary Artery Disease Before TAVI: OPTICS-CAD Observational Study	59

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List of All Submitted Abstracts (in alpha order)

Meisam Abdar Esfahani

Influenza Vaccination in people living with HIV/AIDS: a systematic review and network meta-analysis

Meisam Abdar Esfahani, Lai Honghao, Long Ge, Rachel J Couban, Michael G. DeGroote, Sarah Cairns, Sameer Elsayed, Mohammadreza Rahimi Shahmirzadi, Michael Silverman

Influenza is a significant cause of respiratory infections among individuals with HIV, contributing to hospitalization and mortality. There are concerns about the antibody response, particularly in those with low CD4 and the method of vaccine administration. Studies examining various doses and delivery routes. This review synthetized recent randomized controlled trials offering evaluation of influenza vaccination effectiveness in people living with HIV. We searched database up to March 2025 to identify randomized controlled trials that compared different influenza vaccination in people living with HIV. The protocol for this systematic review was registered in PROSPERO. A total of 18 articles met our eligibility criteria and assessed 12 vaccine strategies. The 15µg IM double dose and 30µg IM booster dose shows superior to standard influenza vaccination in seroconversion rate for H1N1 (RR 1.37 , 95% CI 1.06 to 1.77; RR 1.47, 95% CI 1.06 to 2.03). The 15µg IM double dose also shows superiority to standard influenza vaccination in seroconversion rate for H3N2 (RR 1.23, 95% CI 1.02 to 1.49). Intradermal vaccination has more localized adverse events compared to standard influenza vaccination (RR 2.89, 95% CI 2.26 to 3.68). There was no significant difference between different vaccine strategies on systemic adverse events compared to standard influenza vaccination. We found that 15µg IM double dose vaccine demonstrated better immunogenicity outcomes compared to all other influenza vaccines studied in people living with HIV. Additionally, we observed little to no difference among various influenza vaccination strategies in terms of systemic adverse events.

Romel Abou-Akl

Practice Variation Survey On Investigations And Management Of Eythrocytosis: A Canadian Perspective

Romel Abou-Akl, Jenny Ho, Chai Phua, Benjamin Chin-Yee, Cyrus Hsia

Background The causes of erythrocytosis are diverse, and diagnostic workup can be extensive. Currently, no consensus guidelines exist for investigating erythrocytosis, leading to variability in clinical approaches ranging from limited to comprehensive. Management of secondary erythrocytosis is also inconsistent due to limited evidence-based guidance. Aims This study aimed to survey Canadian specialists to assess their approaches to investigating erythrocytosis and managing secondary erythrocytosis. Methods We developed a 10-minute electronic survey targeting hematologists, medical oncologists, and internists across Canada. The REDCap-based survey included 37 clinical questions addressing diagnostic investigations and their frequency. Response options ranged from “Routinely” to “Never” and context-dependent choices. A total of 30 investigations were assessed, including laboratory, molecular, bone marrow, imaging, and other tests. Management of secondary erythrocytosis was evaluated through 7 questions. Data were analyzed descriptively to identify practice patterns and differences between specialties. Variation was further quantified using normalized Shannon entropy. Results We sent out 453 invitations and 78 responses were received (17.2%). Significant variability was observed in both diagnostic and management practices. Only 48.6% of questions reached ≥50% agreement, and 24.3% exceeded 70% consensus. Most practices showed high entropy, indicating substantial dispersion. Differences between hematologists and internists were noted, particularly in advanced testing. Routine JAK2 V617F testing was reported by 74% of hematologists versus 46% of internists (OR 3.27, p=0.094), suggesting a non-significant trend. Conclusion There is marked variation in erythrocytosis management among Canadian specialists, highlighting the need for larger studies and evidence-based guidelines.

Rabia Afzaal

Baseline Alpha-Fetoprotein (AFP) does not independently predict 6-month hepatic decompensation after TACE in cirrhosis with HCC: A MELD 3.0 adjusted analysis

Rabia Afzaal, Hasan Bualbanat, David G. Hudson, Tamoor Afzaal

Background: Post–transarterial chemoembolization (TACE) hepatic decompensation remains a critical consideration in patients with cirrhosis and hepatocellular carcinoma (HCC). Alpha-fetoprotein (AFP) can often reflect tumor biology and disease burden, but minimal data is present on whether baseline AFP independently predicts post-TACE decompensation. Methods: We conducted a retrospective analysis of an anonymized cohort of 280 patients with cirrhosis and HCC undergoing TACE. The primary outcome was any decompensating event within 6 months (hepatic encephalopathy, spontaneous bacterial peritonitis, variceal bleeding, or ascites). We fit a multivariable logistic regression model including MELD 3.0, AFP, age, sex, portal vein thrombosis, and platelet count. Adjusted odds ratios (aOR) with 95% confidence intervals (CI) were reported. Results: Decompensation occurred in 84/280 patients (30.0%) within 6 months of TACE. In the adjusted model, baseline AFP was not associated with 6-month decompensation (aOR per AFP doubling 1.02, 95% CI 0.87–1.20; p=0.79). Age, sex, PVT, and platelet count were not significantly associated with decompensation in this model. Conclusions: In this cohort of cirrhosis and HCC patients treated with TACE, baseline AFP did not independently predict 6-month hepatic decompensation after adjustment for MELD 3.0 and clinical covariates.

Mashal Ahmed

Bleeding outcomes in patients with thrombocytopenia treated with bruton tyrosine kinase inhibitors: A retrospective cohort study

Mashal Ahmed MD, Ortenc Hoxha, Benjamin Chin-Yee, Cyrus Hsia

Introduction: Bruton tyrosine kinase inhibitors (BTKIs), ibrutinib, acalabrutinib, and zanubrutinib, have demonstrated clinical efficacy in lymphoproliferative neoplasms (LPNs) but are associated with bleeding complications. This study will help elucidate bleeding outcomes during BTKI therapy and concomitant thrombocytopenia. Methods: This retrospective study included adults (≥18 years old) with LPNs who received treatment with BTKI from 2014-2025 at LHSC. Data included baseline demographics, medical history, anticoagulant/antiplatelet use, bleeding events, and laboratory investigations. Major bleeding was

defined as grade ≥3 according to the Common Terminology Criteria for Adverse Events v6.0. Results: 151 patients met inclusion criteria (57 (37.8%) ibrutinib, 39 (25.8%) acalabrutinib, and 55 (36.4%) zanubrutinib) with 104 (68.9%) males and a median age of 71.4 (IQR 11.7). Severe thrombocytopenia (platelet count ≤50 × 10^9/L) occurred in 23 (15.2%) patients (14 (9.3%) ibrutinib, 5 (3.3%) acalabrutinib, and 4 (2.7%) zanubrutinib). Thirty-two (21.2%) patients experienced at least one bleeding event (7 (4.6%) ibrutinib, 9 (6.0%) acalabrutinib, 16 (10.6%) zanubrutinib). Grade 1–2 bleeding events occurred in 26 (17.2%) patients, while major bleeding (grade ≥3) occurred in 6 (4.0%) patients (3 (2.0%) ibrutinib, 1 (0.7%) acalabrutinib, and 2 (1.3%) zanubrutinib). Conclusion: In this preliminary dataset, bleeding events were observed in approximately one-fifth of patients receiving BTKI therapy, the majority of which were low-grade. Major bleeding was uncommon but occurred across all BTKI cohorts. Thrombocytopenia during therapy occurred in a minority of patients and was more frequent in the ibrutinib cohort. Results of final analyses will be presented at the Research Day.

Layan Akkielah

Concurrent Mold, Mycobacterial, and Viral Infections in a Hematopoietic Stem Cell Transplant Recipient Undergoing Lung Transplantation for Graft-Versus-Host Disease

Layan Akkielah, Wayne Leung, Serena Wang, Lili Ataie, Anargyros Xenocostas, Asma Syed, Ying-Han R. Hsu, Michael Silverman, Fatimah AlMutawa, Mohammad Reza Rahimi Shahmirzadi

Hematopoietic stem cell transplant (HSCT) recipients are at high risk for opportunistic infec- tions due to profound immunosuppression and graft-versus-host disease (GvHD). Molds and nontuberculous mycobacteria (NTM) pose diagnostic and therapeutic challenges, es- pecially when infections overlap. A 42-year-old woman with prior allogeneic HSCT for acute myeloid leukemia (AML) developed pulmonary infections with Microascus spp. and Mycobacterium chimaera, later complicated by Aspergillus calidoustus and RSV infection. Initial therapy included voriconazole, amphotericin B, and a macrolide-based multidrug regimen for NTM. Modifications were required for drug resistance and hepatotoxicity. Despite partial response, recurrent fungal infection necessitated prolonged antifungal therapy, including adjunctive inhaled amphotericin B and terbinafine. Ultimately, progres- sive bronchiolitis obliterans prompted bilateral lung transplantation. Explant pathology revealed necrotizing granulomas positive for NTM and Microascus spp. Post-transplant prophylaxis with voriconazole, rifabutin, azithromycin, and inhaled amikacin prevented recurrence, and the patient remained clinically stable at 6-month follow-up. This case illustrates the complexity of managing overlapping mold and NTM infections in HSCT recipients, highlighting the need for individualized, multidisciplinary care. Therapeutic drug monitoring, careful adjustment for drug–drug interactions, and the use of adjunctive inhaled antifungals were critical to achieving a favorable outcome.

Alhanouf Alanazi

Statin Utilization and Determinants of Prescribing Among People Living with HIV in a Canadian Tertiary Care Cohort

Ahmed Bishara, Reza Rahimi, Alhanouf Alanazi, Julia Julkibli, Noor Bumarah, Rachel Foote, Michael Siverman, Fatimah Almutuwa

Background: People living with HIV (PLWH) have an increased risk of atherosclerotic cardiovascular disease (ASCVD) compared with HIV-negative individuals, even with sustained viral suppression. Persistent immune activation and chronic inflammation contribute to this risk and may be modified by statins. However, real-world statin use among PLWH remains incompletely described in Canadian settings. Methods: We conducted a retrospective cohort study of adults aged 20–75 years with confirmed HIV receiving care at a tertiary HIV-specialized center in London, Ontario. Individuals without a lipid panel within three years were excluded unless clinical ASCVD was present. Sociodemographic, behavioral, clinical, laboratory, and HIV-related variables were compared between statin users and non-users. Multivariable logistic regression identified predictors of statin use. Missing data were addressed using

multiple imputation. Results: Among 768 individuals, 257 (33%) were prescribed statins, primarily rosuvastatin and atorvastatin. Statin users were older (median 60 vs. 44 years), more often male, and had higher prevalence of diabetes, hypertension, dyslipidemia, chronic kidney disease, and cardiovascular disease. In adjusted analyses, statin use was associated with age (aOR 1.07 per year), male sex (aOR 2.11), diabetes (aOR 2.64), and dyslipidemia (aOR 8.82), and was inversely associated with ASCVD risk score (aOR 0.96 per 1% increase). Housing instability and stimulant use were more common among non-users. Conclusions: Statin prescribing aligned with cardiometabolic risk, but social vulnerability was associated with lower use, suggesting inequities in preventive care.

Alhanouf Alanazi

Vaccination Coverage and Determinants of Vaccine Uptake Among Adults Living With HIV: A Retrospective Cohort Study

Alhanouf Alanazi, Reza Rahimi, Ahmed Bisharah, Julia Julkibli, Noor Bumarah, Rachel Foote, Michael Silverman, Fatimah Almutawa

Abstract Background: People living with HIV (PLWH) remain at increased risk of vaccine-preventable infections despite effective antiretroviral therapy. Although immunization guidelines are well established, real-world vaccine uptake remains variable and influenced by both clinical and social factors. Methods: We conducted a retrospective cohort study of adult PLWH receiving care at a tertiary HIV clinic in London, Ontario, Canada. Electronic medical records were reviewed to assess vaccination coverage for recommended vaccines, including hepatitis A and B, pneumococcal vaccines, influenza, COVID-19, human papillomavirus, meningococcal vaccines, measles-mumps-rubella, and herpes zoster. Demographic, clinical, and social variables were collected to identify factors associated with vaccine uptake. Multivariable logistic regression analyses were used to evaluate determinants of vaccination. Results: Approximately 756 PLWH were included. Vaccination coverage varied substantially by vaccine type, with higher uptake observed for influenza and COVID-19 vaccines, and lower coverage for hepatitis A, human papillomavirus, and meningococcal vaccines. Higher vaccination uptake was associated with older age, stable housing, access to a primary care provider, and greater comorbidity burden. Lower uptake was observed among individuals with substance use, people who inject drugs, and those with markers of social vulnerability, including recent immigration. Clinical markers such as CD4 count and viral suppression were less strongly associated with vaccine uptake. Conclusions: Vaccination coverage among PLWH remains heterogeneous, with important gaps in several recommended vaccines. Social determinants and healthcare engagement are key drivers of uptake, highlighting the need for targeted, equity-focused interventions.

Zaki Alhashimalsayed

IL23R Gene Polymorphism as a Predictor of Response to Ustekinumab (Stelara) in Patients with Inflammatory Bowel Disease

Zaki Alhashimalsayed, Aze Wilson

Ustekinumab, an interleukin (IL)-12/23 inhibitor, is widely used in inflammatory bowel disease (IBD), though treatment response varies and may be influenced by genetic factors such as IL23R polymorphisms. This single-center retrospective cohort study at Western University evaluated the association between the IL23R 1142G>A variant and treatment outcomes in adult patients with Crohn's disease (CD) or ulcerative colitis (UC) treated with ustekinumab between 2014 and 2024. Patients were genotyped and stratified into wild-type (GG) and variant carriers (GA). Clinical data were obtained from electronic medical records, and outcomes included clinical remission at 6 and 12 months, treatment discontinuation, time to loss of response, treatment duration, and adverse events. Among 95 patients (92.6% CD), 82 (86%) had the GG genotype and 13 (14%) carried the GA variant, with comparable baseline characteristics. At 12 months, clinical remission was achieved in 73.2% of GG patients compared to 46.2% of GA carriers (p=0.06). Treatment discontinuation was significantly higher in GA

carriers (76.9% vs 34.1%, p=0.005), and adverse events were more frequent (30.8% vs 3.7%, p=0.006). Loss of response and time-to-event outcomes were similar between groups. These findings suggest that the IL23R 1142G>A polymorphism is associated with increased treatment discontinuation and adverse events in ustekinumab-treated IBD patients, warranting validation in larger cohorts.

Omar Alhusayni

Tailored Peroral Endoscopic Myotomy for a Long Spastic Segment in Suspected Type III Achalasia Versus EGJOO: A Case Report

Omar Alhusayni, McIntosh Keith

Achalasia is a primary esophageal motility disorder characterized by impaired lower esophageal sphincter relaxation and abnormal peristalsis. Type III achalasia, the spastic form, presents with premature contractions leading to severe dysphagia and chest pain. Esophagogastric junction outflow obstruction can appear similar, showing incomplete LES relaxation and variable peristalsis. Distinguishing between these conditions relies on high-resolution manometry, which also guides procedural planning for peroral endoscopic myotomy . Correlation between the measured spastic segment on HRM and the planned myotomy length is crucial. Case Presentation A 64-year-old woman reported a four year history of progressive dysphagia and vomiting. HRM revealed markedly elevated distal contractile integral values and a 10-cm hypercontractile distal segment with impaired LES relaxation, raising diagnostic uncertainty between type III achalasia and EGJOO. Endoscopy demonstrated a tight, LES without mechanical obstruction. She underwent POEM, during which a long submucosal tunnel was created, and myotomy was extended across the LES into the proximal stomach to encompass the full hypercontractile region identified on HRM. The muscle fibers were carefully divided, achieving complete release of the spastic segment while preserving mucosal integrity. Post-procedure HRM showed full resolution of the spastic zone, normal peristalsis, and appropriate LES relaxation with a residual pressure of 2 mmHg, confirming excellent response. Conclusion This case emphasizes the importance of precise correlation between HRM-defined spastic segment length and tailored myotomy extent. Physiologic guidance during POEM is essential for optimal outcomes in complex spastic esophageal motility disorders such as type III achalasia and EGJOO.

Rakan Alqahtani

Discordance between Liver Frailty Index (LFI) and 6-Minute Walk Distance (6MWD)and association with liver transplant waitlist outcomes

Rakan jknjkn Alqahtani, Mohammed Qasim Khan

Background: Frailty and reduced functional capacity are common in cirrhosis and may predict adverse outcomes on the liver transplant (LT) waitlist beyond MELD-Na. The Liver Frailty Index (LFI) reflects strength, balance, and functional performance, whereas the 6-minute walk distance (6MWD) reflects submaximal endurance and global physiologic reserve. These measures may disagree in individual patients, creating “discordant” phenotypes that could carry different risks. We aimed to determine whether discordance between LFI and 6MWD is associated with LT waitlist outcomes. Methods: We will conduct a retrospective cohort study of adult LT candidates with paired LFI and 6MWD measured during evaluation or early waitlist follow-up. Discordance will be defined a priori using a 2×2 framework (high vs low LFI; low vs high 6MWD), generating four groups: concordant fit, concordant unfit, and two discordant groups (high LFI/high 6MWD and low LFI/low 6MWD). The primary outcome will be an adverse waitlist event (death or dropout), with transplantation treated as a competing event. We will estimate cumulative incidence and compare groups using competing-risks and multi-state time-to-event models, adjusting for MELD-Na and prespecified covariates. Sensitivity analyses will vary cutpoints, restrict to measurements within a prespecified time window, and test interaction between LFI and 6MWD. Results: Analyses are ongoing. We hypothesize that discordant groups will show distinct risks compared with concordant groups, identifying candidates whose vulnerability is not captured by a single functional test. Conclusions:If

validated, LFI–6MWD discordance may refine functional phenotyping and inform individualized prehabilitation, monitoring intensity, and waitlist management in LT candidates.

Monica Arnaldi

Central 22q11.2 Deletion Involving CRKL Presenting in Adulthood: A Genetic Nephrology Case Report

Monica Arnaldi, Leandro Tristao, Samantha Colaiacovo, Lindsay McCaw, Danya Al-Hassani, Zhuan Jiang, Alexander V. Khaw, Shane Smith , Dervla M Connaughton

Congenital anomalies of the kidney and urinary tract (CAKUT) are a leading cause of kidney disease, yet many affected individuals reach adulthood without a definitive etiologic diagnosis. Deletions involving chromosome 22q11.2 are classically associated with DiGeorge/velocardiofacial syndrome due to loss of the TBX1 region. In contrast, deletions restricted to the central LCR22C–D interval that spare TBX1 represent a distinct genomic entity. These central deletions are enriched for congenital solitary kidney, ureteric anomalies, renovascular hypertension, and abnormalities of aortic arch–derived and thoracoabdominal vessels. Accumulating human and experimental evidence implicates CRKL haploinsufficiency as the principal driver of the renal and vascular phenotype. We report a 40-year-old woman with a solitary kidney and refractory hypertension who presented with ischemic stroke in the context of malignant blood pressure elevation. Vascular imaging demonstrated multifocal narrowing of the descending thoracic and abdominal aorta with extensive collateralization. Additional phenotyping identified craniofacial and dental anomalies. Given the combination of CAKUT and extra-renal features, a CAKUT gene panel with exon-level copy-number analysis was performed. This revealed a heterozygous pathogenic ~954.8 kb interstitial deletion at chromosome 22q11.21 (chr22:20,459,997–21,414,845; GRCh37/hg19), sparing TBX1 and encompassing approximately 15 protein-coding genes, including CRKL. This case illustrates an adult presentation of central 22q11.2 deletion and demonstrates that renal and vasculopathy-dominant phenotypes may lack classic features prompting pediatric genetic evaluation. Recognition has important implications for vascular surveillance, hypertension management, neuropsychiatric assessment, and familial counseling. Central 22q11.2 deletions should be considered in adults with CAKUT and thoracoabdominal vascular anomalies.

Monica Arnaldi

Overlooked and Underdiagnosed: Dent Disease in Adults with Chronic Kidney

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Dent disease is an X-linked proximal tubulopathy caused by pathogenic variants in CLCN5 or OCRL. Although classically presenting in childhood with low-molecular-weight proteinuria (LMWP), hypercalciuria, and nephrocalcinosis, it is increasingly recognized in adults with chronic kidney disease (CKD) of unknown etiology. A retrospective review of all referrals (n = 1,010) to a Kidney Genetics Clinic between January 2020 and September 2025. Individuals with CLCN5 variants were identified through phenotype-driven panels, comprehensive kidney gene panels, or reflex exome sequencing. Clinical, biochemical, imaging, and family history data were abstracted from electronic medical records. Ten participants from six families were identified (seven males, three heterozygous females). Among males, median age at CKD onset was 14 years (14–27), with four progressing to kidney failure by a median age of 40 years (40–68). Genetic diagnosis occurred at a median age of 32 years (14–68), frequently after kidney failure onset. LMWP was present in all tested individuals. Hypercalciuria and nephrolithiasis were observed in 30%, and medullary nephrocalcinosis in 20%. Kidney biopsy led to misdiagnoses, including focal segmental glomerulosclerosis and unspecified glomerulonephritis. Pathogenic or likely pathogenic CLCN5 variants were identified in five families (frameshift, nonsense, splice-site, and missense); one family harbored a variant of uncertain significance. Dent disease is underrecognized in adults with CKD. Reliance on biopsy and albumin-based proteinuria assessment contributes to misdiagnosis, whereas

tubular protein assays and genomic testing enable accurate identification. Integrating genomic testing into nephrology practice is essential to improve diagnosis and guide targeted management.

Mark Awad

Routine Needle Aspiration Is Not Associated with Reduced Therapy Duration in Septic Bursitis: A Retrospective Canadian Cohort Study

Mark Awad, Lili Ataie, Esfandiar Shojaei, Fatimah AlMutawa, Michael Silverman, Reza Rahimi Shahmirzadi

Background: Management of septic bursitis remains variable, with no established guidelines. Although routine bursal aspiration is commonly recommended, its impact on treatment duration and clinical outcomes is unclear. This study aimed to evaluate whether aspiration shortens antibiotic therapy or improves outcomes. Methods: We conducted a retrospective cohort study of 124 adult patients diagnosed with septic bursitis at a single-centre infectious diseases clinic between 2015 and 2022. The primary outcome was total antibiotic duration. Secondary outcomes included treatment failure and need for procedural intervention. Patients were stratified based on aspiration and surgical management. Clinical, microbiological, and treatment data were collected and analyzed. Results: The cohort had a mean age of 53.35 ± 15.77 years, with 78.2% male. Most patients (53.2%) were managed with antibiotics alone. Aspiration was performed in 46.8% of cases, typically prior to referral, while 10.5% required surgical intervention. Patients undergoing aspiration had significantly longer antibiotic durations compared to those without aspiration (24.92 ± 7.23 vs. 17.75 ± 8.00 days; p = 0.003). Similarly, surgery was associated with prolonged treatment duration (27.71 ± 7.97 vs. 17.96 ± 7.90 days; p = 0.002). No significant differences were observed based on organism type or antibiotic regimen. Overall, 89.5% of patients achieved clinical resolution. Conclusions: Most cases of septic bursitis were successfully managed with antibiotics alone. Routine aspiration did not shorten treatment duration and was associated with longer courses, likely reflecting greater disease severity. Aspiration may be best reserved for selected cases. Prospective studies are needed to guide standardized management. Routine aspiration shows no clear benefit in septic bursitis management

Ahmad Bafaraj

Feasibility of using Transcranial Doppler measurements to optimize cerebral perfusion and improve outcomes in critically ill patients – the Ultramind Study

Ahmad Bafaraj, John Basmaji, Leann M Blake, Jocelyn Wang, Marat Slessarev

Background: In the ICU, shock doesn’t just threaten the heart; it risks the mind. Up to 80% of patients suffer neurocognitive failure, which often robs survivors of their independence and forces families into exhausting, daily caregiving roles. This creates a lasting socioeconomic crisis that extends far beyond the hospital walls. While impaired brain perfusion drives this damage, clinicians currently lack reliable bedside tools to monitor it in real-time. Transcranial Doppler (TCD) ultrasound offers a non-invasive window into the brain, yet its feasibility in active shock resuscitation remains unproven. Objectives & Methods: We evaluated the feasibility and prognostic value of TCD in a prospective study at LHSC We enrolled adult patients requiring vasopressor support for shock-induced end-organ failure. Within 24 hours of admission, we performed bedside TCD and echocardiography, measuring recruitment, completion, and consent rates while tracking clinical outcomes until discharge. Results: TCD implementation proved entirely feasible, meeting all recruitment and consent targets. Notably, while the Pulsatility Index (PI) showed no significant correlation, higher End-Diastolic Velocity (EdVel) emerged as a significant predictor of increased ICU mortality. Conclusion: Elevated EdVel likely signals cerebral vasoplegia—a dangerous loss of microvascular resistance. These results support a shift toward personalized, neuro-protective resuscitation. By using TCD to move beyond generic systemic targets, we can protect brain health, ultimately improving the quality of life for survivors and alleviating the long-term physical and financial burden on their families

Eisha Baqai

Age Dependent Changes in Isolated Endothelial Cells in Response to Stretch

Eisha Baqai, Amin Manji, Cynthia Lei, Ruud Veldhuizen, Sean Gill

Background: Aging increases susceptibility to disease pathophysiology. Mechanical ventilation is a life-saving intervention but can also injure the lungs. Mechanical forces disrupt junctional proteins that maintain the endothelial barrier, leading to fluid leakage into the lungs. Previous studies have shown greater vascular leakage in aged, ventilated mice compared to younger ones. However, it remains unclear whether this increase in leak is due mechanical ventilation induced stetching of the endothelial barrier or other factors. Hypothesis: Endothelial cells isolated from aged mice will respond differently to stretch compared to those from young mice. Methods: Pulmonary vascular endothelial cell monolayers from young and aged mice were subjected to stretch using the Cell Scale MCB1 Mechanical Stimulation System. Cells were either unstretched (control) or stretched 5% (physiological) or 18% (pathological). Monolayer integrity was then assessed using the XperT assay by measuring fluorescent avidin leakage. Results: The XPerT assay was adapted to measure leakage on a stretchable membrane. In endothelial cells from young mice, no avidin signal was observed in the unstretched or 5% stretch groups, while some signal appeared at 18% stretch. In aged, some signal was present in control, increased at 5%, and was substantially elevated at 18% stretch. Conclusion: The increased avidin signal in cells from aged mice suggests aging increases leakage in vitro similar to what was observed in vivo. It is concluded that leak is primarily driven by endothelial cells rather than their surrounding environment. These findings contribute to a better understanding of how aging responses to mechanical ventilation.

Abigaile Beamish

Heterogeneity of disease location in randomized, placebo-controlled pharmaceutical trials (RCTs) in inflammatory bowel disease (IBD)

Abigaile Beamish, Sudheer Kumar Vuyyuru, Yuhong Yuan, Vipul Jairath

Background Disease location varies among patients with inflammatory bowel disease (IBD) and may influence the efficacy of advanced therapies. We conducted a systematic review to evaluate the distribution of different disease locations Methods MEDLINE, Embase, and Cochrane CENTRAL (via OVID) were systematically searched for randomized, placebo-controlled induction trials in patients with IBD, published from 2000 to March 2025. We extracted data on disease location and assessed whether the studies included disease location in the eligibility criteria or considered it as a stratification factor. Results We identified 367 records and 215 underwent full text review. In total 139 RCTs met inclusion criteria. Among these 71 RCTs included patients with CD (n = 25616) and 68 UC (n = 22959). Among the CD studies, 24.9% (n = 6374) of patients had ileal disease, 36.0% (n = 9210) ileocolonic, 33.1% (n=8467) isolated colonic and 4.1% (n = 1056) had upper GI involvement. Among UC studies, only 2.2% (n = 509) patients had proctitis, 49.9% (n = 11455) left sided colitis, and 37.2% (n=8552) extensive/pancolitis. Although the majority of studies (n=37) did not include patients with proctitis, only 31 explicitly listed proctitis as an exclusion criterion. No RCT stratified patients based on disease location in randomization; and 27 RCTs (CD:12, UC:15) reported outcomes based on disease locations. Conclusions This systematic review provides valuable insights into the distribution of disease location and extent among patients participating with IBD clinical trials. Most CD trials included patients with ileocolonic disease location and patients with proctitis are generally excluded from UC trials.

Garth Blackler

Reprogramming pathologic synovial macrophages and fibroblasts with semaglutide in knee osteoarthritis

Garth Blackler, Joseph Klapak, Jan Tuckermann, Matthew W. Grol, C. Thomas Appleton

Introduction: Clinical trials have demonstrated that semaglutide, a glucagon-like peptide-1 receptor (GLP-1R) agonist may reduce osteoarthritis (OA) associated pain. Whether these effects are due to weight loss or GLP-1R activation in joint cells remains unclear. Synovial macrophages and fibroblasts express the GLP-1R and pathologic changes in both cell types are associated with worse knee OA pain. These pathologic changes include impaired macrophage function, inflammatory activation, dysregulated tissue remodeling, and loss of lining-fibroblast-state. Since these cells express the GLP-1R, they may be key responders to semaglutide. However, the effect of semaglutide on synovial macrophages and fibroblasts remains unknown. Methods: Synovial tissue explants (n=4), collected at knee arthroplasty, were cultured with semaglutide or control for 24-hours and single-cell RNA and ATAC sequencing were performed. OA synovial macrophage function was measured using a phagocytosis assay. Results: Semaglutide activated epigenomic and transcriptomic signatures of GLP-1R signaling. Additionally, semaglutide activated transcriptional programs associated with immune function (phagocytosis) and regulation of inflammation in synovial macrophages. Further, semaglutide improved macrophage phagocytic function (number of macrophages with phagosomes/total number of macrophages, 0.69[95%CI 0.54-0.83] semaglutide vs 0.46 [0.08-0.83] control, $p<0.05$). Synovial fibroblasts activated transcriptional programs associated with regulation of tissue remodeling and shifted their phenotype towards a lining-like state in response to semaglutide. Conclusion: Our data suggests that semaglutide may reverse some of the pathological changes seen in OA synovial macrophages and fibroblasts. Future studies should investigate if the reversal of these changes are sufficient to improve pain, functional, and structural outcomes in OA.

Leann Blake

Clinical Impact and Cost-Effectiveness of Reducing Non-evidence-based Vitamin Supplementation Prescribing on Internal Medicine Wards: A Quality Improvement Initiative.

Leann Blake, Leah Kanee, Marah Abdelkader, Anthony Luginaah, Sukhleen Nagra, Steven Wang, Joyce Yan, Erin Spicer

Background: Vitamin and multivitamin prescriptions are often continued during hospitalization without clear indications. Decision support data from LHSC showed 30,706 multivitamin and 5,725 vitamin C administrations over one year across eight Internal Medicine teams, though clinical reasoning was rarely documented. Non-evidence-based supplementation can contribute to polypharmacy and avoidable costs. Aim: By September 2025, eliminate non-evidence-based vitamin C and multivitamin prescribing on Internal Medicine wards by limiting supplementation to patients with documented indications (scurvy, alcohol use disorder, gastric bypass surgery, or severe malnutrition). Methods: Following the IHI Model for Improvement, we conducted semi-structured interviews with patients (n=9), physicians/residents (n=5), and a pharmacist (n=1). Responses informed a root cause analysis, mapped onto a fishbone diagram. Interventions were ranked using an impact-effort matrix, and iterative Plan-Do-Study-Act cycles tested highest-priority changes. Outcome measures included the proportion of supplement orders with a documented indication and total monthly administrations. Balancing measures included patient experience and adverse events. Findings: Interviews revealed clinician uncertainty regarding evidence-based indications, absence of EMR flags, inconsistent documentation, review, and variable patient expectations. Early PDSA cycles included educational infographics and an EMR pop-up prompting prescribers to confirm valid indications. Conclusions: Interdisciplinary stakeholder input was essential for root cause analysis and developing effective, feasible solutions. Our QI project revealed that education is more impactful when combined with clinical decision support solutions (EMR pop-ups). Reducing non-evidence-based supplementation could eliminate over 36,000 unnecessary supplement administrations annually, saving an estimated $4585.09 on Internal Medicine services alone and serve as a model for other units.

Monica Boctor

Beyond Conventional Treatment: A Case Series of the Use of Continuous Subcutaneous Hydrocortisone Infusion in the Treatment of Adrenal Insufficiency

Monica Boctor, Stan Van Uum

Background: Standard treatment of adrenal insufficiency (AI) involves oral hydrocortisone, often in multiple daily doses. Despite appropriate treatment, some patients continue to experience significant symptoms of hypocortisolism, such as frequent adrenal crises and impaired quality of life. This is attributed to the suboptimal ability of oral hydrocortisone to replicate the rhythm of cortisol secretion. Continuous subcutaneous hydrocortisone infusion (CSHI) may provide a more physiological pattern of cortisol delivery. Presented here are cases and patient testimonials highlighting the impact of CSHI. Cases: A 46 year old female with AI, on oral hydrocortisone (total daily dose 25 mg) continued to have significant symptoms. She was unable to sustain full work days, frequently needing extra doses, with poor symptom control between doses, and not responding to dose adjustments. After initiation of CSHI, she reported rapid and significant improvement in quality of life and functionality. A 47 year old female with confirmed Addison's disease reported severe fatigue and pronounced fluctuations while on oral steroids with prednisone and hydrocortisone. Frequent need for dose adjustments led to stress and variability in steroid exposure. Transition to CSHI resulted in improved energy and reduced symptom variability. Discussion: These cases highlight the ongoing clinical burden of AI despite standard therapy. CSHI represents a promising alternative for patients experiencing majorly disruptive symptoms despite oral therapy, and may significantly improve patient quality of life. Cortisol day curves can be used to assess appropriateness of dosing. Access to CSHI remains a barrier and more study is needed to define the role of CSHI in practice.

Gabrielle Buckley

Homocitrulline-Directed Immunity Promotes Rheumatoid Arthritis-like Disease in HLA-DR4 Transgenic Mice

Gabrielle Buckley, Sheri Saunders, Ewa Cairns, Lillian Barra

Background: Rheumatoid arthritis (RA) is a chronic autoimmune disease characterized by persistent inflammation of the synovial joints, ultimately causing cartilage degradation and bone damage. Risk of RA development is strongly associated with the presence of specific HLA-DRB1 alleles, including HLA-DRB1*0401. Anti-citrullinated protein autoantibodies (ACPAs) have been linked to HLA-DRB1*0401 expression and are well-established in RA pathogenesis. However, emerging evidence suggests that anti-homocitrullinated protein autoantibodies (AHCPAs) may play a role in disease development and could have a similar genetic association. Objective: To investigate whether immune responses directed against homocitrullinated peptides could drive RA-like pathology in HLA-DRB1*0401 transgenic (DR4tg) mice. Methods: DR4tg and C57BL/6 mice were immunized with a synthetic homocitrullinated peptide (HomoCitJED) or saline, followed by a booster 21 days later. 75 days following primary immunization, the mice received weekly HomoCitJED knee intra-articular injections for three consecutive weeks. Mice were euthanized 137 days following primary immunization. Throughout the study, serum was collected to determine autoantibody levels, knee swelling was measured using digital calipers, and histopathological damage was assessed. Results: HomoCitJED immunized DR4tg mice exhibited significantly elevated autoantibody responses against homocitrullinated antigens compared to HomoCitJED immunized C57BL/6 mice and saline immunized controls. Additionally, HomoCitJED immunized DR4tg mice showed significantly greater knee swelling and more severe histopathological damage, which was not accompanied by greater homocitrullinated protein levels in the knee. Conclusion: AHCPAs can drive RA-like pathology in DR4tg mice. Ultimately, this work highlights the relevance of AHCPAs in RA development and supports further exploration of homocitrullinated antigens as therapeutic targets.

Noor BuMurah

Mutation Patterns and Resistance Profiles in HIV Patients Undergoing Treatment at St. Joseph's Hospital: A Cohort Study

Noor BuMurah, Ahmed Bishara, Layan Akkielah, Julia Julkipli, Alhanouf Alanazi, Rachel Foote, Janica Adams, Michael Silverman, Reza Rahimi Shahmirzadi

Background: Despite the success of modern antiretroviral therapy (ART), drug resistance remains a key barrier to sustained viral suppression. This study characterized the prevalence, patterns, and clinical predictors of HIV drug resistance in a regional Canadian cohort to inform treatment strategies. Methods: We conducted a retrospective cohort study of adults (>19 years) receiving HIV care in London, Ontario. Resistance data were obtained from electronic medical records and analyzed with demographic and clinical variables. Results: Resistance data were available for 89% of patients (n = 710), of whom 12.2% (n = 87) had documented resistance. Multi-class mutations were most common (43%). Among patients with resistance, NRTI and NNRTI mutations were frequent (26.4% and 23.0%, respectively), with protease inhibitor mutations in 9.3%. Most pan-susceptible patients had no detected mutations (96.5%, $p < 0.001$). Resistance was more common in those who initiated ART between 2010 and 2019 ($p = 0.04$). Patients with resistance also had higher rates of hypertension (29.9% vs. 19.4%, $p = 0.02$) and cardiovascular disease (12.6% vs. 5.5%, $p = 0.01$). Gaps in resistance documentation were noted, particularly among older and immigrant populations ($p = 0.04$). Conclusion: HIV drug resistance appears driven by prior treatment exposure and multi-class mutations. Its association with cardiometabolic comorbidities suggests a complex interplay with aging. These findings support the need for targeted resistance testing and region-specific surveillance to optimize ART selection and long-term outcomes.

Noor BuMurah

A rare case of Ignatzschineria spp. bacteremia associated with a myiatic wound: Case report and literature review

Noor BuMurah, Sameer Elsayed

This case report describes a rare episode of Ignatzschineria spp. bacteremia in an elderly patient with a maggot-infested postoperative wound, and highlights the clinical features and management challenges associated with this uncommon pathogen. An elderly man was brought to the emergency department of a Canadian tertiary care center with fever and acute confusion. His medical history was notable for parotid squamous cell carcinoma, for which he had undergone right total parotidectomy, neck dissection, and free flap reconstruction one week prior. On presentation, he appeared disoriented and was unable to provide a history. Physical examination revealed a postoperative wound with a drain in situ, complicated by visible maggot infestation. His vital signs were significant for fever (38.4°C) and tachycardia (147 bpm), while other parameters were stable. Initial laboratory investigations were within normal limits. The wound was promptly irrigated, and blood cultures were obtained prior to empiric antimicrobial therapy with ceftriaxone and metronidazole. One of two blood culture sets later grew a gram-negative rod, identified as Ignatzschineria spp. using MALDI-TOF mass spectrometry. Antimicrobial therapy was escalated to intravenous piperacillin–tazobactam, resulting in rapid clinical improvement and clearance of bacteremia on repeat cultures. Ignatzschineria spp. are rare aerobic Gram-negative organisms associated with wound myiasis, with fewer than 20 cases reported worldwide. This case underscores the importance of recognizing the link between myiasis and Ignatzschineria bacteremia, particularly in vulnerable patients, to ensure timely diagnosis and appropriate antimicrobial management.

Carly Burow

Understanding the limitations of fractional exhaled nitric oxide as a longitudinal predictor for remission in patients with moderate to severe asthma while on biologic therapy

Carly Burow, Carly Burow, Jane Ding, Lisa Cameron, Anurag Bhalla, Christopher Licskai, Constance Mackenzi, Hana Serajeddini

BACKGROUND: Fractional exhaled nitric oxide (FeNO) is shown to correlate with asthma exacerbations, poor symptom control, and lung function decline. FeNO is suppressed by some biologics; however, complex interactions, confounders, and even paradoxical responses make its prognostic value while on biologic therapy uncertain. METHODS: Thirty-seven patients with moderate to severe asthma were enrolled between 2012-2016 and followed longitudinally for up to 13 years. FeNO and eosinophils were collected alongside outcomes of interest at routine intervals. Exacerbation rate, lung function (FEV1), asthma symptoms (ACQ-5), and steroid use were analyzed within 6 months of FeNO measurements taken at routine intervals over the study period. RESULTS: Figure 1 summarizes baseline demographic data for patients started on biologic therapy (n=21) or not (n=16). For patients never on or prior to starting a biologic, FeNO was correlated with exacerbation rate within 6 months of measurement (rho=0.41, p=0.002). However, the same relationship was insignificant for patients on biologic therapy (rho=0.03, p=n.s.). Results were consistent when groups were stratified by FeNO > 40 ppb. CONCLUSION: The prognostic value of FeNO may be weakened for patients treated with biologic therapy. Further studies are required to assess differences between biologics; however, these results may justify the use of more comprehensive biomarker monitoring in biologic-treated asthma populations.

Jodi Chiu

Hydroxyurea Treatment in Pregnant Women with Sickle Cell Disease

Jodi Chiu, Ann Malinowski, Vesna Sokol Karadjole, Kevin Kuo, Genevieve Eastabrook, Ziad Solh

Background: Pregnancy in sickle cell disease (SCD) patients is associated with substantial maternal and fetal morbidity, including vaso-occlusive crises, acute chest syndrome, pre-eclampsia, preterm birth, and fetal growth restriction. Disease-modifying treatment during pregnancy is limited to hydroxyurea and red cell transfusion. Chronic transfusions may reduce complications, but are not feasible for some patients due to red cell alloimmunization. Hydroxyurea is effective, yet current guidelines recommend discontinuation in pregnancy because of historical teratogenicity concerns based primarily on high-dose animal studies. Emerging human data suggest reassuring outcomes, but evidence remains limited, and practice is variable across North America. We aimed to describe maternal and neonatal outcomes among SCD patients exposed to hydroxyurea during pregnancy compared with non-exposed controls. Methods: We conducted a retrospective cohort study at London Health Sciences Centre between January 2015 and December 2023. Data were collected from electronic and archived charts, including demographics, pregnancy course, hospitalizations, delivery characteristics, and neonatal outcomes. Outcomes were compared with matched control patients. Results: We included 10 patients: four HbSS patients exposed to hydroxyurea, and six controls (1 HbSS, 5 HbSC). All hydroxyurea-exposed pregnancies resulted in live births. Three deliveries occurred at term and one at 36 weeks via emergent Cesarean section following HELLP syndrome. No congenital anomalies were identified. Among controls, four of six infants were born at term; one was small for gestational age. Conclusion: In this high-risk cohort, hydroxyurea exposure was associated with live births and no observed congenital anomalies. Larger studies are needed to better define the safety of hydroxyurea.

Daniel Cui

Cerebral Blood Flow and Amyloid and Tau Pathology in Alzheimer's Disease: A Scoping Review of Regional Associations

Daniel Cui, Taliya Rizvi, Wyatt Pickrell, Donald Salloum, Jaspreet Bhangu

Background: Alzheimer's disease (AD) is a progressive neurodegenerative disorder characterized by amyloid beta (Aβ) plaques and tau neurofibrillary tangles. Cerebral blood flow (CBF) may contribute to AD pathophysiology, but its relationship with these biomarkers remains incompletely characterized.

Objective: To synthesize literature examining associations between cerebral blood flow and biomarkers of neuronal injury, including Aβ and tau, and to identify brain regions in which these relationships are most consistent. Methods: A scoping review was conducted of studies published from 1980 to August 2024 using predefined inclusion criteria. Included studies quantified CBF using arterial spin labeling MRI, dynamic susceptibility contrast MRI, single photon emission computed tomography, or positron emission tomography, and reported correlations with Aβ and tau assessed using positron emission tomography or cerebrospinal fluid analysis. Results: Thirty five studies met inclusion criteria. Lower CBF was associated with higher amyloid burden in 66% (18/27) of studies and higher tau burden in 79% (15/19), indicating negative correlations. For Aβ, this negative correlation, in which lower CBF corresponded to greater deposition, was most consistent in the parietal (80%, 8/10), lateral temporal (75%, 12/16), and medial temporal regions (75%, 6/8). For tau, a similar pattern was most consistent in the medial temporal (86%, 6/7), frontal (83%, 5/6), parietal (80%, 4/5), and lateral temporal regions (78%, 7/9). Conclusion: Reduced CBF is consistently associated with increased amyloid and tau pathology, particularly in temporoparietal and frontal regions, supporting its role as a complementary biomarker for assessing disease burden and early detection in AD.

Mohammad Hossein Derakhshan Nazari

Single-Cell Profiling Identifies an Aberrant Epithelial–Stromal Regenerative Niche Linked to Colitis-Associated Cancer

Mohammad Hossein Derakhshan Nazari, Frederikke Larsen, Mathieu Derouet, Parisa Shooshtari, Samuel Asfaha

Background: Persistent colitis in inflammatory bowel disease (IBD) can progress to colitis-associated colorectal cancer (CA-CRC). Mouse models are widely used to study colitis, but they differ in how well they recapitulate human disease. Notably, only dextran sodium sulfate (DSS)–induced colitis progresses to CA-CRC when treated with carcinogen azoxymethane, whereas other models do not. The cellular and molecular basis of this difference remains unclear. Methods: We performed single-cell RNA sequencing (scRNA-seq) on distal colon tissues from mice with DSS, TNBS, oxazolone (Oxa), or Citrobacter rodentium (Cr)–induced colitis, alongside healthy controls (n = 16 total). Disease induction was validated clinically. Approximately 8,000 cells per mouse were profiled. Data were processed using CellRanger, CellBender, scDblFinder, and Seurat. Cell types were identified through unsupervised clustering and marker-based annotation. Results: A distinct epithelial population emerged in DSS, TNBS, and Oxa models, characterized by expression of pancreatic exocrine enzymes (Cela2a, Cpa1, Prss2, Cel, Pnlip) alongside regenerative markers (Reg3a, Reg3b, Reg3g, Reg2, Reg1), consistent with an exocrine-like regenerative state. Stromal analysis revealed DSS-specific remodeling, including loss of homeostatic fibroblasts and expansion of inflammatory subsets expressing Cxcl13, Cxcl5, and Ptx3. Conclusion: DSS colitis is characterized by coordinated epithelial and stromal remodeling. The emergence of exocrine-like regenerative epithelial cells suggests an injury-driven repair program. Concurrent expansion of fibroblast subsets expressing Cxcl13, Cxcl5, and Ptx3, genes involved in immune recruitment and tissue repair, points to a mesenchymal niche that supports regeneration. These interactions may promote aberrant repair and help explain why CA-CRC develops selectively in DSS.

Christina DiCarlo

Late onset pulmonary aspergillosis following tocilizumab therapy for COVID-19: A case report

Christina Di Carlo, Zayya Zendo, Nikesh Adunuri

Background: Tocilizumab has been used for several years for the treatment of severe COVID-19 infection. While tocilizumab may improve morbidity and mortality in COVID-19 patients, it has also been associated with increased risk of secondary infections such as invasive fungal disease in the acute phase of illness. We report a case of delayed-onset pulmonary aspergillosis occurring 30 months following exposure to tocilizumab for COVID-19 infection. Case Report: A 71-year-old male with a history of severe

COVID-19 pneumonia treated with tocilizumab 30 months prior to presentation reported a one-week history of hemoptysis and dyspnea. He had a history of a renal transplant on chronic immunosuppression for four years. He has radiographic evidence of a cavitary lung lesion compared to normal baseline chest X-ray one year prior. Bronchoscopy with bronchoalveolar lavage confirmed aspergillosis infection for which he was treated with six months of voriconazole with clinical improvement. Conclusion: This case raises the possibility of prolonged susceptibility to opportunistic infections following tocilizumab exposure. This highlights the importance of maintaining clinical vigilance for invasive fungal infections in patients with prior tocilizumab exposure regardless of the time elapsed since administration. Early diagnostic bronchoscopy should be considered in patients with clinical suspicion of fungal infection, particularly in the post-COVID era.

Henri Fero

Impact of Gut Decontamination Strategies on the Clinical, Microbiological, and Ecological Outcomes of Critically Ill Patients Requiring Mechanical Ventilation: A Systematic Review and Meta-analysis

Henri Fero, Brian H Cuthbertson, Louise Rose, Michelle Wong, Kyle Fiorini, Nicolas Orozco, Srinvas Murthy, Reyad Elzaanoun, Leann Blake, Jocelyn Wang, Anushka Hasija, Logan Van Nynatten, Chris Louis McChesney, Kimia Honarmand, Katie Dainty, Bianca Seaton, Alla Iansav

Objective To determine the impact of gut decontamination strategies on patient-level clinical and microbiological outcomes and unit-level ecological outcomes in critically ill patients requiring mechanical ventilation. Data Sources We searched MEDLINE, EMBASE, Cochrane Library, and trial registries from inception to October 7, 2025. Study Selection We included randomized controlled trials evaluating gut decontamination compared to standard care and cohort studies reporting ecological surveillance data in ICUs implementing gut decontamination. Data Extraction We extracted data on study and patient characteristics, gut decontamination regimens, patient outcomes, patient-level microbiology outcomes, and unit-level ecological outcomes. Data Synthesis We identified 39 RCTs (n = 37,449) and 24 cohort studies (n >383,159). Gut decontamination probably reduces hospital mortality (RR 0.92, 95% CI 0.86–0.97, moderate certainty), with regimens including intravenous antibiotics driving this benefit over topical-only regimens. Gut decontamination reduces bloodstream infections (RR 0.68, 95% CI 0.57–0.80, high certainty) and mechanical ventilation duration (MD −0.91 days, 95% CI −1.23 to −0.58, high certainty), and probably reduces VAP (RR 0.44, 95% CI 0.36–0.54, moderate certainty) and therapeutic antibiotic use (RR 0.63, 95% CI 0.49–0.82, moderate certainty). Gut decontamination may not increase antibiotic-resistant organisms or Clostridioides difficile infection at the patient level (low certainty). Unit-level surveillance data suggest gut decontamination may reduce VAP without increasing antimicrobial resistance (low certainty). Conclusion Gut decontamination reduces hospital mortality, mechanical ventilation duration, VAP, bloodstream infections, and therapeutic antibiotic use (moderate to high certainty), and may not increase antimicrobial resistance at the patient or ICU level (low certainty).

Henri Fero

Normothermic Regional Perfusion (NRP) versus DCD without NRP and Donation after Neurological Criteria (DNC) in Liver Transplantation: A Systematic Review and Meta-Analysis

Henri Fero, Usman Ali, Marat Slessarev, Kimia Honarmand, Laura Hornby, Everad Tilokee, John Basmaji

Background: Normothermic regional perfusion (NRP) is an emerging perfusion strategy applied after circulatory determination of death (DCD) prior to organ procurement. Its comparative effectiveness relative to DCD without NRP and donation after neurological criteria (DNC) livers remains uncertain. Methods: We conducted a systematic review and meta-analysis evaluating NRP in DCD liver transplantation across two comparisons: NRP versus DCD without NRP, and NRP versus DNC. Outcomes included recipient mortality, graft loss, re-transplantation, primary non-function (PNF), ischemic cholangiopathy (IC), early allograft dysfunction (EAD), hepatic artery thrombosis (HAT), and length of

stay. Certainty of evidence was assessed using GRADE. Results: Compared to DCD without NRP, NRP was associated with reduced 12-month recipient mortality (RR 0.62, 95% CI 0.44–0.86; low certainty), reduced 12-month graft loss (RR 0.52, 95% CI 0.40–0.66; low certainty), reduced re-transplantation (RR 0.31, 95% CI 0.19–0.49; low certainty), reduced PNF (RR 0.47, 95% CI 0.28–0.82; low certainty), substantially reduced IC (RR 0.17, 95% CI 0.10–0.29; low certainty), reduced EAD (RR 0.65, 95% CI 0.54–0.79; low certainty), and reduced HAT (RR 0.52, 95% CI 0.30–0.88; low certainty). Compared to DNC livers, the direction of effect consistently favoured NRP across outcomes, but all estimates were rated very low certainty due to serious risk of bias, inconsistency, and imprecision. Conclusions: NRP after DCD may substantially improve liver transplant outcomes relative to DCD without NRP, with a signal toward comparability with DNC across key endpoints. All estimates carry important uncertainty driven by non-randomized study designs.

Henri Fero

Point-of-Care Ultrasound-Guided Resuscitation and ICU Mortality in Shock: A retrospective Observational Study

Henri Fero, Nicolas Orozco, Kyle Fiorini, Marat Slessarev, Ross Prager, Ian M. Ball, Robert Arntfield, Diyaa Bokhary, Ahmad Bafaraj, John Basmaji

Background Shock remains a leading cause of ICU death despite advances in critical care. Point-of-care ultrasound (POCUS) enables rapid bedside assessment of cardiac function, volume status, and shock phenotype. While randomized trials suggest mortality benefits with POCUS-guided resuscitation, its effectiveness in routine practice remains uncertain. We examined whether POCUS-guided resuscitation is associated with improved survival in patients with shock. Methods We conducted a retrospective observational study at Victoria Hospital, including patients meeting criteria for shock with target-organ injury on presentation or ICU admission. The exposure was POCUS-guided resuscitation during the index presentation. The primary outcome was ICU mortality. Cox proportional-hazards models were prespecified, adjusting for age, sex, Charlson Comorbidity Index, MODS, admission pH, and shock type. We compared temporal trajectories for norepinephrine equivalents, peak lactate, and cumulative fluid balance. Results We included 600 patients: 382 received POCUS-guided resuscitation and 218 did not. POCUS was associated with lower ICU mortality in univariable (HR 0.73, 95% CI 0.57–0.93) and adjusted analyses (HR 0.64, 95% CI 0.49–0.82; p<0.001). Independent mortality predictors included age (HR 1.02/year; p<0.001), MODS (HR 1.08/point; p<0.001), and admission pH (HR 0.14/unit; p<0.001). Compared to cardiogenic shock, distributive (HR 0.40; p<0.001), hypovolemic (HR 0.47; p=0.005), and mixed shock (HR 0.44; p=0.006) were associated with lower mortality; obstructive and unknown subtypes were not significant. Norepinephrine-equivalent trajectories differed between groups (p=0.001), whereas lactate and cumulative fluid balance did not. Conclusions POCUS-guided resuscitation was independently associated with lower ICU mortality among patients with shock.

Rachel Foote

Adherence to cervical screening and follow-up care in HIV-positive women at a Canadian tertiary care center

Rachel Foote, Julia Julkipli, Alhanouf Alanazi, Ahmed Bishara, Noor BuMurah, Nor Azmaniza Azizam, Janica Adams, Michael Silverman, Reza Rahimi Shahmirzadi

Introduction: Women with human immunodeficiency virus (HIV) are at a significantly increased risk of developing cervical cancer. However, adherence to cervical screening remains suboptimal. Objective: To assess adherence to Pap smear initial screening and follow-up, and to analyze its association with sociodemographic characteristics. Methods: A retrospective cohort study of women with HIV ≥21 years of age who attended SJH's HIV clinic between 2015-2024. Medical records were reviewed to determine Pap smear completion at HIV diagnosis, follow-up adherence, and management of abnormal results. Results: Of 235 women identified, 211 were included. Only 29% (n = 62) underwent Pap smear testing at the time

of HIV diagnosis. Among 148 women with normal initial cytology, 28 (19%) completed three consecutive annual follow-up screenings. Thirty-four women (17%) had atypical squamous cells of undetermined significance results, of whom 29 (85%) underwent appropriate repeat cytology within 6-12 months. Fifty-three women (27%) were diagnosed with low-grade squamous intraepithelial lesion or higher-grade lesions, and 42 (79%) were appropriately referred for colposcopy. Adherence to cervical screening was positively associated with year of HIV diagnosis ($p<0.001$); an association with injection drug use was observed in unadjusted analyses ($p = 0.018$), but did not persist in post-hoc analysis. Conclusion: Substantial gaps exist in cervical cancer screening among women with HIV. Despite guideline recommendations, less than one-third of patients in our cohort received Pap smears at the time of HIV diagnosis, and long-term follow-up adherence was low. Enhanced system-based interventions are required to improve screening continuity and outcomes in this high-risk population.

Yanghao Fu

Engineering Bioluminescent and Immune-Evasive Human Colonic Organoids for Non-Invasive In Vivo Engraftment Tracking in Inflammatory Bowel Disease

Yanghao Fu, Mathieu Derouet, Samuel Asfaha, John Ronald

Inflammatory bowel disease (IBD), encompassing ulcerative colitis and Crohn's disease, is a chronic relapsing disorder characterized by epithelial barrier disruption and progressive mucosal damage [1,2]. Current therapies target immune dysregulation but fail to directly restore damaged epithelium [3,4]. Moreover, up to 40% of patients are reported to exhibit primary non-response to biologic therapies, with some patients requiring surgical resection [5–10], highlighting the need for novel regenerative approaches. Human colonic organoids derived from adult intestinal stem cells represent a promising epithelial regeneration strategy, capable of recapitulating native architecture and differentiating into mature epithelial subtypes following transplantation [11–13]. However, clinical translation has been hindered by poor engraftment efficiency, the absence of non-invasive longitudinal monitoring tools, and immune-mediated rejection of allogeneic donor cells, all of which are obstacles towards universal donor organoid lines [14]. To address this, we engineered patient-derived human colonic organoids with a stable bioluminescent reporter via lentiviral transduction of a constitutively expressed dTomato-Firefly luciferase (EF1α-dt-Fluc2) construct. The line demonstrates preserved proliferative capacity, robust reporter expression, and a linear bioluminescence signal detectable from as few as 1,000 cells in vitro. CRISPR-Cas9-mediated knockout of β2-microglobulin (B2M) was then performed in the same reporter line, eliminating MHC class I surface expression to yield a dual-engineered organoid that is both longitudinally trackable and potentially less immunogenic. These organoids provide an essential tool for in vivo transplantation studies in established mouse models of colonic injury. Reference will be provided upon request.

Caitlin Giannis

Circulating proteins identify persistent inflammation and vascular injury in HIV

Caitlin Giannis, Calvin Voong, Edward Lau, Michael Silverman, Aleksandra Leligdowicz & Mark Chandy

Introduction: People living with HIV (PLHIV) have a two-fold higher risk of cardiovascular disease (CVD), partly driven by chronic immune activation despite antiretroviral therapy (ART). Cannabis use is disproportionately high among PLHIV and has been associated with vascular injury, yet its impact on systemic inflammation remains unclear. This study quantified inflammatory and vascular injury biomarkers in PLHIV with and without cannabis use. We hypothesized that PLHIV would exhibit greater inflammation and vascular injury than controls, and that cannabis exposure would be associated with greater inflammation and vascular injury. Methodology: Plasma was collected from healthy controls (n=21) and PLHIV (n=56), including cannabis users (n=24) and nonusers (n=32). All PLHIV were virally suppressed on ART. Plasma proteins were quantified using a 19-plex custom Luminex panel targeting inflammation and vascular injury and a NuLISA™ 249-plex inflammation panel. Biomarkers were log10-transformed

and analyzed using multivariable linear regression, followed by differential expression and pathway enrichment analyses. Results: Luminex showed that PLHIV had significantly MCP-2, TNF RI, VCAM-1, CXCL11, IL-2Rα, CCL11, ANG-2, TNF RII, MCP-1, and IL-8 compared with controls (FDR<0.05). NuLISA identified 35 upregulated proteins in PLHIV, with enrichment of cytokine and TNF-response signaling, leukocyte chemotaxis, response to bacterium, and T-cell activation. Among PLHIV, no proteins differed between cannabis users and nonusers after FDR correction.Discussion: PLHIV exhibit greater systemic inflammation and vascular activation compared to healthy controls, supporting persistent immune and endothelial dysregulation in PLHIV. Among PLHIV, cannabis use is not associated with greater circulating inflammation or vascular injury.

Maria Grigorescu

Prevalence of Sepsis-Associated Genetic Polymorphisms in a Critically Ill ICU Population

Maria Grigorescu, Hanna Kusznirewicz, Aleksandra Leligdowcz

Sepsis is a life-threatening syndrome characterized by a dysregulated host response to infection, leading to multiorgan failure. Genetic polymorphisms may influence susceptibility to sepsis and clinical outcomes. However, the prevalence of the most commonly reported genetic polymorphisms in local ICU populations is unknown. We aimed to characterize the prevalence of polymorphisms associated with sepsis risk and outcomes in critically ill patients in Southwestern Ontario. Whole blood samples were collected from critically ill adults admitted to London Health Sciences Centre (LHSC) and enrolled in the Early Severe Illness Biology Informatics in Humans (ESTABLISH) cohort. Genomic DNA was extracted and amplified using polymerase chain reaction targeting twelve polymorphisms previously associated with sepsis risk and/or outcomes, focusing on genes involved in immune response and endothelial function. Amplified regions were sequenced by Sanger sequencing, and genotypes were determined from chromatogram analysis using Geneious. Allele frequencies were calculated for each polymorphism. 237 patients were genotyped. Every patient had at least one sepsis-associated polymorphism. Individual polymorphism prevalence ranged from 6%–86%. The most common polymorphism was in Class II Major Histocompatibility Complex Transactivator (CIITA), a gene involved in antigen presentation. Analysis of combinatorial polymorphism permutations and comparative population prevalence is ongoing. Sepsis-associated polymorphisms are common in our ICU population, with substantial variation between loci. These findings provide a foundation for future studies investigating the clinical and biological relevance of these variants. Planned analyses will examine associations with clinical characteristics and outcomes, and inform targeted patient selection for induced pluripotent stem cell models.

Rasam Haghazali

Double Trouble: Bilateral Thigh Abscesses Caused by Mycobacterium chelonae in the Realm of Testosterone Injections

Rasam Haghazali, Lili Ataie, Manal Gabril, Michael Silverman, Fatimah AlMutawa, Reza Rahimi Shahmirzadi

BACKGROUND: Mycobacterium chelonae is a rapidly growing, nontuberculous mycobacterium that causes infections of the skin and soft tissues, usually in people with a compromised immune system or after invasive operations. An unusual instance of bilateral thigh abscesses caused by M. chelonae in an immunocompetent patient who self-administered testosterone injections is described in this study. METHODS: A 52-year-old male with a history of orchiectomy who had been self-injecting testosterone intramuscularly for many years without trouble, presented with persistent, non-tender abscesses at injection sites over four months. Prior drainage and incision techniques, as well as intravenous antibiotic treatments, proved ineffective. Histopathological examination and skin biopsy showed non-necrotizing granulomatous inflammation. M. chelonae was identified by matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) analysis after acid-fast culture of a testosterone vial revealed acid-fast bacilli. RESULTS: A prolonged multidrug regimen consisting of imipenem, moxifloxacin, and azithromycin,

followed by linezolid, was directed by antimicrobial susceptibility testing. Abscesses were surgically removed following a partial antibiotic response. The 12-month course of treatment resulted in a total recovery. CONCLUSION: Even in immunocompetent individuals, this case emphasizes the significance of taking atypical mycobacterial infections into account when treating persistent injection-site abscesses. Successful results depend on culture and molecular diagnosis, followed by customized antibiotic medication, and surgical intervention.

Kirolos Hana

Deep learning prediction of pacing-induced cardiomyopathy using paced QRS morphology and patient demographics

Kirolos Hana, Pavel Antiperovitch, Meichen Liu

Background: Chronic RV pacing can lead to pacing-induced cardiomyopathy (PICM), but clinicians mainly rely on simple measures like pacing burden and QRS duration, which often detect patients only after LV dysfunction has already developed. Recent research has demonstrated that deep learning applied to standard 12-lead ECGs can identify LV dysfunction and predict future cardiomyopathy earlier than traditional ECG criteria. Methods: We plan a single-centre retrospective cohort study of adults with permanent pacemakers and RV pacing burden of at least 40%. Using de-identified data, we will link 12-lead paced ECGs (in XML format) with demographics, comorbidities, device interrogation data, and echocardiograms. The derivation cohort will include patients who have been upgraded to cardiac resynchronization therapy (CRT) for suspected PICM, along with a matched group of RV-paced patients without LV deterioration. A deep learning model will be trained to predict subsequent LV dysfunction or heart failure hospitalization from paced QRS morphology combined with clinical variables. Its performance will be compared to standard predictors (paced QRS duration, RV pacing percentage, baseline LVEF) and then tested in a separate cohort of patients upgraded to left bundle branch area pacing. Results: Data extraction and model development are underway. We will present metrics on discrimination, calibration, and reclassification compared to conventional predictors, as well as performance in the validation cohort. Conclusion: This project aims to determine whether routinely acquired paced ECGs, analyzed with deep learning, can identify pacemaker patients at high risk of PICM earlier and support decisions about closer follow-up or earlier CRT/LBBAP upgrade.

Joella Ho

Human seminal plasma hypersensitivity: a Canadian perspective

Joella Ho, Uliana Kovaltchouk, Samira Jeimy

Human seminal plasma hypersensitivity (SPH) in women is a rare disorder. It may present with local or systemic reactions, the etiology of which are not well-defined. The true prevalence and incidence in Canada is unknown though it is estimated to have a prevalence of ~12% in the United States. To date, there have been no clinical reports of SPH in Canadian literature, despite numerous well-documented cases in other countries. This suggests that SPH may not be readily recognized as a women's health issue by the Canadian medical community. In this case report, we describe the case of a reproductive age female diagnosed with systemic SPH based on history and positive skin testing to seminal fluid, who was successfully treated with a 5-step whole seminal fluid desensitization protocol. SPH remains an important and under-recognized women's health issue in Canada. Increased awareness of the condition may help medical providers include SPH as part of their differential diagnosis for recurrent vulvovaginitis or systemic symptoms post-coitus in patients.

Lynn Huong

Synovial Joint Organ Metabolism: Associations with Knee Osteoarthritis Stage and Disease Activity

Lynn Huong, Harrison Gao, Garth Blackler, Yong Jin (James) Lim, Bradley Urqhart, Tom Appleton

Introduction: Innate immune cell infiltration drives non-resolving synovitis in osteoarthritis (OA), causing worse pain and faster disease progression. Although targeting altered cellular metabolism may improve OA outcomes, synovial metabolic profiles linked to OA-related inflammation and pain remain unknown. We investigated metabolic shifts associated with high disease activity (high pain and inflammation) in early- and late-stage knee OA using metabolomics and transcriptomics. Methods: Synovial fluid (SF) was collected from patients with early- (radiographic grade 0-2) and late-stage (grade 3-4) knee OA. Participants were classified as high or low disease activity based on KOOS (Knee OA Outcome Score) pain scores and ultrasound-measured synovitis (n=23 per group; total n=92). Untargeted metabolomics with chemical derivatization was performed to increase metabolite coverage. Differential metabolites were identified, and enrichment analysis was conducted using Metaboanalyst. Healthy blood-derived macrophages were conditioned with OA SF for 6 hours prior to RNA-sequencing. Gene Set Enrichment Analysis (GSEA) compared transcriptomic responses between disease stage and activity groups. Results: Metabolomic profiles showed decreased energy metabolism, anaplerotic amino acids, and antioxidants in high disease activity and late-stage OA. High disease activity was associated with increased lysophosphatidylcholines and formate metabolites. RNA-sequencing revealed increased cell/oxidative stress and mitochondrial activity, with reduced lipid metabolism and amino acid deficiency in macrophages exposed to high disease activity and early-stage OA SF. Conclusion: Severe knee OA is associated with dysregulated metabolic processes and toxic metabolite accumulation, worsening in late-stage OA. As a chronic joint disease, long-term bioenergetic stress and metabolic exhaustion may underlie non-resolving inflammation, pain, and disease progression.

Marianne Hupé

Factors influencing placebo rates in randomized controlled trials in inflammatory bowel diseases: an umbrella review

Marianne Hupé, Yuhong Yuan, Vipul Jairath

There has been an unexpected resurgence of high placebo rates in recent clinical trials for inflammatory bowel diseases (IBD). Thus, we conducted an umbrella review to summarize the best available evidence for factors which influence placebo rates. Methods A systematic search was conducted in MEDLINE, Embase, and the Cochrane CDSR to identify systematic reviews with meta-analysis focused on factors associated with placebo response and remission rates in placebo-controlled RCTs in IBD. Outcomes evaluated were clinical, endoscopic and histological response and remission in both induction and maintenance phases. For each outcome, placebo rates, non-significant predictors, individual significant predictors and their effect estimates were extracted. Results In total, 18 reviews published between 2004 and 2025 were eligible. Pooled placebo rates and significant predictors of placebo outcomes varied widely across reviews. Some factors reflecting higher baseline disease activity were consistently associated with lower placebo rates. We identified predictors related to outcome measure: definition of outcomes, but also the moment it was measured (earlier measures in induction yielding lower placebo rates) and with central reading (consistently associated with lower placebo rates). Placebo rates increased with treatment route in the following order: oral, topical, subcutaneous and intravenous. Some consistent factors were related to trial design and location: longer maintenance phases, asymmetrical randomization, studies conducted outside of Northen America or with fewer sites consistently having higher placebo rates. Conclusion We identified several factors which consistently influence placebo rates across multiple clinical trials. Implementation of these into trial design may enable the conduct of more efficient RCTs.

Shawnze Ilyas

Predicting Relapse And Sustained Remission After Therapeutic De-Escalation In Ibd: A Systematic Review Of Randomized Trials

Shawnze Ilyas, Jamie Gregor

Background: Therapeutic de-escalation in inflammatory bowel disease (IBD) is increasingly considered to reduce drug toxicity, treatment burden, and costs. However, safe withdrawal of thiopurines, biologics, or JAK inhibitors remains uncertain, and clinically actionable predictors of relapse are not well defined. Methods: A systematic search of PubMed identified randomized controlled trials (RCTs) published from 2014-2025 evaluating planned therapeutic de-escalation in adults with IBD in clinical remission. Outcomes included clinical relapse, sustained remission, and objective biomarkers. Predictors were categorized as biochemical, endoscopic/histologic, pharmacokinetic, or clinical. Results: Nine RCTs met inclusion criteria. Across drug classes, reproducible predictors of relapse were identified. Biochemical: Increased fecal calprotectin (>250 µg/g) and rising C-reactive protein predicted relapse after withdrawal of thiopurines, tumor necrosis factor (TNF) inhibitors, or vedolizumab combination therapy. Endoscopic/histologic: Absence of histologic remission or elevated Crohn's Disease Endoscopic Index of Severity (CDEIS) predicted relapse after thiopurine or infliximab withdrawal and tofacitinib dose reduction. Pharmacokinetic: Low or declining infliximab trough levels, unfavorable anti-TNF pharmacokinetics, and vedolizumab troughs <11-12 µg/mL were associated with relapse, whereas therapeutic levels predicted sustained remission. Clinical: Prior anti-TNF failure, younger age at diagnosis, and active smoking increased relapse risk. Conclusion: Across nine RCTs, normal biomarkers, deep endoscopic/histologic healing, and therapeutic drug exposure predicted successful de-escalation, whereas elevated calprotectin, residual inflammation, and subtherapeutic trough levels predicted relapse. These findings support a biomarker, histologic, and trough guided approach to de-escalation rather than time-based withdrawal.

Faramarz Jabbari-Zadeh

Hematologic Changes Associated with Measles Infection: A Retrospective Chart Review

Faramarz Jabbari-Zadeh, Michael Samuel, Benjamin Hedley, Ana Cabrera, Johan Delport, Benjamin Chin-Yee, Cyrus Hsia

INTRODUCTION: Measles is a highly contagious viral illness that has seen resurgence in recent years. While the classical clinical features of measles are well documented, its diagnostic hematologic abnormalities remain poorly characterized. The current outbreak in Southwestern Ontario, one of the largest known in North America, offers the opportunity to characterize laboratory abnormalities associated with measles, which may yield insights into key clinical features to aid in diagnosis and prognosis. METHODS: We conducted a retrospective chart review at London Health Sciences Centre from January 1, 2025 to April 25, 2025. Two groups were analyzed: patients with laboratory-confirmed measles infection and a control group comprised of patients who tested negative for measles. Primary analysis compared CBC parameters between groups. Secondary analysis assessed whether laboratory changes predicted clinical outcomes. RESULTS: Primary analysis showed statistically significant differences for hemoglobin and eosinophil count, with lower values in measles-positive patients (hemoglobin: $t = 2.75$; $P = 0.0070$; eosinophil count: $t = 2.20$; $P = 0.0298$). In measles-positive patients, anemia was associated with greater rates of hospital admissions ($X2 = 4.75$; $OR = 0.96$; $P = 0.0438$), though this was not associated with differences in other clinical outcomes. CONCLUSIONS: The diagnostic laboratory findings and hematologic abnormalities in measles are nonspecific. The association of anemia in measles-positive patients requiring hospitalization suggests that anemia may predict a more severe disease course. As the diagnosis of measles is based on clinical presentation and confirmed by serology, the role of other laboratory testing is limited but factors such as anemia may be helpful in predicting disease severity.

Hanyu Jiang

Microvascular dysfunction in knee osteoarthritis

Hanyu Jiang, Tom Appleton

Osteoarthritis (OA) causes joint failure with unclear mechanisms. The synovial microvasculature perfuses the joint to maintain homeostasis and its disruption is associated with OA progression and pain. However, how it becomes dysfunctional is unclear. We hypothesize that disruption of the synovial microvasculature accelerates OA, while its protection may slow disease progression. (i) Test whether synovial endothelial cell loss and MVD drive OA progression by selectively ablating synovial endothelial cells in a knee OA rodent model and assessing OA outcomes. (ii) Identify endothelial-protective mechanisms by delivering endothelial-protective interventions in vitro. (iii) Determine whether improvement of endothelial function attenuates OA progression in vivo. (i) Cdh5-Cre+Rosa26-DTR+ mice will receive intra-articular diphtheria toxin to achieve synovial endothelial ablation, followed by knee OA surgery. Histopathology will confirm endothelial loss, OA severity, microvascular barrier function evaluated by leak assay, and 3D microvascular structure by light-sheet microscopy. Pain will be tracked. (ii) Empagliflozin will be delivered to human microvascular endothelial cells and assessed for barrier integrity, angiogenic behaviours, sodium/calcium fluorescent assays, and undergo bulk RNA sequencing. (iii) Outcomes will be assessed like (i) after empagliflozin is delivered to OA mice. This is the first project to dissect the role of synovial microvasculature in OA that integrates both loss-of-function and rescue strategies. This will hopefully establish a mechanistic basis for targeting the synovial endothelium as a disease-modifying target for OA.

Jordan Jordan

Optimizing Guideline-Based Screening for Adults in Southwestern Ontario with Multiple Endocrine Neoplasia Type 1 (MEN1) Syndrome: A Quality Improvement (QI) Initiative

Jordan C. LeSarge, Stan Van Uum, Tayyab S. Khan

MEN1 is a tumour syndrome classically characterized by a predisposition to developing parathyroid tumours, duodenopancreatic neuroendocrine tumours (dp-NETs), and pituitary adenomas.1 Patients have reduced life expectancy, particularly when tumour screening and surveillance is suboptimal.1 The recently updated 2025 MEN1 guidelines are comprehensive; however, their complexity can make incorporation into clinical practice challenging. Through a QI framework, we aim to improve adherence to guideline-based screening in adults with MEN-1 in Southwestern Ontario by at least 20% by 2030. We conducted a retrospective 5-year chart review of all adults with MEN1 followed London Hospitals (n=26) to assess baseline adherence to guideline-based recommendations, defined as completed investigations relative to those due. Baseline screening adherence varied. For parathyroid hyperplasia, calcium was assessed at diagnosis in 57% and annually in 78%. For dp-NETs, gastrin was assessed at diagnosis in 62% and annually in 38%; pancreatic imaging was assessed at diagnosis in 69% and follow-up imaging in 100%. For sellar masses, prolactin and IGF-1 were assessed at diagnosis in 71% and 59% and annually in 67% and 31%, respectively; sellar imaging was assessed at diagnosis in 47% and follow up imaging in 85%. Other tumour screening showed similar variability. QI interventions included sending patient-specific recommendations to their endocrinologist, presenting the guidelines to the division, and placing a guideline summary printout in clinical areas. These interventions may improve guideline-concordance and patient outcomes. Future work will evaluate intervention impact and refine strategies within the QI framework. References: 1. Brandi, M. et al. Lancet. 2025;13:699-721.

Rayyan Kamal

Defining Person-Centred Care in Oncology Through Patient and Caregiver Perspectives: A Convergent Parallel Mixed Methods Study

Rayyan Syed Kamal, Hanna Dutt, Caroline Zhang, Alison Allan, Jacqueline Torti

Background: Person-centred care is widely endorsed in oncology, yet patients and caregivers describe encounters where they feel uncertain, unheard, or unsupported. We sought to identify patient- and caregiver-valued features of care experiences to inform clinician training and improve care. Methods: A convergent parallel mixed-methods study grounded in a constructivist paradigm was conducted. Patients (n=25) and caregivers (n=20) completed surveys on communication, understanding, decision support,

and holistic considerations; semi-structured interviews with patients (n=14) and caregivers (n=6) explored how care in oncology succeeds or breaks down in real encounters. Quantitative data were analyzed descriptively; qualitative data were analyzed using a descriptive/inductive approach and thematic analysis. Results: Surveys suggested information delivery occurs, but understanding and question-resolution are inconsistent (patients: 66% of desired information understood; 58% left with questions answered; 32% reported consideration of non-medical concerns). Caregivers reported similar understanding (64%), lower comfort communicating (55%), and lower ratings for side-effect explanations (40%); only 30% felt caregiver needs were considered. Interview themes emerged: (1) communication needed to be contextualized to the patient/caregivers' situation; (2) feeling heard meant acknowledging the whole person and incorporation of concerns/preferences; (3) supportive care was most meaningful when proactive and addressed realities outside medical care; and (4) continuity across transitions shaped experiences; fragmentation shifted care-navigation burdens onto patients/caregivers. When these were absent, care was associated with distress, mistrust, and necessary self-advocacy. Conclusions: Patient/caregiver highlights teachable competencies for trainees, including tailored explanations, inclusion, proactive supportive care, and ownership across transitions. Ongoing analysis is aimed at translating patient/caregiver-valued experiences into improving oncology training.

Fabiana Kellen

Dual Paradoxical Reactions in Tuberculous Lymphadenitis During and After Pregnancy: Case Report

Fabiana Kellen, Lili Ataie, Fatimah AlMutawa, Michael Silverman, Mohammad Reza Rahimi Shahmirzadi

Background: Paradoxical reactions (PR) in tuberculosis (TB) are defined as clinical or radiologic worsening despite appropriate anti-tuberculous therapy (ATT) and microbiologic response. PR is well described in lymph node TB and the postpartum period due to immune reconstitution. However, PR during pregnancy has not been reported in indexed literature. We describe a unique case of dual PR occurring during pregnancy and postpartum in tuberculous lymphadenitis. Methods: We performed a detailed clinical review of a 23-year-old HIV-negative woman with cervical tuberculous lymphadenitis treated with first-line ATT for nine months, including during pregnancy. Serial clinical assessments, imaging, and repeat lymph node biopsies with acid-fast bacilli smear, PCR, and cultures were used to differentiate PR from relapse or drug resistance. A focused literature search of MEDLINE (via PubMed) and Embase from inception to September 2025 was undertaken to identify comparable cases. Results: At day 68 of treatment during pregnancy, the patient developed progressive cervical lymphadenopathy with serosanguinous drainage, consistent with PR. Following partial improvement, she delivered a healthy infant at treatment completion. At 56 days postpartum, she developed recurrent bilateral lymphadenopathy and a transient pulmonary opacity. Repeat microbiologic investigations were negative for viable Mycobacterium tuberculosis, supporting a second PR. She was managed conservatively with drainage and nonsteroidal anti-inflammatory drugs without corticosteroids or modification of ATT, resulting in complete resolution. Conclusions: PR can occur during pregnancy as well as postpartum. Recognition is essential to avoid misdiagnosis as treatment failure or drug resistance. Conservative management may lead to favorable maternal and neonatal outcomes.

Fabiana Kellen

Pyoderma Gangrenosum Presenting to an Infectious Diseases Clinic: A 2024 Case Series

Fabiana Kellen, Michael Silverman, Esfandiar Shojaei, Mohammad Reza Rahimi Shahmirzadi, Lili Ataie

Background: Pyoderma gangrenosum (PG) is a rare neutrophilic dermatosis characterized by painful ulcerative skin lesions and a lack of definitive diagnostic tests. It is frequently mistaken for infectious conditions, often resulting in inappropriate antibiotic use and delayed immunosuppressive therapy. Although dermatologists are primarily responsible for PG diagnosis and management, infectious disease (ID) clinics commonly encounter PG during early presentations, particularly in patients referred for

presumed cellulitis or wound infections. Objectives: To describe the clinical and demographic characteristics of patients with PG initially assessed in an ID setting and identify patterns that may aid in earlier diagnosis and management. Methods: A retrospective case series was conducted at the Cellulitis Clinic of St. Joseph's Hospital (London, Ontario) from January 2024 to February 2025. Patients with a PARACELSUS score ≥10 were included. Data were collected on demographics, comorbidities, lesion morphology, time to diagnosis, treatments, and laboratory findings. Results: Ten patients met inclusion criteria. The median age was 61.5 years; 60% were female and 90% Caucasian. All patients received antibiotics before diagnosis (median duration: 3.5 weeks), with a median diagnostic delay of 11.5 weeks. Autoimmune diseases were present in 90%, mental health disorders in 50%, and endocrine abnormalities in 60%. Notably, 20% developed PG at sites of previously healed scars—a rare and underreported presentation. Lesions most commonly showed acute deep ulceration (40%) and undermined borders (70%). All patients improved with corticosteroid therapy. Conclusions: PG is frequently encountered in non-dermatologic settings. Early recognition and multidisciplinary management are essential for timely treatment and improved outcomes.

Fatima Khaliq

Prevalence of Paroxysmal Nocturnal Hemoglobinuria Clones and Clinical Outcomes Across Hematologic Disorders: A Systematic Review

Fatima Khaliq, Ahmed Irshad, Alla Iansavitchene, Benjamin Chin-Yee, Cyrus C. Hsia

Background: Paroxysmal nocturnal hemoglobinuria (PNH) is an acquired clonal hemopoietic stem cell disorder characterized by deficiency of glycosylphosphatidylinositol (GPI)-anchored proteins and susceptibility to complement-mediated hemolysis. PNH clones are found across a range of hematologic disorders, yet their prevalence and outcomes remain poorly described. This systematic review examines PNH screening rates in patients with hematologic disorders, characterizes prevalence of PNH clones, and associated clinical outcomes. Methods: Following PRISMA guidelines, we performed a systematic literature search using Medline, Embase, Web of Science, Google Scholar, and Scopus without language restrictions for papers published January 1, 2000, to October 10, 2025. We excluded case reports and case series with fewer than 5 patients. Two reviewers independently screened the studies, with disagreements resolved by a third reviewer. Data was extracted on variables regarding study characteristics, screening practices, and prevalence data across hematologic conditions and will be synthesized using descriptive analysis. Results: Our systematic search identified 1004 studies; 156 full texts were reviewed resulting in 54 meeting inclusion criteria. The number of patients in these studies ranged from 41-320 with patients aged 4 months to 94 years old. PNH screening rates ranged from 30-100%, and PNH clones were identified in 6-46% of patients screened. The most prevalent hematologic disorders evaluated in these studies were aplastic anemia and myelodysplastic syndrome. Final extraction and analysis are underway and will be presented at DOM Resident Research Day. Conclusion: This systematic review will offer insights into PNH screening rates, prevalence of PNH clones, and their outcomes across hematologic disorders.

Hanna Kusznirewicz

Induced Pluripotent Stem Cell Derived Macrophages as a Disease Model for Sepsis

Hanna Kusznirewicz, Amena Aktar, Maria Grigorescu, Poorna Manappurathu Rameshchandran, Mark Chandy, Aleksandra Leligdowicz

Background: Sepsis is a complex, life-threatening syndrome caused by infection and characterized by an exaggerated inflammatory response. The key immune cell in the immune response to infection is the macrophage, a cell responsible for clearing pathogens. Genetic polymorphisms contribute to sepsis heterogeneity, some of which may affect macrophage function. Induced pluripotent stem cells (iPSCs) offer a patient-specific disease model to investigate the effects of genetic variations on macrophage function. Methods: Peripheral blood mononuclear cells from critically ill patients enrolled in the Early

Severe illness Translational Biology Informatics in Humans (ESTABLISH) study will be selected for iPSCs generation. using Sendai virus transduction. iPSCs will be differentiated into macrophages (iPSC-M) using a 21-day protocol in the presence of growth factors and cytokine s, followed by CD14 magnetic positive selection. Lineage progression will be characterized using flow cytometry. Terminal macrophage function will be confirmed using an IgG fluorescent bead phagocytosis assay. Results: Stage-specific marker expression increased at key time points throughout iPSC-M differentiation. Terminally differentiated iPSC-M express the macrophage markers CD45+ and CD14+. . iPSC-M from critically ill patients with genetic polymorphisms c ompared to those without are expected to demonstrate altered cell surface marker expression and reduced phagocytosis. Conclusions: iPSC-derived macrophages provide a patient-specific and scalable platform to study the phenotype and functional impact of genetic polymorphisms. The approach improves our understanding of how patients' genetic predisposition contributes to sepsis pathobiology and may serve as a model for personalized therapeutic strategies for sepsis

Matthew Laird

Evaluating Strategies to Wean Tracheostomized Adult Patients from Invasive Mechanical Ventilation: A Scoping Review Part II

Matthew Laird, James Stevenson, Neciula de Paula Carneiro Porto Gomes, Ron Butler, Alla Iansavitchene, Paul Cameron, Karen J. Bosma

Purpose: This study aims to systematically review and evaluate weaning strategies for tracheostomized adults experiencing prolonged mechanical ventilation, with the goal of identifying effective approaches. Background/Objectives: A significant knowledge gap exists regarding effective weaning strategies for tracheostomized adults on invasive mechanical ventilation. Variations in practice across patient populations, healthcare settings, and multidisciplinary teams create an opportunity to identify optimal strategies Methods: We conducted a systematic review of studies involving adults (≥18 years) with tracheostomy requiring prolonged mechanical ventilation (> 21 days). Following PRISMA guidelines, we performed a systematic literature search in MEDLINE, EMBASE, CENTRAL, CINAHL, Scopus, and PEDro without language exclusions up to December, 2023. Abstracts and full texts were screened in duplicate and data extraction was completed in duplicate. The primary outcome was weaning success, defined by proportion of successfully weaned patients, the duration of weaning, and/or ventilator-free days. Secondary outcomes encompass mechanical ventilation duration, tracheostomy decannulation, ICU and hospital length of stay, hospital mortality, post-hospital survival rates, and physiologic and psychologic endpoints. Results: Of 2118 studies, 33 studies were included. Results of the review previously presented, demonstrated that successful weaning is linked to the use of physiotherapy, progressive tracheostomy collar trials, and inspiratory muscle training, with in-line speaking valves contributing to improved lung recruitment. New key insights of this review include the utility of multidisciplinary team approaches and dedicated weaning centres as strategies for successful weaning. Conclusions: Ultimately, this review will contribute to the development of optimal weaning strategies for patients with prolonged mechanical ventilation.

Frederikke Larsen

Tumor suppressor loss induces transposable element driven viral mimicry to restrain colorectal cancer initiation

Frederikke Larsen, Alice E. Shin, Yanghao Fu, Liyue Zhang, Mathieu Derouet, John Ronald, Samuel Asfaha

Introduction Mutations in the tumor suppressors APC and TP53 are early common events in colorectal cancer (CRC). How these mutations lead to malignant transformation, however, is not well understood. We recently showed that patients with early CRC lesions display decreased transposable element (TE) expression and downstream interferon signaling. TEs are normally silenced repetitive elements

comprising 50% of the genome. Here, we explored the effects of TP53 and APC mutations on TE expression and cancer initiation. Methods To assess the effects of Apc and/or p53 in mice or human cells, we used our Dclk1CreERT2/Apcff mice crossed to Trp53f/f mice or TP53 and/or APC knockout human colonic organoids. TE and interferon expression were assessed by RT-qPCR. To assess effects on cell stemness, colonic organoid self-renewal assays were conducted. A cGAS inhibitor was used to assess the effects of downstream cGAS/STING signaling. Results Using human and mouse colonic epithelial models, we discovered that loss of TP53 and/or APC induced TE expression. In mice, loss of APC and/or TP53 promoted tumorigenesis to varying degrees that inversely correlated with TE expression. TE expression triggered type I interferon signaling that suppressed stemness and tumor initiation. Combined loss of TP53 and APC led to an additive effect on TE activation and antiviral signaling, dependent on the cGAS–STING pathway. Disruption of this pathway abolished this tumor-suppressive effect, promoting expansion of cancer-initiating cells. Discussion Our findings demonstrate that Apc and p53 loss promotes tumorigenesis and expression of TEs that activate and antiviral response that counteracts colorectal cancer initiation.

Graham Lean

Reducing 30-Day Readmissions Following Acute Respiratory Hospitalizations: A Quality Improvement Initiative Targeting Chronic Obstructive Pulmonary Disease

Graham Lean, Stephanie Handsor, Erin Spicer, Kathryn Myers, Kelly MacIsaac, Kathryn Ellett, Daniel Tejada Rojas, Cyan Wen, Radha Joseph

Background: Chronic obstructive pulmonary disease (COPD) exacerbations are a leading cause of 30-day readmissions to the Clinical Teaching Units (CTUs) at London Health Sciences Centre (LHSC). With risk-adjusted readmission rates exceeding provincial benchmarks and ongoing capacity pressures, reducing COPD readmissions is an LHSC priority. We launched a quality improvement initiative to identify modifiable drivers of readmission and implement targeted system-level interventions. Aim: By June 2027, reduce CTU 30-day readmissions to 13.3% (from 15.7-16.2% at LHSC), achieving the provincial median within the GEMINI network. Methods: We conducted a retrospective audit of patients readmitted within 30 days following hospitalization for COPD (2022–2023; n=103 encounters). Guided by the IHI Model for Improvement, we examined treatment variables, discharge documentation, and transitional care supports to identify modifiable drivers of readmission. Findings informed root cause analysis and development of targeted interventions, now under iterative Plan-Do-Study-Act (PDSA) testing. Results: Readmissions clustered early, with 47% occurring within 7 days. Only 72% of discharges included a follow up plan, often relying on primary care without specificity regarding timing and required actions. Uptake of COPD-specific supports was low: only 23% were referred to a COPD navigator, 9% received inhaler education, and 3% were referred to pulmonary rehabilitation. Conclusions: COPD readmissions are driven in part by modifiable gaps in discharge processes and transitional care. Early readmission clustering highlights the importance of timely follow-up and enhanced discharge supports. Potential interventions under evaluation include standardized discharge tools, improved patient education, early post-discharge follow-up, and increased COPD navigator involvement.

Anna Lee

Review on Mucus and Asthma Remission: A Conspicuous Biomarker

Anna Lee, Anurag Bhalla, Ebenezer Ogunsakin, Lisa Cameron, Grace Parraga, Hana Serajeddini

RATIONALE: Current literature has highlighted the role of mucus-plugs in predicting asthma outcomes. The extent to which computed tomography (CT)-quantified mucus-plugs correlate with clinical asthma remission—defined by symptom control, lung function, oral corticosteroid (OCS) use and exacerbation frequency-is under-reported. We conducted a review to evaluate published data investigating the relationship between mucus-plug burden and clinical asthma remission. METHODS: The search was conducted on the Embase, MEDLINE, and Cochrane Central for articles published between 2017 to

October 31, 2025, of adults with asthma and reported mucus burden (n=384). Assessment of any one of the four clinical asthma remission domain variables and objective measurement of mucus-plugs1 were pre-defined inclusion criteria. RESULTS: A total of 37-studies were included. Meta-analysis of published correlations of FEV1 (%) and mucus-plug burden demonstrated a moderate inverse correlation (r= -0.433, p=0.0027) with moderate heterogeneity and low variance (I^2 = 48.1%, τ^2=0.0143). However, mucus-plug burden had no meaningful correlation with symptom burden (r= 0.006, p=0.1281, I^2 = 42.1%, τ^2=0.0099). Few studies reported correlations or comparisons between high and low mucus burden patients for OCS use (n=4 studies) and exacerbation frequency (n=11 studies). CONCLUSIONS: Despite high interest regarding the impact of mucus on disease burden in patients with asthma, published data on the relationship of mucus burden with domains of asthma remission remains limited. Our review suggests a moderate, reliable inverse correlation of mucus burden and lung function. Further studies are required to establish a relationship between symptom severity, OCS use and exacerbations. 1. Dunican et al. JCI (2018).

Nathalie Loeb

Tocilizumab Administration Delay in Cytokine Release Syndrome in Patients Receiving BiTE and CAR-T Cell Therapy: A Quality Improvement Project

Nathalie Loeb, Michael MacNeill, Deanna Caldwell, Arvand Barghi, David Hudson, Uday Deotare, Alan Gob

Patients receiving Bispecific T-cell Engagers (BiTEs) and Chimeric Antigen Receptor (CAR) T-cell therapy are at risk of cytokine release syndrome (CRS), a serious life-threatening adverse event causing fevers, hypoxia, and hypotension. The treatment of moderate-severe CRS is tocilizumab, an interleukin (IL)-6 inhibitor. Delays in tocilizumab administration can lead to increased morbidity and mortality. At LHSC, there have been instances of delay from the time signs and symptoms of CRS are noted to the time tocilizumab is administered to the patient. A Quality Improvement project is underway to reduce the time from CRS symptoms to tocilizumab administration to under one hour by July 1, 2026. To achieve this goal, stakeholder analysis and interviews were held, and a process map of each step between first signs of CRS and drug administration was created. A baseline data analysis was performed on eight tocilizumab administrations between October 2024 and January 2026, which revealed the median time from CRS to tocilizumab administration was 115 minutes; and from drug order to administration was 85 minutes. Two other CAR-T centers in Ontario indicated that standard of care for tocilizumab administration is less than 60 minutes at their centers. Root causes and process measures were identified, and solutions to each were mapped. Two main solutions identified were changing the tocilizumab order-set to urgent (“STAT”), and storing tocilizumab directly on the hematology-oncology ward. Once these changes have been implemented, we will continue to analyze tocilizumab administrations to assess for improvements in time from CRS to tocilizumab administration.

Haitao Lu

ADAR1 and RIPK1 orchestrate the ZBP1-mediated PANoptosis and mouse heart transplant rejection

Haitao Lu, Jifu Jiang, Xuyan Huang, Tianqing Peng, Aaron Haig, Anthony M Jevnikar, Lakshman Gunaratnam, Zhu-Xu Zhang

Despite modern immunosuppressive therapies, early graft injury and endothelial cell death remain major unmet clinical drivers of heart transplant rejection and long-term graft failure. In this study, we identify ZBP1-mediated PANoptosis as a previously unrecognized, clinically relevant cell-death pathway that directly contributes to cardiac allograft injury and rejection. We show that Z-DNA accumulates in cardiac grafts following transplantation, particularly in the microvascular endothelium, where it activates ZBP1 and induces PANoptosis. ADAR1 functions as an early protective checkpoint, limiting ZBP1–RIPK3 complex formation and restraining endothelial cell death during initial graft stress. However, as injury

progresses, RIPK1 amplifies PANoptotic signaling by promoting RIPK3 phosphorylation and stabilizing the ZBP1–RIPK3 complex, leading to sustained inflammatory cell death and graft damage. Critically, in vivo heart transplantation models demonstrate robust upregulation of ZBP1 and Z-DNA within rejecting grafts. Donor heart–specific ZBP1 deficiency markedly suppresses PANoptosis, reduces both acute and chronic graft injury, attenuates anti-donor immune responses, and significantly prolongs long-term graft survival. Clinical implication: These findings position ZBP1-dependent PANoptosis as a mechanistic bridge between non-immune graft injury and alloimmune rejection. Therapeutically targeting ZBP1 offers a non-immunosuppressive, graft-protective strategy that complements existing immunosuppression by preserving endothelial integrity and limiting inflammatory cell death, with the potential to improve long-term outcomes in heart transplantation.

Michael MacNeill

Post-Renal Transplant Erythrocytosis: A Regional Transplant Centre Retrospective Review

Michael MacNeill, Ojan Khosravifar, Jessie Sanghe, Ben Chin-Yee, Cyrus Hsia, Jenny Ho

Post-transplant erythrocytosis (PTE) is a condition of elevated hematocrit/hemoglobin within 24 months post-renal transplant with an estimated incidence of 10-15%. PTE is associated with plethora, headache, and lethargy, as well as complications, including hyperviscosity syndrome and thrombotic events. Management includes angiotensin-converting enzyme inhibitors (ACEis), angiotensin II receptor blockers (ARBs), and/or phlebotomy. We sought to characterize the incidence of PTE, association with adverse events, need for treatment, and risk factors. Methods: We conducted a single-centre retrospective observational study of adult post-renal transplant patients assessing for PTE, defined as a hemoglobin >170 g/L or hematocrit >51% for >1 month within the first 24 months post-transplant, between November 17, 2017 to August 31, 2020. Data was collected on the renal donor, recipient, prior/post-transplant treatment, thrombotic risk factors and adverse events. Results: Three hundred and thirty-nine patients were identified with 19 patients (5.6%) meeting the PTE threshold. For non-PTE patients prior to transplant, 124 (38.8%) were on an ACEi/ARB and 174 (54.4%) were on Erythropoietic-Stimulating Agents (ESAs). For PTE patients, 8 (42.0%) were on an ACEi/ARB prior and 10 (52.3%) were on ESAs. Median peak hemoglobin was 138 g/L (99–225) occurring at a median of 385 days (0–730) post-transplant. PTE median onset was 231 days (84–586) with a median duration of a 106 days (8–438). One PTE patient (5.2%) required treatment phlebotomy plus initiation of an ACEi. One PTE patient (5.2%) developed a venous thromboembolism, compared to the 4.7% thrombotic event rate in non-PTE patients. Final Results/Conclusions: pending

Michael MacNeill

The Efficacy and Safety of Avatrombopag in Elderly Patients with Immune Thrombocytopenia: A Single-Center, Real-World Case Series

Michael MacNeill, Benjamin Chin-Yee, Cyrus Hsia

Background: Avatrombopag is a novel oral thrombopoietin receptor agonist (TPO-RA) for treatment of adults with immune thrombocytopenia (ITP) in second and subsequent-line therapy. Its efficacy and safety in elderly (≥ 65 years old) patients remains limited. Methods: We performed a single centre retrospective review of all patients with ITP who received avatrombopag to evaluate its real-world safety and efficacy, particularly in the elderly. Results: Seventeen patients were identified with a median age 64 years (32–91), 8 elderly, median duration of ITP diagnosis 9 years, and a median of 5 prior therapies (15 had another prior TPO-RA). Median platelet count prior to avatrombopag was 7 × 109/L (<5–145×109/L). Thirteen patients (76%) had complete responses (platelets >100×109/L), including 7 elderly patients, and median time to a partial response (platelets 30–100×109/L) was 8 days. One patient had no response. Thirteen patients (76%) required rescue therapy, with median time to rescue therapy 23 weeks (0–85) and 33 weeks in the elderly patients. Eleven patients (64%) remained on avatrombopag at the time of review with the median avatrombopag exposure 33 weeks (10–98). All avatrombopag cessations were

due to lack of response. Most common adverse events were thrombocytosis, headache, and peripheral edema. One thrombotic event, multivessel coronary artery disease, occurred in an elderly patient with pre-existing significant cardiovascular risk factors. Two patients (11.8%) experienced bleeding events, neither were elderly patients. Conclusions: Overall, avatrombopag was effective and safe in this single-centre case series of heavily pretreated and elderly patients with ITP.

Zainab Mansoor

Pregnancy After Heart Transplantation: A National Survey of Canadian Cardiac Transplant Programs

Zainab Mansoor, Udbhav Kharad, Stuart Smith

Background: Advances in immunosuppression and long-term post-transplant care have led to a growing population of female heart transplant recipients of childbearing age. Pregnancy in this setting is high-risk, carrying significant potential for acute rejection, allograft vasculopathy, hypertensive complications, and adverse fetal outcomes. Despite this, no Canadian consensus framework exists to guide pre-conception counselling, antenatal surveillance, immunosuppression management, or peripartum care in this population, and the degree of practice variability across Canadian programs remains unknown. Objectives: To characterize current clinical practices among Canadian cardiac transplant programs regarding the management of pregnancy in heart transplant recipients, and to identify gaps between existing institutional practice and published guideline recommendations. Methods: A structured, multi-domain questionnaire was developed and will be distributed electronically to cardiac transplant programs across Canada. The survey captures program-level demographic data and solicits responses across eight domains: program volume and patient demographics, pre-pregnancy counselling, immunosuppression selection and target level adjustment, antenatal monitoring and multidisciplinary care structure, complication surveillance, delivery planning, postpartum care and breastfeeding management, and reported clinical outcomes over the preceding decade. Questions include predefined response options with supplementary freehand fields. Results: Data collection is ongoing. Results will be presented at the time of the event. Conclusions Characterizing practice variability across Canadian transplant programs will inform the development of national consensus-driven protocols, supporting standardized, evidence-based care for this complex and high-risk patient population.

Amn Marwaha

Functional Status of ANCA-Associated Vasculitis Before and After Treatment

Amn Marwaha, Richard Yu, Lillian Barra

Background: Despite the chronicity of anti-neutrophil cytoplasmic antibody (ANCA)-associated vasculitis (AAV), the assessment of functional status throughout the disease course is lacking. This study aims to describe the longitudinal functional status in patients with AAV. Methods: This study was a retrospective cohort of 73 patients with AAV at a tertiary care outpatient clinic evaluated at initial visit and 6 months to assess functional status using the Health Assessment Questionnaire (HAQ) and disease progression using the Vasculitis Damage Index (VDI). Statistical analysis involved descriptive statistics, univariable and multivariable regression analysis. Results: A total of 33 female and 40 male patients were included with a mean age of 55.2 (SD 18.2) years. At baseline, disease duration was 2.46 (SD 4.7) years, and the mean HAQ was 0.55 (SD 0.64). Twenty-one patients (29%) were characterized as having significant functional impairment (HAQ>=1) at baseline. Patients with significant functional impairment reported greater pain ($p<0.001$), and fatigue ($p<0.001$) and were more likely to be anti-PR3 positive ($p=0.007$) at baseline. On multivariable logistic regression analysis, neuropsychiatric ($p=0.005$) and musculoskeletal manifestations ($p=0.044$) were associated with significant functional impairment when controlling for age, sex, and AAV type. At follow-up, patients experienced progressive damage (ΔVDI 1.73 ± 2.06, $p<0.001$), and the change in HAQ did not meet the minimally clinically important difference (ΔHAQ -0.17 ± 0.53, $p=0.01$). Conclusion: This study supports the assessment of functional outcomes in patients with AAV, as

functional impairments were common and associated with musculoskeletal and neuropsychiatric manifestations that can affect quality of life.

Ashwin Mathews

A Planned Prospective Registry of Patients Referred With Suspected Normal Pressure Hydrocephalus: Characterizing Referral Pathways and Diagnostic and Management Trajectories in Southwestern Ontario

Ashwin Mathews, Jaspreet Bhangu, Michael Borrie, Jonathan Lau, Manas Sharma, Mervin Blair, Ameya Patwardhan

Background: Normal pressure hydrocephalus (NPH) is a condition affecting older adults that is potentially treatable with cerebrospinal fluid (CSF) shunting. Radiologically, it presents as communicating hydrocephalus and clinically with gait impairment, cognitive decline, and urinary dysfunction. Timely diagnosis and treatment are critical, as delays can worsen progressive impairments in mobility, cognition, and daily functioning. However, NPH is clinically complex, overlapping with neurodegenerative disorders and common age-related comorbidities. The absence of standardized referral and evaluation pathways may further contribute to regional diagnostic delays, duplicative investigations, and challenges in selecting appropriate candidates for diagnostic CSF tap testing and neurosurgical intervention. Objective: To establish a registry of patients with suspected NPH referred to the Parkwood Hospital NPH clinic, to characterize referral pathways, patient characteristics, and treatment outcomes to inform a standardized, locally relevant approach to evaluate suspected NPH. Methods: Adults referred with suspected NPH will be enrolled in a prospective longitudinal registry. Routine clinical data collected at baseline and follow-up will include demographics, referral patterns, presenting features, medical history, gait/mobility measures, cognitive assessments, neuroimaging, NPH rating scales, and laboratory data. Diagnostic interventions and treatments such as CSF tap testing and surgeries will also be captured. Descriptive analyses will characterize prior workups, patient characteristics, and management trajectories. Significance: This registry will generate real-world evidence on referral patterns, diagnostic distribution, care pathways, and management outcomes in suspected NPH patients. This will help support more standardized decision-making processes for the local healthcare context and optimize selection of patients for diagnostic CSF tap testing and neurosurgical intervention.

Rochelle McAdam

Eosinophilic Granulomatosis with Polyangiitis Masquerading as Giant Cell Arteritis: A Case Series

Iva Okaj, Rochelle Mcadam, Joanne Jiang

Eosinophilic granulomatosis with polyangiitis (EGPA) is a systemic small-to-medium vessel vasculitis characterized by a core triad of peripheral eosinophilia, atopic disease, and eosinophilic vessel inflammation. Temporal arteritis is a classical feature of giant cell arteritis (GCA) and generally manifests with symptoms including visual disturbance, temporal headaches, and jaw claudication. Although temporal arteritis is typically associated with large vessel vasculitis, there are rare reports of occurrences in ANCA-associated vasculitis. Here, we highlight two patients who presented with symptoms suggestive of GCA but were eventually diagnosed with EGPA based on clinical features. Case 1 involved a 61-year-old man with known EGPA in clinical remission for 15 years on low dose prednisone who developed a bitemporal headache, jaw claudication, worsening asthma and eosinophilia. Temporal artery biopsy demonstrated histology consistent with EGPA rather than GCA. Symptoms responded to high dose prednisone and rituximab. Case 2 involved a 77-year-old man with new-onset asthma and sinonasal disease who presented with temporal headache, jaw claudication, eosinophilia and MPO-ANCA positivity. Temporal artery biopsy findings were suggestive of partially treated arteritis, and MR-A demonstrated mural thickening and vessel wall enhancement of the temporal artery. The overall clinical picture favored EGPA rather than isolated GCA. Treatment with high-dose corticosteroids and cyclophosphamide resulted in clinical improvement. This case series adds to a growing body of evidence demonstrating

temporal arteritis as a rare clinical feature associated with EGPA. These cases highlight the overlapping clinical features of vasculitides, underscoring the importance of maintaining a broad differential diagnosis when assessing patients with systemic vasculitis.

Christopher McChesney

Impact of Short-Acting Beta-Blockers on the Outcomes of Patients With Septic Shock: A Systematic Review and Meta-Analysis

Christopher Mcchesney, Nicolas Orozco, Kyle Fiorini, Michelle Wong, Suet Yee, Marat Slessarev, Ross Prager, Raymond Kao, Aleksandra Leligdowicz, Sameer Sharif, Kimberley Lewis, Bram Rochwerg, Kimia Honarmand, Ian M Ball, Robert Arntfield, Rachael Houlton, Logan VanNynatten, John Basmaji

OBJECTIVES: To determine the impact of short-acting beta-blocker therapy on outcomes in patients with septic shock. DATA SOURCES: We searched MEDLINE, Embase, and unpublished sources from inception to April 19, 2024. STUDY SELECTION: We included randomized controlled trials (RCTs) that evaluated short-acting beta-blockers compared with usual care in patients with septic shock. DATA EXTRACTION: We collected data regarding study and patient characteristics, beta-blocker administration, and clinical, hemodynamic, and biomarker outcomes. DATA SYNTHESIS: Twelve RCTs proved eligible (n=1170 patients). Short-acting beta-blockers may reduce 28-day mortality (relative risk [RR], 0.76; 95% CI, 0.62–0.93; low certainty) and probably reduce new-onset tachyarrhythmias (RR, 0.37; 95% CI, 0.18–0.78; moderate certainty) but may increase the duration of vasopressors (mean difference [MD], 1.04 d; 95% CI, 0.37–1.72; low certainty). Furthermore, there is an uncertain effect as to whether short-acting beta blockers impact 90-day mortality (RR, 0.98; 95% CI, 0.73–1.31), ICU length of stay (MD, –0.75 d; 95% CI, –3.43 to 1.93 d), duration of mechanical ventilation (MD, –0.10 d; 95% CI, –1.25 to 1.05 d) (all very low certainty), bradycardia episodes (RR, 3.14; 95% CI, 0.91–14.01), and hypotension episodes (RR, 4.74; 95% CI, 1.62–14.01) (all very low certainty). CONCLUSIONS: In patients with septic shock, short-acting beta-blockers may improve survival and reduce new-onset tachyarrhythmias. However, these findings were based on low certainty evidence and given ongoing concerns regarding adverse effects and the increase duration of vasopressor use, we need larger and more rigorous RCTs to evaluate this intervention.

Isla Mitchell

Automating Pre-Visit Intake and Triage to Improve Efficiency and Documentation in a Tertiary Hypertension Clinic

Isla Mitchell, George Dresser

The London Hypertension Clinic is subject to prolonged wait times. We developed the “Hypertension Documentation Quality tool” to determine the quality of clinical documentation prepared by clinicians assessing new patients and found quality to be significantly variable. Root causes include insufficient referral data, clinician experience (both physician and nurse), as well as clinic time pressure with resultant inefficient visits. The traditional model used in this clinic is time-intensive in-person history collection. We aimed to implement and evaluate a digital pre-visit intake that would automate triage workflow, improve data completeness, clinician preparedness, and visit efficiency in the London Hypertension Clinic. A structured digital questionnaire was developed based on current hypertension guidelines. Select patients were invited to pilot the form. In those who agreed, the form was distributed prior to their appointment, and responses were automatically processed to calculate a triage score. This score will be used to prioritize higher risk patients to more timely assessment and treatment. We are testing the impact of standardized collection of key clinical information to enhance clinical workflows, clinician preparedness, and document completion. Pre-intervention assessment of Hypertension Documentation Quality by chart review has been conducted. Following implementation of the pre-visit intake form the following will be assessed: questionnaire completion rates, documentation quality, clinician-reported preparedness, and time spent on history collection. Preliminary results will be presented. This digital workflow represents a

scalable approach to improving efficiency, clinical documentation quality, and should ultimately improve wait times.

Alexander Moersch

Rinderpest: Humanity's centuries long battle with cattle pestilence

Alexander Moersch, Andee Qiao, Vivian McAlister OC

Human history has been shaped by the spread of disease, inevitably propelled by the domestication of animals. Once widely feared, rinderpest (RPV) was a common livestock disease closely related to the measles virus (MeV), which is theorized to have diverged from RPV. Rinderpest, literally meaning “Cattle Plague”, likely originated in Asia, and spread near-globally through livestock. Human history has long been marked by outbreaks of rinderpest. It may have been one of the ten plagues of Egypt, and in the 1890s, caused a famine that killed one third of Ethiopia’s population. In some cases, up to 95% of affected animals died. Rinderpest affected cattle, buffalo, camels, and many other wild and domestic animal species. Rinderpest is now immortalized as the second disease ever eradicated, achieved in 2011 through a combination of surveillance and vaccination – the same methods which nearly cleared it from the European continent by the 1900s. Using scientific journal articles, books, and studies of African oral histories, this presentation will firstly explore efforts to control the spread of rinderpest in Europe and Africa, and its ultimate global eradication. Through journal articles, case reports, and opinion articles, I highlight parallels and alternate perspectives in how eradication efforts were applied. I also explore the international eradication efforts as they applied to Sub-Saharan Africa, the last reservoirs of the disease. Finally, I synthesize the lessons learned from rinderpest eradication as they apply to the prospect of measles eradication today.

Ahmed Mohammad

GLP-1 Receptor Agonists as a Bridge to Solid Organ Transplantation: A Systematic Review of Metabolic Optimization and Transplant Eligibility

Ahmed Mohammad, Noor Marwaz-Khan, Areej Hasan, Shreya Narayanamoorthy, Mohammad Qasim Khan

Background: Obesity and metabolic dysfunction are major barriers to solid organ transplantation (SOT), often limiting candidacy and delaying waitlist activation. Glucagon-like peptide-1 receptor agonists (GLP-1RAs) have emerged as effective therapies for weight loss and glycemic control; however, their role as a strategy to optimize patients prior to transplantation remains unclear. Objectives: To systematically evaluate the efficacy and safety of GLP-1RAs as a bridge to SOT, focusing on their impact on weight reduction, metabolic parameters, and transplant eligibility. Methods: A systematic review was conducted using MEDLINE (via PubMed), EMBASE, and Cochrane Library from inception to present. Studies involving adult patients with advanced organ disease or transplant candidacy receiving GLP-1RAs were included. Search strategies incorporated MeSH terms and keywords related to GLP-1RAs, transplantation, waitlisting, and metabolic outcomes. Primary outcomes included change in body weight and body mass index (BMI), while secondary outcomes included glycemic control, transplant eligibility or waitlist activation, and adverse events. Two reviewers independently screened studies, extracted data, and assessed risk of bias. Results: Preliminary evidence suggests that GLP-1RAs are associated with significant weight loss and improvement in metabolic parameters in patients with advanced organ disease. Several studies reported improved transplant eligibility or successful waitlist activation following therapy. Safety profiles were consistent with known effects of GLP-1RAs, with gastrointestinal symptoms being the most common adverse events. Conclusions: GLP-1RAs appear to be a promising strategy for pre-transplant optimization, potentially facilitating access to SOT. Further prospective studies are needed to define their role in transplant pathways and long-term outcomes

Minhyuk Mun

Outcomes of High-Dose Chemotherapy With Autologous Stem Cell Rescue in Relapsed Germ Cell Tumors: A Single-Center Retrospective Study

Minhyuk Mun, Minhyuk Mun, Deanna Caldwell, Ropo Ebenezer Ogunsakin, Kate Kelly, Shona Philip, Adrienne Fulford, Eric Winquist, Scott Ernst, Ricardo Fernandes, Uday Deotare, Anargyros Xenocostas

Background: High-dose chemotherapy (HDCT) followed by autologous stem cell transplant (ASCT) is an established salvage strategy for relapsed germ cell tumors (GCTs). However, the optimal transplant approach, specifically, single versus tandem HDCT-ASCT remains unclear. This study investigates long-term outcomes of patients treated with single or tandem HDCT-ASCT, and evaluated clinical factors associated with prognosis. Methods: Patients that received tandem HDCT-ASCT for relapsed GCTs at a single tertiary academic cancer centre between 2010 and 2023 were identified. Outcomes were compared with a secondary cohort who received single HDCT-ASCT between 1990 and 2010. Clinical characteristics and survival outcomes were collected from both groups. Two-year progression-free survival (PFS) and three-year overall survival (OS) were estimated using Kaplan–Meier methods, and prognostic variables were analyzed. Results: Twenty-two eligible patients were identified, (tandem, n=11; single, n=11). Median age was 27.5 years (range, 16-52). All patients had non-seminomatous histology. The single HDCT-ASCT cohort had higher 2-year PFS (63.6%, 95% CI 41-99) versus tandem cohort (18%, 95% CI 5-64). Three-year OS was 63.6% and 45% for single HDCT-ASCT and tandem HDCT-ASCT, respectively. Notably, all patients receiving tandem HDCT-ASCT as third-line or later therapy progressed within two years. Conclusions: HDCT-ASCT remains an important salvage option for relapsed GCTs with unfavourable prognosis. However, outcomes are strongly dependent on treatment timing, with markedly diminished efficacy when used beyond the second-line setting. These findings also challenge the assumption that tandem HDCT-ASCT provides superior benefits compared with a single HDCT-ASCT. Prospective trials are needed to refine selection and optimal strategy.

William Myers

Plasma Biomarkers and Neurocognitive Outcomes Following Critical Illness

William Myers, Victoria Labuda, Aleksandra Leligdowicz

Background: Two out of three critical illness survivors experience neurocognitive impairments that affect their quality of life. The biological mechanisms underlying these deficits are poorly understood. Circulating proteins have been associated with neurocognitive outcomes in other neurological conditions, such as in neurodegenerative diseases and hypoxic brain injury. Evaluating circulating proteins at the time of ICU admission in patients who survive critical illness may provide insight into modifiable mechanisms of neurocognitive dysfunction. Methods: Critical illness survivors enrolled in the Early Severe illness TrAnslational BioLogy InformaticS in Humans study were invited to complete Creyos neurocognitive assessment at hospital discharge. Invalid scores were imputed using multiple imputation. Raw scores were converted to age- and sex-matched healthy population Z-scores. Neurocognitive impairment was defined as Z<-1.5. 23 plasma proteins related to neurocognition, endothelial function, and inflammation were batch quantified in plasma samples collected within 48 hours of ICU admission and concentrations were $\log_{10}$-transformed. Linear regression was used to examine associations between biomarkers and neurocognition. Bonferroni correction accounted for multiple comparisons. Results: 37 critical illness survivors were included in the study. Neurocognitive impairment on one or more neurocognitive domains was present in 29 (78%) of participants. Verbal ability was most frequently impaired. There was no association between circulating proteins and neurocognition. Conclusions: Neurocognitive impairment is common among survivors of critical illness.

Mitchell Pellarin

Reducing (100-day) readmissions in autologous hematopoietic stem cell transplant patients through a risk stratification

Mitchell Pellarin, Alan Michaud, Amol Kalra, Syed Irfan, Marina Shaker, Ravnoor Kang, Sage Sandhu, Suzy Wong, Vibha Choudhary, Uday Deotare

Background: Hospital readmissions within 100 days after autologous hematopoietic stem cell transplantation (HSCT) present a challenge. During this period, patients are vulnerable to infectious complications, which can lead to unplanned hospital returns. In 2024 at LHSC Victoria Hospital, 4 of 48 autologous HSCT patients (8.3%) were readmitted within 100 days of transplant. Reasons for re-admission included febrile neutropenia and clostridioides difficile infection, highlighting opportunities for prevention. Objective: This quality improvement initiative aims to reduce the readmission rates of post-autologous HSCT patients from 8.3 % to 6.25% at the 100-day readmission threshold by December 31st, 2026 at LHSC Victoria Hospital. Methods: A root cause analysis was performed to identify potential contributors to HSCT patient readmissions. A kaizen event was then held to consult stakeholders to select which root causes to target. A Plan-Do-Study-Act (PDSA) cycle was designed and implemented for each change idea. These included risk stratification to identify high-risk patients qualifying for prophylactic antibiotics, enhanced patient discharge education, tailored instructions on symptom recognition, and closer early outpatient monitoring. Results: We hypothesize that implementing a risk stratification approach will allow us to provide targeted discharge and follow-up support for high-risk autologous HSCT patients and reduce 100-day readmission rates. Conclusion: Although the overall 100-day readmission rate after autologous HSCT at LHSC Victoria hospital is relatively low, readmissions still present clinically significant events that take a toll on patient health and healthcare resource utilization. By identifying patients at higher risk and providing more targeted discharge/follow up protocols, we aim to reduce preventable hospital re-admissions.

Mahsa Rahmany Rad

Age-Stratified Outcomes and Predictors of Mortality Following Inpatient ERCP: A Nationwide Multivariable Analysis

Mahsa Rahmany Rad, Bishoy Lawendy, Muni Rubens, Maureen Okafor, Lekhya Kollu, Chukwunonso Ezeani, Chukwuemeka Ogbu, Carmen Priego-Perez, Philip Okafor

Background: Endoscopic retrograde cholangiopancreatography (ERCP) is increasingly utilized in aging populations, yet detailed age-stratified outcomes and mortality predictors remain limited. Aim: To evaluate age-based outcomes and identify independent predictors of inpatient mortality following ERCP. Methods: We performed a retrospective cohort study using the National Inpatient Sample, including adult inpatients undergoing ERCP. Patients were stratified by age (<65, 66–70, 71–75, 76–80, 81–85, ≥85 years). Multivariable logistic regression assessed outcomes and mortality predictors, adjusting for demographics, comorbidities, frailty, procedural indications, and hospital characteristics. Adjusted odds ratios (aOR) with 95% confidence intervals (CI) were reported. Results: Increasing age was associated with a graded rise in adverse outcomes. Compared with patients <65 years, those ≥85 years had higher odds of mortality (aOR 3.20, 95% CI 2.80–3.66), prolonged length of stay (aOR 1.49), sepsis with shock (aOR 1.68), acute kidney injury (aOR 1.48), myocardial infarction (aOR 2.25), and post-ERCP pancreatitis (aOR 1.25) (all $p<0.05$). Early ERCP was less likely with advancing age (aOR 0.83). Mortality increased progressively across age strata (up to aOR 2.57 for ≥85 vs 65–70). Frailty (aOR 3.10), comorbidity burden (Elixhauser ≥3: aOR 2.18), bile duct injury (aOR 3.05), cholangitis (aOR 2.42), malignancy (aOR up to 2.40), and renal failure (aOR 3.55) were strong predictors. Urban teaching hospitals were associated with lower mortality (aOR 0.81). Conclusions: Advancing age is a graded predictor of worse ERCP outcomes. Multidimensional risk stratification incorporating frailty, comorbidities, and system-level factors is essential to guide clinical decision-making.

Mahsa Rahmany Rad

Pyoderma Gangrenosum in IBD: A Retrospective Case Series

Mahsa Rahmany Rad, Alessandra Ceccacci, Isabel Bustamante, Fiona Lovegrove, Lili Ataie, Rokhsana Murtaza, Rocio Sedano

Background: Pyoderma gangrenosum (PG) is a rare, debilitating neutrophilic dermatosis most commonly associated with inflammatory bowel disease (IBD). It affects approximately 0.4–3% of IBD patients and is associated with significant morbidity, including pain, chronic ulceration, and impaired quality of life. Diagnosis remains challenging due to the absence of pathognomonic features and frequent overlap with other conditions, often leading to delays in appropriate management. Aim: To characterize the clinical presentation, diagnostic approaches, treatment strategies, and outcomes of PG in patients with and without IBD in a tertiary care setting. Methods: We conducted a retrospective case series of adult patients diagnosed with PG at a tertiary care center in London, Ontario, over a 30-year period. Patients with and without IBD (Crohn's disease or Ulcerative Colitis) were included. Data collected included demographics, comorbidities, IBD characteristics, PG presentation, diagnostic criteria used, treatment modalities, and outcomes. Descriptive statistics were used to summarize findings, and exploratory analyses were planned to assess associations between clinical variables and outcomes. Results: A total of 43 cases were identified and data collection was completed.Data analysis is currently ongoing. Preliminary observations suggest heterogeneity in clinical presentation, timing of PG relative to IBD activity, and treatment approaches, with frequent use of corticosteroids and less frequently, biologic therapies. Conclusions: This study will provide real-world insight into the diagnostic and therapeutic challenges of PG in patients with and without IBD. Final results will help inform clinical decision-making and highlight areas for future research.

Mahsa Rahmany Rad

Management of IBS symptoms in quiescent IBD: A systematic review

Mahsa Rahmany Rad, Bishoy Lawendy, Angela Kwan, Neya Ramanan, Omar Alhusayni, Cathy Yuan, Rokhsana Mortuza, Rocio Sedano

Background: Overlap between inflammatory bowel disease (IBD) and irritable bowel syndrome (IBS) is increasingly recognized, with many patients experiencing persistent IBS-like symptoms despite quiescent disease. This overlap presents diagnostic and therapeutic challenges and is associated with impaired quality of life. Aim: To systematically review therapeutic strategies for managing residual gut symptoms in patients with quiescent IBD. Methods: We searched MEDLINE (Ovid), EMBASE (Ovid), and the Cochrane Central Register of Controlled Trials (CENTRAL, Ovid) from 1990 to November 2, 2025. The search strategy, developed in MEDLINE and adapted for other databases, included controlled vocabulary and free-text terms related to IBD and IBS. Eligible studies included clinical trials and comparative observational studies. Systematic reviews were screened to identify additional primary studies. Exclusion criteria included pediatric populations, case reports, case series, conference abstracts, trial protocols, animal studies, and non-English publications. A total of 4,056 records were identified; after removing 126 duplicates, 3,930 records were screened. Fifty-one full-text articles were assessed, and 25 studies were included. Results: Study selection and data extraction are complete, and data analysis is ongoing. Preliminary findings suggest that dietary interventions, particularly low FODMAP diets, may improve functional gastrointestinal symptoms. Pharmacologic therapies, including antispasmodics and neuromodulators, demonstrate potential benefit in symptom control. Psychological therapies, such as cognitive behavioral approaches, also appear promising in reducing symptom burden and improving quality of life. Conclusions: This review will synthesize current evidence to inform management of IBS symptoms in patients with quiescent IBD. Final results are pending completion of analysis.

Nadith Ranasinghe

Anal Cancer Screening Modalities and Outcomes in Solid Organ Transplant Recipients: A Systematic Review

Nadith Ranasinghe, Reza Rahimi

Background: Anal squamous cell carcinoma (SCC) and its precursor, high-grade anal intraepithelial neoplasia (AIN), occur at disproportionately higher rates in solid organ transplant recipients (SOTRs) due to persistent high-risk human papillomavirus (HPV) infection and chronic immunosuppression. Despite this elevated risk, screening practices remain inconsistent, with recommendations often extrapolated from other high-risk populations such as individuals with HIV. Existing studies report a high prevalence of abnormal anal cytology and clinically significant AIN; however, heterogeneity in study design and limited longitudinal data hinder conclusions regarding optimal screening strategies and clinical benefit. Rationale: A comprehensive synthesis of evidence evaluating anal cancer screening in SOTRs is needed to clarify diagnostic yield, effectiveness, and clinical implications. Current literature lacks transplant-specific consensus, limiting standardized guideline development. This review aims to evaluate how screening approaches and patient-related risk factors influence detection rates and disease burden. Methods: We will conduct a systematic review of studies assessing anal cancer screening in adult SOTRs. PubMed, Embase, and Web of Science will be searched from inception to present. Eligible studies will include observational and interventional designs reporting outcomes related to anal cytology, high-risk HPV testing, high-resolution anoscopy, or histopathologic diagnosis of AIN or anal SCC. Primary outcomes include prevalence of abnormal screening results and detection of AIN or anal SCC; secondary outcomes include screening performance and downstream diagnostic findings. Study selection, data extraction, and risk-of-bias assessment will be conducted in duplicate. Where appropriate, a random-effects meta-analysis will be performed, with heterogeneity assessed using the I^2 statistic. Results: Results upon analysis completion.

Nadith Ranasinghe

Late-Onset Cytomegalovirus Disease Following Heart Transplantation: Evidence From a Systematic Review and Meta-Analysis

Nadith Ranasinghe*, Kiyan Sadeghi Janbahan*, Zoe Wu* (* co-first authors), Reza Rahimi, Dave Nagpal

Background: Cytomegalovirus (CMV) is a major complication following heart transplantation, associated with morbidity, graft dysfunction, and mortality. Although antiviral prophylaxis has reduced early disease, an increasing proportion occurs after its cessation (late-onset CMV). These infections are linked to adverse outcomes including acute rejection and long-term graft injury, yet their epidemiology and clinical impact remains incompletely characterized. Rationale: Characterizing the incidence, predictors, and outcomes of late-onset CMV disease is critical for optimizing prophylaxis strategies and post-transplant surveillance. Existing studies are heterogeneous in design/reporting, limiting consistent conclusions. A comprehensive synthesis is needed to inform clinical decision-making and future research. Methods: We will conduct a systematic review and meta-analysis of studies evaluating late-onset CMV disease in adult heart transplant recipients. Electronic databases including Ovid MEDLINE, Embase, Scopus, and Web of Science will be searched from 2000 to present. Eligible studies will include observational and interventional designs reporting incidence, risk factors, or outcomes of CMV disease occurring after completion of prophylaxis. The primary outcome will be incidence of late-onset CMV disease, with secondary outcomes including mortality, graft rejection, and CMV disease severity. Study selection, data extraction, and risk-of-bias assessment will be conducted in duplicate. Meta-analysis will be conducted using a random-effects model to generate pooled estimates, with statistical heterogeneity assessed using the I^2 statistic. Publication bias will be evaluated using funnel plots and Egger's test where sufficient studies are available. Prespecified subgroup and sensitivity analyses will explore sources of heterogeneity, including CMV serostatus, prophylaxis duration, and immunosuppressive regimens. Results: Results upon analysis completion.

SyedaTaliya Rizvi

Unexpected Left Coronary Artery Occlusion After SAVR Presenting as Refractory Post-Bypass Ventricular Failure

Syeda Taliya Rizvi, Raffael Zamper

Left coronary artery (LCA) obstruction after surgical aortic valve replacement (SAVR) is rare. Diagnosis can be challenging, as intraoperative echocardiography may still suggest preserved coronary flow, and ventricular dysfunction may resemble myocardial stunning. We present a case of a 67-year-old woman undergoing elective SAVR using a bioprosthetic valve for asymptomatic severe aortic stenosis. Preoperative echocardiography had shown severe aortic stenosis with preserved biventricular systolic function, and coronary angiography confirmed normal coronary arteries without obstructive disease. During the procedure, the patient experienced abrupt failure to wean from CPB with progressive hypotension. Intraoperative transesophageal echocardiography (TEE) initially showed preserved RV function and coronary flow, but severely depressed LV contractility, particularly in the left anterior descending artery territory. Ventricular function continued to deteriorate after escalation of inotropic support and increased perfusion pressures, and the patient was transferred to the ICU on extracorporeal membrane oxygenation (ECMO) support. Postoperative bedside TEE showed extensive regional wall motion abnormalities with absent flow in the left coronary system. Coronary angiography confirmed total occlusion of the LCA, and the patient underwent emergent coronary artery bypass graft surgery. Despite successful revascularization, her condition deteriorated, vasopressor requirements increased, and there was no significant improvement in LV function. Therefore, life-sustaining measures were withdrawn following family discussion. This case report demonstrates that TEE may not accurately identify early coronary obstruction. Thus, new post-bypass regional wall motion abnormalities, particularly those affecting multiple coronary territories, should prompt urgent angiography. Early recognition of coronary obstruction can allow for more timely revascularization and prevent irreversible ventricular failure.

Sara Sadeghi

Diagnosis, management, and outcomes of tumour-associated erythrocytosis: A systematic review

Sara Sadeghi, Jessica Liu, Jenny Ho, Alla Iansavitchene, Cyrus C. Hsia*, Benjamin Chin-Yee* (*co-senior authors)

Background: Secondary erythrocytosis (SE) refers to elevated hemoglobin (>160 g/L in females; >165 g/L in males) not due to an underlying myeloproliferative neoplasm. Tumour-associated erythrocytosis (TAE) is a rare cause of SE, with limited data on tumour types, management, and outcomes such as thrombosis. We conducted a systematic review of the literature on TAE to describe its diagnosis, management, and outcomes. Methods: This systematic review was a substudy of a preregistered review in PROSPERO (CRD42024508643), followed PRISMA guidelines, and searched MEDLINE, EMBASE, CENTRAL, and Google Scholar databases for articles published between 2005 and 2026. Studies of patients with solid tumour malignancies and SE were included. Data synthesis was performed using SWiM guidelines. Results: Of 3,231 records, 21 studies (108 patients) met the inclusion criteria. Most were case reports or series with variable definitions of erythrocytosis. The mean age was 48.2 years, and 60% were female. TAE was most associated with hepatocellular carcinoma (n=79), followed by hemangioblastomas (n=9) and uterine leiomyomas (n=9). Tumour resection was performed in 76.9% of cases and resulted in resolution of erythrocytosis. Hematologic interventions, including phlebotomy (10.2%), anticoagulation (4.6%), cytoreduction (3.7%), and antiplatelet therapy (1%), were infrequently used. Mortality was 10.5% at median 12-month follow-up. Thrombotic outcomes were rarely reported. Conclusion: TAE is a rare and likely underrecognized cause of SE. Tumour-directed therapy, primarily surgical resection, appears most effective, while the role of hematologic interventions remains unclear. Standardized definitions of TAE and studies with routine reporting of interventions and outcomes are needed to better guide management.

Rhidita Saha

Case Series of TSH-immunopositive Ectopic Pituitary Adenomas

Rhidita Saha, Aisha Yusuf Ibrahim, Shervin Pejhan, Lee-Cyn Ang, Arvindpaul Mangat, Stan Van Uum

Ectopic pituitary adenomas that are TSHomas are exceedingly rare, with approximately 19 reported cases. Given the rarity of this presentation, patients are often misdiagnosed and treated for hyperthyroidism for many years, delaying definitive treatment and symptom resolution. This highlights the importance of improving recognition of atypical presentations to prevent diagnostic delays and optimize patient outcomes. In this case report, we highlight a 77-year-old male at LHSC who was found to have an ectopic TSH-immunopositive pituitary macroadenoma of the sphenoid sinus. Interestingly, this patient's thyroid function tests were consistent with primary hypothyroidism. After surgical resection of the tumor, pathology stained positive for TSH, with reticulin staining suggestive of a TSH-secreting pituitary adenoma. Post-operatively, the patient continued to have elevated TSH, suppressed free T3 and T4, and positive anti-TPO antibodies. His TSH and free thyroid hormone levels normalized three months after levothyroxine initiation, suggesting that the patient likely had a silent TSH-secreting adenoma. Two years after surgery, MRI showed evidence of recurrence of the ectopic mass. In contrast, 14 of 19 reported cases of ectopic pituitary TSHomas presented with hyperthyroidism, either biochemically or clinically. 7 ectopic masses were in or involved the sphenoid sinus. 5 of the reported cases required ongoing treatment with levothyroxine post-op. 2 cases required a second surgery, as 1 of these had remnant mass while the other case had recurrence. Interestingly, the case with recurrence initially presented with hypothyroidism. Our patient therefore highlights that a background of hypothyroidism may increase the risk of ectopic TSHoma recurrence.

Shamsher Sandhu

Real-World Thrombotic Outcomes and Management Strategies in Severe Secondary Erythrocytosis: A Retrospective Cohort Study

Shamsher Sandhu, Abdulla Al-Najjar, Elia Arbana, Cyrus Hsia, Benjamin Chin-Yee

Background: Secondary erythrocytosis (SE) is commonly encountered in hematology. A subset with severe SE (hemoglobin ≥200 g/L) may have higher thrombotic outcomes compared to mild SE, and management remains unclear. Aim: To assess risk factors, thrombotic outcomes, and management of severe SE compared to mild SE. Methods: A retrospective cohort study at LHSC of patients with erythrocytosis (Hb ≥165 males, ≥160 females) without pathogenic JAK2 mutations were included and classified as severe SE (Hb ≥200g/L) or mild SE (Hb <200g/L). Time zero was the first elevated Hb. Primary outcome was thrombosis. Secondary analyses included assessment of risk factors and management. Thrombosis-free survival analyzed using Kaplan-Meier and Cox regression; risk factors assessed with chi-square. Results: Among 581 patients, 66 (92.4% male) had severe SE and 515 (72.2% male) had milder SE. Severe SE was associated with higher rates of smoking (p=0.01), COPD (p=0.025), and androgen use (p=0.034). Rates of thrombosis were 1.94 and 1.23 events/100 patient-years in patients with severe SE and mild SE, respectively There was no significant difference in thrombosis-free survival between groups; Cox analysis showed no association between severe SE and thrombosis (HR1.26, 95%CI, 0.66-2.40; p=0.477). Severe SE patients experience higher rates of phlebotomy (41% vs 9%; p<0.001) and antiplatelet use (50% vs 35%; p=0.02). Conclusion: Severe SE was not associated with significantly increased risk of thrombosis compared to mild SE. Phlebotomy and antiplatelet use was more common in patients with severe SE; impact on thrombotic risk remains uncertain. Prospective studies to clarify risk are underway.

Renee Schryer

Identifying and Treating Vitamin C and Zinc Deficiencies in Marginalized Patients with Chronic Wounds at St. Joseph's Hospital, Cellulitis Clinic: An Interim Analysis.

Renee Schryer, Lise Bondy, Reza Rahimi, Lili Ataie, Michael Silverman

Vitamin C and zinc are essential factors in wound healing, and deficiencies have been recognized in individuals at risk of malnutrition. Currently, these levels are not routinely addressed in patients with chronic wounds. We sought to diagnose and treat these deficiencies in patients with chronic wounds and risk factors for malnutrition at the Cellulitis Clinic at St. Joseph's Hospital. We identified at-risk patients with chronic wounds, obtained serum vitamin C and whole blood zinc levels, and conducted thorough chart reviews. In the initial 6 months of the project, 9 patients met criteria to have their micronutrient levels assessed via whole blood and serum. 44% of assessed patients (4/9) had micronutrient deficiencies, (3/9, 33%) had low vitamin C levels, and one patient had an isolated low zinc level (1/9, 11%). Of patients diagnosed with low Vitamin C, all received supplementation (500 IU PO daily for 30d). The next stages of this project will focus on follow up to ensure the uptake and clinical utility of supplementation and gather patient feedback. Prior to this project, the prevalence of micronutrient deficiencies had not been identified among patients at risk – including those facing homelessness and incarceration in Canada. It is likely that it is presently underdiagnosed in marginalized populations. Initial analysis highlights that micronutrient deficiencies are not uncommon among populations at risk, that assessing micronutrient status is feasible in this setting, and that supplementation is an acceptable option for patients who have identified deficiencies.

Shreya Sharma

Enhancing Provider Knowledge in Cardio-Obstetrics Through Virtual Modules

Shreya Sharma, Michelle Keir, Maude Peretz-Larochelle, Matthew Sibbald, Sarah Blissett

Background: The increasing, potentially preventable cardiac events in pregnancy have led to calls to enhance interdisciplinary Cardio-Obstetrics education. We designed virtual, asynchronous modules tailored to high-priority educational needs and interdisciplinary skills relevant to Cardiology trainees. This proof-of-concept study evaluated satisfaction, clinical knowledge, interdisciplinary skills and interactivity of the modules. Methods: Cardiology trainees from three Canadian programs completed four virtual, asynchronous modules. Modules incorporated design elements, including reflection questions, discussion boards, and simulated dialogue to promote interactivity. Satisfaction was evaluated using questionnaires. Clinical and interdisciplinary knowledge on pre-and post-tests were compared with related samples Wilcoxon-Signed Rank tests. Interactivity was assessed using a standardized tool, with ratings compared using Kruskal-Wallis tests. Results: Thirty-four trainees participated (18% female). Satisfaction was high, with 92% agreeing or strongly agreeing their clinical knowledge improved and 87% agreeing or strongly agreeing their interdisciplinary knowledge improved. Scores increased for both clinical (32% vs. 52%, p=.004) and interdisciplinary knowledge (50 vs 80%, p=.023). Among design features, simulated dialogue had a significantly higher overall interactivity score, scoring an average of 3.81± 0.53 of a total of 6 points, compared to reflection questions (3.73± 0.41) and discussion boards (3.39 ± 0.47) (p=.002). Design elements were most frequently rated as having similar interactivity to an in-person session (reflection questions 50%, discussion board 52%, simulated dialogue 42%). Conclusion: Participants were highly satisfied and demonstrated increased clinical knowledge and improved interdisciplinary skills. Our findings highlight the benefits of incorporating such modules into cardiology training and offer guidance for designing interactive online education.

Zack Singer

Title: Driving Restrictions and Incapacitation Vulnerability Evaluation after Coronary Artery Bypass Grafting (DRIVE-CABG Study)

Zachary Singer, Harindra C Wijeysundera, Brooke Carter, Mathieu Rheault-Henry, Christopher S. Simpson, Luiz F Ybarra

Background: Driving restrictions after coronary artery bypass grafting (CABG) vary. Canadian guidelines base recommendations on sudden cardiac death rather than direct estimates of sudden cardiovascular incapacitation (SCI). We evaluated the incidence of SCI after CABG and estimated optimal restrictions on private driving. Methods: Using health administrative databases, patients ≥16 years discharged after CABG with or without valve surgery between April 2018 and March 2023 were followed for one year. The primary SCI composite included death, cardiac arrest, syncope, myocardial infarction (MI), stroke, or ventricular tachyarrhythmia. A prespecified sensitivity analysis excluded MI. SCI incidence was evaluated in intervals after discharge and extrapolated to estimate annual risk using the Canadian Cardiovascular Society risk of harm formula. Results: Among 36,608 patients, 15.3% experienced SCI within one year. Events included death (3.8%), cardiac arrest (0.4%), syncope (1.7%), MI (8.2%), stroke (1.0%), and ventricular tachyarrhythmia (0.1%). SCI incidence was highest within 15 days of discharge and was largely driven by MI. Using the primary endpoint, a one month restriction is recommended across subgroups defined by age, sex, and operation type. When MI was excluded, the composite incidence was 7.9%, and estimated restrictions were two weeks for patients <65 years or those undergoing isolated CABG, and one month for ≥65 years or CABG + valve surgery. Conclusions: SCI risk after CABG is highest early after discharge and is primarily driven by MI. These findings support current one-month driving restrictions. Shorter restrictions may be reasonable for lower-risk subgroups when MI is excluded from the definition of incapacitating events.

Cavizshajan Skanthan

Type 2 low asthma subtype associated with metabolic comorbidities and elevated neutrophil to lymphocyte ratio

Cavizshajan Skanthan, Courtney Heaman, Lisa Cameron, Anurag Bhalla

Introduction: Metabolic comorbidities including hypertension, dyslipidemia, and diabetes may influence asthma outcomes. Neutrophil to lymphocyte ratio (NLR) is an emerging biomarker associated with asthma severity. Aim: Our aim was to examine the relationship between metabolic comorbidities, NLR, and various asthma measures. Methods: We conducted a retrospective cross-sectional study at a tertiary asthma clinic in London, Canada from 2024-25. Metabolic comorbidities were defined as any of hypertension, dyslipidemia, or diabetes. Results: 97 moderate-severe asthma patients were enrolled. Asthma patients with metabolic comorbidities (n=64) were older (63 versus (vs) 46 years, p<0.0001), had asthma diagnosis later in life (37 vs 28 years, p=0.03), higher body mass index (38 vs 28 kg/m2, p=0.07), lower blood eosinophils (0.20 vs 0.32x109/L, p=0.03) and higher NLR (3.4 vs 2.5, p=0.04). Asthma patients with high NLR (>3.5, n=29) were older (62 vs 48 years, p=0.009), more likely to have hypertension (76% vs 63%, p=0.01), had lower eosinophils (0.18 vs 0.37x109/L, p=0.008), lower fractional exhaled nitric oxide (18 vs 50 ppb, p=0.06) and lower serum immunoglobulin G (IgG) levels (7.1 vs 10.8 g/L, p=0.007). NLR was inversely correlated with blood eosinophils (r=-0.332, p=0.004) and serum IgG levels (r=-0.677, p=0.0004). Conclusion: Asthma patients with metabolic comorbidities and high NLR represent a non-eosinophilic group with lower IgG. NLR may be a potential biomarker for T2 low phenotype and guide a comprehensive comorbidity assessment in asthma patients.

Sahanah Thirukumar

Targeting Cardiac Necroptotic Cell Death in Diabetic Cardiomyopathy with Murine Cytomegalovirus M45

Sahanah Thirukumar, R Ni, C Wang, J Zhang, Tianqing Peng

Diabetic cardiomyopathy (DCM) is defined by diabetes-induced structural and functional myocardial abnormalities, possibly leading to heart failure. We and others have reported that cardiac cell necroptosis contributes to DCM. Murine cytomegalovirus encodes M45, a protein that disrupts necroptotic signalling via its N-terminal RIP homotypic interaction motif (RHIM). We hypothesize that delivery of the RHIM-encoding, N-terminal 1-90 residue (N90) of M45 can inhibit necroptosis and reduce diabetes-related

cardiac damage. Mouse cardiac endothelial cells (MCECs) were exposed to high glucose and palmitate (HG-Pal) to create diabetic conditions in vitro, leading to elevated cytotoxicity and necroptotic protein expression. MCECs were then transfected with a plasmid expressing DDK-tagged N90 and EGFP and treated with HG-Pal to measure changes to cell viability and necroptotic biomarkers. N90 delivery significantly reduced the injury and necroptotic death of MCECs. Mechanisms underlying HG-Pal-induced necroptosis were investigated via CRISPR/Cas9-mediated knockout of ZBP1 and pharmacological inhibition of RIPK3 with GSK'872 in vitro. These interventions diminished the cytotoxic effects of HG-Pal, validating potential targets of N90. The cardioprotective capacity of N90 was explored in vivo with Akita mice, a well-established type 1 diabetes model, via echocardiography, serum analysis, and tissue collection. Echocardiographic analyses reveal preserved cardiac function in N90-transfected Akita mice four weeks following dosages. These mice also demonstrated lowered cardiac troponin I levels, proportionate to myocardial injury, and decreased cardiac necroptosis through pRIPK3 expression and RIPK1-to-RIPK3 interactions. Our preliminary findings display the protective potential of N90 against myocardial damage, serving as a novel therapeutic approach and mechanistic insight for alternative applications.

Wesley Tran

Peroxisome Proliferator-Activated Receptor Delta Modulates and Alters Extracellular Matrix Remodelling and Inflammatory Processes in Osteoarthritic Synovial Fibroblasts

Wesley Tran, Garth Blackler, J. Daniel Klapak, Jan Tuckermann, Frank Beier, C. Thomas Appleton, Matthew W. Grol

Introduction: Osteoarthritis (OA) is a multifactorial disease of synovial joints driven by complex interactions between metabolic, inflammatory, and mechanical factors. Among these regulators, Peroxisome Proliferator-Activated Receptors (PPARs) are nuclear hormone receptors that regulate lipid metabolism and immune/inflammatory signaling, all implicated in OA pathogenesis. PPARδ, a PPAR family member, regulates connective tissues such as cartilage, where its activation has shown to promote extracellular matrix (ECM) degradation, while knockout models show protective effects; however, its role in the synovium remains unclear. Objective: To determine how PPARδ activation alters the transcriptional and epigenomic landscape in synovial cells from patients with knee OA. Methods: Synovial tissue from the suprapatellar recess was harvested during knee arthroplasty and cultured for 24 hours with a PPARδ agonist or vehicle. Single-cell RNA and ATAC sequencing was then performed to examine transcriptional and chromatin accessibility changes. A scratch wound assay in fibroblast-like synoviocytes was used to evaluate functional effects on ECM remodelling. Results: PPARδ-treated synovial fibroblasts exhibited 4352 differentially expressed genes (DEGs) and 5186 differentially accessible regions (DARs) of open chromatin. Notably, utilizing DEGs, pathway analysis revealed downregulated ECM remodeling and upregulated inflammation processes with integrated DARs at leading-edge gene loci. Functionally, PPARδ agonism demonstrates impaired wound closure, whereas antagonism enhanced wound closure capacity. Conclusion: PPARδ activation drives coordinated transcriptional and epigenomic changes in synovial fibroblasts, with suggested roles in ECM remodeling and inflammation with functional implications suggesting impaired wound closure capacity. These findings highlight PPARδ as a potential regulator of synovial dysfunction and therapeutic target in OA.

Ava Travo

Preliminary Report: Long-Term Registry of Patients with Left Ventricular Non-Compaction

Ava Travo, Pratham Gupta, Habib Rehman Khan

Left ventricular noncompaction (LVNC) is a heterogeneous cardiomyopathy defined by excessive myocardial trabeculation and variable clinical expression. Rising diagnosis rates driven by advances in multimodality imaging have highlighted the need for prospective, evidence-based risk stratification frameworks. This preliminary report presents baseline data from an ongoing, single-center observational

registry of adult LVNC patients followed at a tertiary inherited cardiac conditions clinic. Fifty patients were enrolled (34 female, 16 male; mean age at diagnosis 48.9 ± 13.4 years). CMR was the primary diagnostic modality in 80% of cases. Clinical presentations included cardiac arrest in 3 patients, syncope in 10, palpitations in 16, and a family history of sudden cardiac death in 9. Baseline TTE revealed a mean LVEF of 51.7 ± 11.8%. CMR confirmed diagnosis in 44 patients, with non-compacted-to-compact ratios ranging from 2.8:1 to 6.3:1 (median 4.0:1), universal apical involvement, and lateral wall hypertrabeculation in 64%. Mean LVEF by CMR was 55 ± 9.7%. Electrocardiographic findings included T-wave abnormalities in 15.4%, left bundle branch block in 7 patients, and premature ventricular complexes in 7.7%. Pathogenic titin mutations were identified in 22% of patients. Serial follow-up demonstrated predominantly preserved systolic function, with mean LVEF of 51.1% and 56.4% at first and second follow-up, respectively. This registry highlights substantial phenotypic, morphologic, and genetic heterogeneity in adult LVNC. The high prevalence of preserved systolic function at presentation reinforces the need for structured longitudinal surveillance. Prospective follow-up will support improved prognostication and development of phenotype-directed management strategies.

Alexandra Troitskaya

Aging and biological sex impact transcriptional activation in septic mouse lungs

Alexandra Troitskaya, Amin Manji, Onon Batnyam, Eric Patterson, Ruud Veldhuizen, Sean Gill

Background: Sepsis is a systemic inflammation leading to life-threatening organ dysfunction, particularly in the lungs. Sepsis risks exponentially increase in elderly. However, most pre-clinical sepsis research has relied on young male animals. To address this gap, we investigated sepsis in male vs female, aged vs young mice, hypothesizing that aging results in more widespread transcriptional activation. Methods: Male and female, young (2-3 months) and aged (22-23 months) mice were randomized to an intraperitoneal injection of fecal slurry (septic) or a dextrose solution (control). Mice were monitored using the mouse sepsis score (MSS). At 4h, lungs were collected for transcriptional analysis via bulk RNA sequencing. Results: Septic groups showed a higher MSS than controls, with aged septic male mice exhibiting significantly higher scores than young male and female mice. Differential expression indicated higher numbers of significantly up and downregulated genes with sepsis in young animals, which was further increased in the aged animals, particularly in males. Analysis of various pathways revealed that sepsis increased inflammation and damage response pathways in all groups. Discussion: We conclude that advanced age increases transcriptional activation due to sepsis, specifically in inflammatory pathways. Preliminary data analysis indicates a potential difference in the magnitude of responses in males vs females which may ultimately affect outcomes; this will be explored in future studies.

Sofya Ulanova

Pro-Inflammatory T-Cell Responses to Homocitrullinated Peptides in Rheumatoid Arthritis

Sofya Ulanova, Gabrielle Buckley, S.M. Mansour Haeryfar, Ewa Cairns, Lillian Barra

Introduction: Rheumatoid arthritis (RA) is a chronic autoimmune disease affecting approximately 1 in 100 Canadians. Homocitrulline is a lysine-derived modified amino acid. While antibodies to homocitrullinated peptides (HomoCitP) are present in RA, corresponding T-cell responses have not been studied. Objective: To investigate HomoCitP-specific T-cell responses in RA. Methods: Peripheral blood from RA patients and age- and sex-matched healthy controls was analyzed. HomoCitP-specific T cells were identified using HLA-DR4 tetramers and phenotyped by flow cytometry. Peripheral blood mononuclear cells were assessed for cytokine production and antigen-specific proliferation following HomoCitP stimulation. Serum antibodies were also measured. Results: RA patients had approximately threefold higher frequencies of HomoCitP-specific CD4+ T cells compared to controls. These cells displayed a predominantly pro-inflammatory phenotype, with enrichment of Th1 (51%) and Th17 (39%) subsets, the latter significantly increased in RA. Upon stimulation, RA patient cells produced higher levels of TNF-α, IFN-γ, IL-22, IL-6, and IL-2. Functionally, 71% of RA patients demonstrated proliferative responses to

HomoCitP versus 16% of controls, largely driven by Th1 and Th17 expansion. Increased FOXP3+ regulatory T-cell frequency was associated with reduced proliferation, suggesting partial immune regulation. Consistent with T-cell findings, 88% of RA patients had detectable HomoCitP antibodies compared to 8% of controls. Conclusion: RA is characterized by robust, pro-inflammatory T- and B-cell responses to homocitrullinated peptides. HomoCitP-specific CD4+ T cells are expanded and Th1/Th17-skewed, supporting a potential role in disease pathogenesis and highlighting a clinically relevant biomarker and therapeutic target.

Akshay Varghese

A Pathway Analysis of the Adrenal Hypertension Clinic at St' Joseph's Hospital

Akshay Varghese, Tayyab Khan, David Hocking, Fabio Accorsi, Stan Van Uum

Primary aldosteronism (PA) is a group of disorders characterized by excessive and autonomous aldosterone secretion by one or both adrenal glands leading to renal sodium retention, hypertension and hypokalemia. The literature has demonstrated than up to 13% of patients with hypertension have PA, which is underdiagnosed by healthcare providers. Most appropriate management of PA requires adequate diagnosis and subtyping to differentiate between bilateral idiopathic hyperaldosteronism (IHA) and unilateral aldosterone producing adenoma (APA), usually requiring adrenal vein sampling (AVS). In September 2022, the Adrenal Hypertension Clinic was started at St. Joseph's Hospital focusing on PA and other adrenal hypertensive disorders. Our study looked at analyzing patients referred for initial assessment of PA from its inception to December 31st, 2024. We included 146 patients, of which (60%) were diagnosed with PA after clinical and biochemical assessment. 50 patients went on to have AVS (44 successful procedures, 88%), with 27 patients having unilateral aldosterone production. 23 patients underwent a unilateral adrenalectomy, with 4 patients pending surgery. The most common pathology (N=17) was adrenal adenoma. After surgery, 10 patients no longer required anti-hypertensive medications. In the other patients, the median number of anti-hypertensive medications decreased from 3 to 1. The initiation of the Adrenal Hypertension Clinic has streamlined the evaluation and management of patients with PA. Future directions may include creation of a score to predict which patients would benefit the most from surgery, as well as initiatives to improve the referral and management pathway.

Sudheer Kumar Vuyyuru

Outcomes of Endoscopic Balloon Dilatation for De novo and Anastomotic Crohn's Strictures: A Canadian Tertiary Centre Experience

Sudheer Kumar Vuyyuru, Gaurav Nigam, Shane W Goodwin, Shivya Sethi, Jamie Gregor, Brian Yan, Michael Sey, Vipul Jairath

Background: Over half of patients with Crohn's disease (CD) develop intestinal strictures which often require surgical resection. Endoscopic balloon dilatation (EBD) can be a potential alternate therapeutic option. Methods: Adult patients with CD (≥18years) who underwent EBD between Jan-2016 and Sep-2024 at two Canadian hospitals were included retrospectively. The primary outcome was technical success. Secondary outcomes were clinical success at 6- and 12-months, hospitalization due to obstruction, and CD related surgery. Cox proportional hazards models assessed predictors of hospitalization and surgery. Results: A total of 234 patients (age: 47.6years, males: 47.4%) were included with a median follow-up of 61months. 79.4% had symptoms at baseline. Most strictures were de novo type (62.5%) and median number of stricture dilatations was 3 (IQR: 2). Technical success was achieved in 81% (150/185). Clinical success was noted in 47.7% at 6months. The cumulative probabilities of being hospitalization-free was 96.9% (95%CI [94.7-99.2]) at 1-year, 91.3% (95%CI [87.5-95.2]) at 3-years, and 85.0% (95%CI [79.8-90.5%]) at 5-years. The cumulative probabilities of being surgery-free was 91.1% (95%CI [87.5-94.9]) at 1year, 81.7% (95%CI [76.5-87.2]) at 3years, and 78.1% (95%CI [72.4-84.3]) at 5years. Multiple strictures was associated with increased risk of surgery while anastomotic strictures and maximum balloon diameter were associated with lower risk of surgery. No patients experienced

complications. Conclusions: EBD effective and safe in de novo and anastomotic strictures with the majority of patients achieving technical success and being free of surgery within 5 years.

Sudheer Kumar Vuyyuru

Patients with Crohn's disease achieving transmural healing experience superior long-term outcomes compared to those with mucosal or radiological healing alone

Sudheer Kumar Vuyyuru, Shane W. Goodwin, Virginia Solitano, Daryl Ramsewak, Zahra Kassam, Cassandra Townsend, Jamie Gregor, Melanie Beaton, Eileen Crowley, Maan Alkhattabi, Michael Sey, Vipul Jairath

Background: Crohn's disease (CD) is characterized by transmural inflammation and achieving transmural healing (TH) indicated by absence of inflammation on imaging study or endoscopy may lead to improved long-term outcomes. However, evidence supporting this hypothesis is limited. Methods: Adults diagnosed with CD who underwent ileocolonoscopy and cross-sectional imaging within 6-months were included. Long-term outcomes of CD-related surgery and hospitalization in patients with TH, endoscopic healing (EH) alone, radiological healing (RH) alone, and no healing (NH) were assessed. We used Cox proportional hazards models and modified Poisson regression. Results: Among 180 included patients, 26.7% achieved TH, 21.1% EH, 12.8% RH and 39.4% classified as NH. At baseline, 54.4% were on biologics which increased to 81.7% at last follow-up (76-78 months across groups). Cumulative probabilities of surgery were lowest in patients with TH (0%, 2.3%, 7.0% at 1, 3, and 5yrs) and highest in patients with NH (13%, 20.5%, 26.9%). On Cox-proportional hazard regression analysis, TH was associated with a significantly reduced risk of CD-related surgery (HR 0.01, 95%CI [0.00–0.35], p = 0.009) compared to NH. The probabilities of surgery were numerically lower for patients with RH compared to EH (10% vs. 13.2%, 10% vs. 18.4% and 21.2% vs. 26.9% at 1, 3 and 5yrs). Probabilities of CD related hospitalization were lowest with TH (4.3%, 8.8% and 13.6% at 1, 3 and 5yrs). Conclusions: Transmural healing was associated with superior long-term outcomes compared to endoscopic or radiologic healing. Future studies should focus on standardizing its definition and evaluate treat-to-target strategies.

Sudheer Vuyyuru

Biologics and small molecules for Perianal Crohn's disease, a systematic review and meta-analyses of randomized placebo-controlled trials

Sudheer Kumar Vuyyuru, Yuhong Yuan, Jurij Hanzel, Marianne Hupe, Rocio Sedano, Mohammad Shehab, Olga Maria Nardone, Fernando Magro, Ailsa Hart, Vipul Jairath

Background: Although several advanced therapies (ATs) for luminal Crohn's disease (CD) have been approved, their efficacy for perianal fistulizing Crohn's (pCD) has not been comprehensively reviewed. Methods: A literature search was conducted in MEDLINE, Embase, and Cochrane CENTRAL up to October 2, 2025. Placebo-controlled RCTs evaluating treatment efficacy in pCD were included. Outcomes of interest were fistula response and fistula remission during the induction and maintenance trials. Pooled RRs were calculated using a random-effects model. Results: Fourteen studies were eligible; only four RCTs were specifically designed for pCD, whilst the remainder were post-hoc analyses of luminal CD studies with moderate to serious risk of bias. On pooled analyses of induction trials (4–28 weeks), ATs were associated with significantly higher induction of fistula response (RR 1.65, 95%CI 1.22–2.22) and remission (RR 1.91, 95%CI 1.37–2.67) compared to placebo. Infliximab and upadacitinib demonstrated significantly greater fistula response and remission, while ustekinumab significantly increased rates of fistula remission. For maintenance phase (22–52 weeks), ATs were associated with significantly higher maintenance of fistula response (RR 1.54, 95%CI 1.21–1.97) and remission (RR 2.08, 95%CI 1.49–2.90) compared to placebo. Infliximab showed significantly greater maintenance of fistula response and remission compared with placebo, while adalimumab was superior for fistula remission. Conclusion: Findings from our meta-analysis indicate that infliximab is effective for pCD, with limited evidence of

benefit with adalimumab, ustekinumab and upadacitinib. Well-designed RCTs investigating newer advanced therapies are needed to better guide targeted treatment strategies.

Arpana Wadhwani

Expanding Hospice Access: A Proposal to Improve Patient Care and Increase Acute Care Capacity – at a Reduced Cost

Arpana Wadhwani, Carter Winberg, Robert Sibbald, Ian Ball

Background: Despite a common public desire for comfort-focused, non-hospital deaths, many Canadians experience barriers, forcing them into hospital settings in their final days. Limitations in hospice infrastructure, gaps in end-of-life (EoL) care policies, and inconsistent funding mechanisms for hospice accelerate misalignment between patient preferences and EoL care delivery. Objective: To evaluate limitations to hospice delivery in Canada, and examine its role in delivering equitable, cost-effective patient centered care. Methods: We synthesized national reports, population-based studies, and international comparisons to evaluate hospice availability, and associated health system outcomes in Canada. Literature was analyzed thematically, using the quintuple aim framework: patient experience, population health, cost-efficiency, health equity and clinician well-being. Results: Patient experience: Hospice care is associated with enhanced symptom control, communication, and psychosocial support. Population health: Hospice models address intersectional barriers uniquely though partnerships with faith-centered organizations, social service agencies and local neighbourhood groups. Reducing Healthcare Costs: Terminal hospitalizations cost $1359 per day for beds with no palliative involvement and over $700 per day with palliative care involvement. At $460 per bed per day, hospice is a financially sustainable alternative. Health equity: Limited hospice access disproportionately affects rural populations, older adults, racialized groups, and patients with non-cancer diagnoses. Clinician well-being: Hospice access may reduce provider burnout associated with delivering non-beneficial, high-intensity treatments in acute care settings. Conclusion: Hospices remain undervalued in Canada, despite advancing all five pillars of the Quintuple Aim framework. Integrating hospices into the public healthcare system, supported by a transparent, needs-based funding model, promotes compassionate, patient-centered EoL care.

Dominic Wang

Concurrent Sweet Syndrome and Leukemia Cutis as the presenting manifestations of acute myeloid leukemia

Marilyn Phung, Isabel Bustamante

Introduction: Cutaneous manifestations may be the initial presentation of an underlying malignancy and can serve as an important diagnostic clue. Case Description: A 64-year-old female with no past medical history presented with a one-week history of fevers, chills, and a new painful lesion on the anteromedial aspect of the left lower leg. On exam, there was an erythematous, violaceous, well-demarcated plaque with a central necrotic lesion measuring 3-by-3cm. Pus was noted in the centre of the lesion. Surrounding erythema was excruciatingly painful to palpation. Preliminary investigations included hemoglobin 89g/L, platelets 74×10^9/L, leukocytes 14.2×10^9/L with lymphocyte count 4.4×10^9/L, C-reactive protein 208mg/L, and reactive lymphocytes on peripheral blood smear. Piperacillin/tazobactam and vancomycin were initiated empirically. The lesion continued to worsen over the following week. The plaque rapidly expanded, measuring 15-by-10cm with new appearance of indurated, elevated borders. Biopsies were obtained and empiric treatment with prednisolone initiated. Blood counts the following day showed a new blast count of 13.5×10^9/L (total leukocyte count 25.4×10^9/L). Biopsy demonstrated neutrophilic infiltration at the plaque's border and atypical mononuclear cells at the central necrotic lesion, consistent with concurrent Sweet Syndrome and leukemia cutis. Bone marrow biopsy confirmed acute myeloid leukemia. One week after prednisolone initiation, the erythema resolved and pain improved. She was discharged 6 weeks after prednisolone initiation after completing induction chemotherapy. Conclusion: Concurrent

Sweet syndrome and leukemia cutis is rare. This case suggests that these entities may lay on a shared pathophysiologic spectrum.

JunBo Wang

Testosterone for the management of traumatic hemorrhage: A systematic review

Jun Bo Wang, Joseph Russel, Benson Law, David Boersma, Alla Iansavitchene, Colin Laverty, Fran Priestap, Shane Smith, Kelly Vogt, Ian Ball

BACKGROUND AND OBJECTIVES: Acute hemorrhagic resuscitation is crucial after traumatic injury, but options are limited in austere and operational environments where such trauma is common, and definitive surgery or blood products may be unavailable. Testosterone may assist in traumatic haemostasis given its well-established role in erythropoiesis, platelet activation, and vasoconstriction; however, whether exogenous testosterone improves acute outcomes in traumatic haemorrhage is unknown. METHODS: Following PRISMA 2020, we registered the protocol in PROSPERO (CRD42024617294; 12 Oct 2024). MEDLINE and EMBASE (Ovid) were searched from inception to November 2024 for studies that investigated the acute effects of testosterone administration in adults (≥ 16 years of age) with hemorrhage. Two reviewers independently screened citations and full texts using prespecified eligibility criteria. Independent and duplicate data extraction by two reviewers, and GRADE certainty assessments were prespecified. RESULTS: Of the 195 records identified, 177 were excluded at title/abstract screening; 18 underwent full-text review. No eligible human studies were identified. Consequently, no planned data extraction and GRADE assessments were performed. While some preliminary evidence from animal and in-vitro models was available among excluded studies, their study limitations warrant cautious interpretation. CONCLUSIONS: No eligible human studies evaluate exogenous testosterone as an acute intervention in traumatic haemorrhage, despite a clear clinical rationale and predefined outcome set. With increasing androgen exposure in the general population, high-quality translational and clinical studies, using rigorous dosing/timing definitions and standard coagulation and patient-centred endpoints, are needed to determine whether pre-injury or peri-injury testosterone exposure confers benefit or harm in acute hemorrhagic trauma care.

Mikael Wardak

Improving Sustainable Inhaler Practices: Inpatient Inhaler Prescribing Patterns and Duplicate Device Dispensing at London Health Sciences Centre

Mikael Wardak, Utkarsh Sood, Leila Saadat, Bernie Boulu, Kendra MacDougall, Constance Mackenzie

Background: Inhalers are commonly prescribed to patients admitted to hospital. The most common type, metered dose inhalers (MDI), use propellants and contribute to greenhouse gas emissions. In 2024, London Health Sciences Centre (LHSC) dispensed 42,750 inhalers, of which 62.5% were MDIs. Recent studies show that MDIs are frequently wasted in hospital and contribute to excess carbon emissions and costs. We evaluated inpatient inhaler dispensing at LHSC to identify prescribing patterns, frequency of duplicate dispensing, and inhalations utilized per device. Methods: We conducted a retrospective review of inpatient pharmacy inhaler dispensing data at LHSC for five medical teams in 2025. For each team, 100 patient encounters were reviewed, using length-of-stay criteria (2-14 days). Inhalers were categorized as MDIs, soft-mist inhalers (SMIs), or dry-powder inhalers (DPIs). Duplicate dispensing was defined as two or more inhalers of the same type during a single admission. Inhalations utilized were documented. Cost and carbon emissions were calculated. Results: For 500 encounters, 1,115 inhalers were dispensed. MDIs accounted for 46.1%, DPIs 36.9%, and SMIs 17.0%. MDIs were the most frequently dispensed device in 4 of 5 teams. Duplicate inhalers were dispensed for 188 patients (37.6%). Duplicate inhalers generated 2,995.93 kgCO2e and $11,808.68 in costs. Approximately 10% of inhalers had zero recorded inhalations, contributing 1,850 kgCO2e and $3,396.06 in costs. Conclusions: Inpatient inhaler use is characterized by frequent MDI use and duplicate inhaler dispensing. Duplicate inhaler

dispensing contributes to excess carbon emissions and healthcare costs and can be targeted to reduce waste.

Rebecca Wong

Improving the representativeness of clinical trial participation using quality improvement methodology: Lessons from the OK-TRANSPLANT 2 vanguard

Rebecca Wong, Aayushi Joshi, Louise Moist, Kristin K. Clemens

Introduction: The Obesity Management for Kidney TRANSPLANTation (OK-TRANSPLANT 2) trial is a vanguard for a large randomized, open-label trial. Participants with obesity and high-risk chronic kidney disease are randomized to a multi-component virtual weight management program versus usual care. We used quality improvement methodology to meet trial recruitment targets and ensure demographic representation amongst the recruited sample. Methods: We used descriptive statistics to assess the demographic data of the first 21 locally enrolled participants from our trial. We compared characteristics with the contemporary characteristics of patients from which we recruited (Multi-Care Kidney Clinic [MCKC]) in London, Ontario. Results: Of the 21 participants, the mean age was 59.1±11.3 years and 38.1% were female. The majority reported being European (81.0%); three participants (14.3%) reported being Black, and two (9.5%) were Indigenous. 33.3% of participants completed high school, 19.0% had a college diploma, 14.3% completed trade/technical school, and 28.5% had a bachelor's degree or higher level of education. In comparison, the mean age of MCKC patients was 71.4 years and 35.6% were women. Although racial data was not available for the MCKC, the proportion of racialized participants (23.8%) mirrors the 2021 London census estimate (23.4%); however, South Asian, Arab, Southeast Asian, and Latin American communities may be underrepresented. Conclusions: Quality improvement methodology helped us to efficiently meet local OK-TRANSPLANT 2 recruitment targets and examine whether participants to date are similar to general patient populations. Future efforts should prioritize targeted outreach to racialized communities and older participants reflective of the MCKC population.

ZiFan(Tony) Yang

SCARy Pustules: An atypical and fatal case of acute generalized exanthematous pustulosis rapidly progressing to features of toxic epidermal necrolysis

Zi Fan (Tony) Yang, Mara Mihailescu, Jeremy Strain, Karen Naert, Samira Jeimy

Background: Acute Generalized Exanthematous Pustulosis (AGEP) is a severe cutaneous adverse reaction (SCAR) distinguished both clinically and histopathologically from Toxic Epidermal Necrolysis (TEN). There are rare cases in the literature of overlap syndromes that show histopathologic consistency with AGEP, but display clinical features of TEN. Prognosis is usually good with drug discontinuation and mortality is exceptionally rare. Case Presentation: We detail an unfortunately fatal case of AGEP with progressive systemic TEN like features in an 80 year old male after multiple exposures to beta-lactams first as prophylaxis for a dental cleaning and then as treatment for presumed sepsis from the procedure. The eruption of pustules was followed rapidly by geometric erosions, mucosal involvement, refractory atrial fibrillation, and renal failure. Despite high dose steroids and etanercept, he ultimately developed pneumonia with overwhelming septic shock and passed 10 days post admission, 11 days following the dose of amoxicillin. Despite multiple biopsies consistent with AGEP, his clinical course was more consistent with TEN. We illustrate the challenges in the diagnosis and management with photos and histology and discuss the rationale and evidence behind key clinical decisions in this case. Conclusions: Despite repeat histopathology consistent with AGEP, the clinical evolution was more consistent with TEN. Such cases are already rare, with mortality being exceedingly so. Beyond drug discontinuation, both the diagnosis and management of these cases remain challenging. Studying the preceding events, presentation, and response to treatment can better aid in the management and prevention of these severe and rarely life threatening reactions.

Wenqi Yang

Single-cell analysis of the mechanisms underlying leukemic transformation in myeloproliferative neoplasms

Wenqi Yang, Jenny Ho, Tallulah Andrews

Myeloproliferative neoplasms (MPNs) are chronic blood cancers with a significant risk of progression to acute myeloid leukemia (AML), resulting in poor clinical outcomes. Transcriptomic profiling of CD34+ blasts in myelofibrosis, an MPN subtype, has revealed altered transcriptional pathways during leukemic transformation (LT). However, the heterogeneity of CD34+ blasts, which include both early and mature hematopoietic stem and progenitor cells (HSPCs), complicates the identification of the precise populations driving disease progression. This study employs a single-cell multiomic approach to address these limitations. We hypothesize that specific HSPC populations undergo genetic and biological alterations that contribute to LT in MPNs. Sample cells were isolated from 12 MPN patients, including 6 who later underwent LT and 6 who remained stable, and single-cell transcriptomic and chromatin accessibility profiling were used to capture altered cell states and gene regulatory changes. We identified 12 major HSPC populations, with an expansion of erythroid progenitors in LT patients. Among all cell populations, hematopoietic stem cells (HSCs) showed the strongest transcriptional and regulatory changes between LT and control samples. HSCs exhibited increased inflammatory signaling, including TNF-α and IL-2 pathways, along with altered transcription factor activity of BACH1 and AP-1 family members. These findings suggest that early regulatory disruption in HSCs may play a central role in LT and could serve as a biomarker to identify patients at increased risk. Future work will focus on applying this multiomic workflow across additional cell populations and validating key pathways as potential targets for preventative therapy.

Jenny Yang

Reducing Routine Phlebotomy in Autologous Stem Cell Transplant Inpatients Through Electronic Order Set Redesign

Jenny Yang and Madelaine Bohnert, Katlynn Schellenberger, Christine Luu, Victor Pope, Ashley E. Smith, Sarah Sayles, Anargyros Xenocostas, Shona Philip, Alan Gob, Uday Deotare

Background: Excessive laboratory testing in hospitalized patients contributes to iatrogenic anemia, patient discomfort, and increased healthcare utilization. In high-acuity settings, routine daily testing is often driven by default order sets rather than evolving clinical needs. Autologous stem cell transplant (ASCT) inpatients may therefore experience substantial cumulative phlebotomy. Objective: To reduce unnecessary laboratory testing in ASCT inpatients at London Health Sciences Centre by modifying the electronic order set. Methods: Baseline data were collected retrospectively from ASCT admissions between January and February 2022. A multidisciplinary review identified default order sets as a key driver of routine testing. The admission order set was redesigned to remove automatic daily laboratory orders. Outcomes were evaluated using a Plan–Do–Study–Act cycle between January and August 2024. The primary outcome was cumulative phlebotomy volume per admission. Secondary outcomes included length of stay, nursing time associated with phlebotomy, and laboratory costs. Emergency bloodwork frequency was assessed as a balancing measure. Results: Mean cumulative phlebotomy volume decreased from 210.7 mL per admission at baseline (n = 23) to 88.5 mL post-intervention (n = 23), a 58% reduction. Mean length of stay decreased from 18.5 to 15.3 days. Nursing time decreased from 147 to 59.7 minutes per admission, and laboratory costs decreased from CAD 898.5 to CAD 584.0 per patient. Emergency bloodwork frequency did not increase. Conclusion: Redesigning electronic admission order sets reduced routine laboratory testing in ASCT inpatients without evidence of harm and may represent a scalable strategy to improve patient care and reduce unnecessary resource use.

Yohanna Zendo

Optimizing Patient Trajectory to Improve Comprehensive assessment of Coronary Artery Disease Before TAVI: OPTICS-CAD Observational Study

Yohanna Zendo, Mosa Abbadi, Yuhan Bi, Pantelis Diamantouros, Patrick Teefy, Gloria Chaumont, Federico Liberman, Matthew Valdis, Michael W. A. Chu, Rodrigo Bagur

Background: Routine invasive coronary angiography (ICA) is commonly performed before transcatheter aortic valve implantation (TAVI) to assess concomitant coronary artery disease, but its impact on clinical outcomes compared with CT angiography (CTA) remains unclear. Methods: 1,147 TAVI patients, who underwent their procedure between 2018-2024 were included: 769 underwent ICA and 378 CTA-only preprocedural assessment. The primary outcome was composite cardiovascular death, myocardial infarction (MI), and heart failure hospitalization (HFH) at 1-year. Propensity score-adjusted inverse probability of treatment weighting addressed baseline differences between groups. Results: The ICA group was younger (81.8±6.7 vs 84.5±6.1 years, P<0.001) with more prior PCI, peripheral vascular disease, and pacemakers, while the CTA group had higher STS-scores (4.2±3.5 vs 3.5±1.6, P<0.001) and more left bundle branch block. CTA-guided strategy reduced assessment-to-TAVI time by 80 days. At 1-year, adjusted composite outcome rates were similar (SHR: 1.55, 95%CI: 0.93-2.58, P=0.090), with comparable cardiovascular death and MI rates but a trend toward higher HFH in the ICA group (SHR: 2.16, 95%CI: 0.97-4.81, P=0.060). All-cause mortality, bleeding, and stroke/TIA were similar. Long-term follow-up showed similar composite outcomes (SHR: 1.38, 95%CI: 0.90-2.12, P=0.142) with persistent trends toward higher HFH with ICA (SHR: 1.91, 95%CI: 1.00-3.67, P=0.052). Conclusion: Routine ICA before TAVI offered no significant clinical benefit compared with CTA-only, supporting a CTA-guided preprocedural assessment strategy.

Zayya Zendo

Rare Linezolid Induced Toxicity in Enterococcus faecalis ICD Associated Endocarditis

Zayya Zendo, Mah-noor Ahmed Malik, Christina Di-Carlo, Nikesh Adunuri

Introduction: Linezolid is a strong oxazolidinone that is often used to treat resistant Gram-positive infections. Although usually effective, its similar structure to that of mitochondrial ribosomes can lead to rare but severe host toxicity, such as lactic acidosis and myelosuppression. Case Description: A 68-year-old male with HFrEF and CKD presented with Enterococcus faecalis bacteremia. Transesophageal echocardiography confirmed a vegetation on his primary prevention ICD lead. Initial treatment with ampicillin and ceftriaxone was complicated by clinically suspected acute interstitial nephritis. He was transitioned to oral linezolid but returned to the hospital weeks later with severe nausea, vomiting, diarrhea, and general malaise. Investigations revealed new-onset lactic acidosis and bone marrow suppression. Symptoms resolved entirely upon cessation of linezolid and initiation of supportive care. He subsequently required CCU admission for milrinone supported diuresis to manage worsening renal function and volume status. Following stabilization, he underwent successful laser lead extraction and was transitioned to IV vancomycin, managed outpatient via a Virtual Vancomycin Clinic to accommodate his fragile renal baseline. Discussion: Linezolid's off target inhibition of human mitochondrial ribosomes impairs oxidative phosphorylation, triggering a shift to anaerobic metabolism. This duration dependent adverse effect requires high clinical suspicion to differentiate from worsening sepsis or alternative causes of metabolic derangement. Conclusion: This case highlights the necessity of vigilant metabolic monitoring during prolonged linezolid therapy. Recognizing drug-induced toxicities is critical to avoiding diagnostic errors in patients with complex, multi-system comorbidities.

Hanjia Zhao

A 10-Amino Acid Deletion at N-terminus of DNA Damage Inducible Transcript 3 Confers Protection Against Doxorubicin-Induced Cardiotoxicity

Hanjia Zhao, Chao Wang, Rui Ni, Daniel Thompsen Passos, Fred Dick, Tianqing Peng

Doxorubicin is an antitumor drug whose clinical use is limited by its cardiotoxicity (DIC). While reactive oxygen species generation and topoisomerase II poisoning are key mechanisms of DIC, targeting them has shown limited success. Increasing evidence suggests that multiple regulated cell death pathways contribute to DIC. DNA damage-inducible transcript 3 (DDIT3) is a stress-responsive transcription factor induced by doxorubicin and is best known for promoting apoptosis. Our previous work identified a 10-amino-acid N-terminal domain (Glu19–Val28) of DDIT3 required for necroptosis and showed that Ddit3$^{-/-}$ mice are protected from DIC. However, the relative contribution of DDIT3-mediated apoptosis versus necroptosis remains unknown. We therefore investigated whether deleting the necroptosis-mediating N-terminal domain protects against DIC. Primary cardiac cells from C57BL/6N and Ddit3Δ10aa/Δ10aa mice are treated with doxorubicin in vitro. In vivo, both strains receive doxorubicin. Cardiac function and injury are assessed by echocardiography and serum cardiac troponin I levels, respectively. Cell death is measured by LDH assay, and the expression of DDIT3, apoptosis, and necroptosis markers is evaluated by western blot. Expected Results:Doxorubicin will increase DDIT3 levels and LDH release. Ddit3Δ10aa/Δ10aa cells will show reduced LDH release and necroptosis markers. Ddit3Δ10aa/Δ10aa mice will show a normal baseline phenotype like wildtype mice but improved cardiac function and lower troponin I levels after doxorubicin treatment. By identifying the relative importance of necroptosis in DIC and DDIT3 as a potential target, this study may promote cardioprotective strategy development to improve the quality of life of patients receiving doxorubicin.