THE UNIVERSITY OF BRITISH COLUMBIA

**Department of Medicine**

Faculty of Medicine

# 39th Annual Resident Research Day

Wednesday, June 7, 2023

**12:00 - 7pm**

Paetzold Auditorium

VGH | Vancouver, BC

# Welcome to the UBC Department of Medicine 39th Annual Resident Research Day

*Paetzold Foyer*

**12:00 Lunch**

*Paetzold Auditorium*

**12:30 Opening Remarks - Dr. Anita Palepu**
**12:40 Podium Presentations - Session 1**
**1:55 Podium Presentations - Session 2**
**3:20 Podium Presentations - Session 3**
**4:35 Podium Presentations - Session 4**

*Multipurpose Room*

**12:40 - 5:30 Poster Adjudication**

*Paetzold Foyer*

**5:20 Reception**

*Paetzold Auditorium*

**6:20 Awards Ceremony**

## Introduction

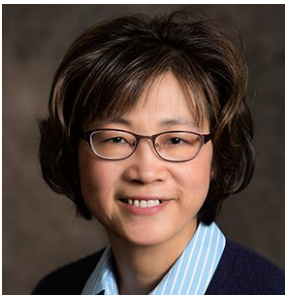
We are very pleased to welcome you here today to the 39th Annual Resident Research Day, an important celebration of the scholarly endeavors of the Residents and Fellows in our program. Today we take time to recognize the many hours of hard work, dedication and effort necessary to execute these scholarly research projects, and acknowledge the efforts of the faculty mentors who have contributed to the success of these projects.

The Department of Medicine is the largest department in the Faculty of Medicine, with over 1200 faculty members and staff across the province of BC. Our members represent 18 distinct divisions which focus on understanding the nature, cause, and prevention of adult disease. The mission of the Department is to provide the highest possible standards of excellence in patient care, teaching, and research. As residents trained in the Department of Medicine, you all play an integral part in helping deliver this mission by directly contributing to the high standards of patient care and research for which UBC Department of Medicine is recognized. Each year your hard work contributes to the over 1000 peer reviewed publications and abstracts. Your dedication to the creation, dissemination and translation of new knowledge is part of evolving health care landscape.

Today we encourage you to reflect on the lessons you have learned throughout your research projects and carry these forward as you develop your own practice. We hope that you will continue to develop and utilize evidence to inform your decision making, and contribute to the strong history of patient care through innovation.

Anita Palepu, MD, MPH, FRCPC, MACP
Professor and Eric W. Hamber Chair
Head, Department of Medicine,
UBC Department of Medicine

Andrea Townson, MD, FRCPC, MScHPEd
Medical Co-Chair, Regional Rehab Program, VCHA
Clinical Professor, Division of Physical Medicine and Rehabilitation
Associate Head Education,
UBC Department of Medicine



Teresa S.M. Tsang, MD, FRCPC, FACC, FASE
Director of Echo Lab, VGH and UBC
Director of UBC Artificial Intelligence Echo Core Lab
Professor, Division of Cardiology
Associate Head Research,
UBC Department of Medicine

# Podium Presentations

# Moderator

Dr. Graham Wong
MD MPH FRCPC FACC FCCS FAHA

Currently Dr. Wong is the Director of the UBC Cardiology Training Program, the Associate Director of the Cardiac Intensive Care Unit at Vancouver General Hospital, the Medical Director of the Vancouver Coastal Health Authority STEMI Program and the Medical Lead for the Coronary Artery Disease Population Group for Cardiac Services BC. He is a Clinical Professor of Medicine at UBC.

He was on the Primary Author Panel for the 2013 and 2018 Canadian Cardiovascular Society Antiplatelet Guidelines, the 2022 CCS/Canadian Neurocritical Care Society Position Statement on Neuroprognostication for the Post Arrest Patient, the 2022 American Heart Association Scientific Statement on Escalating and De-escalating Temporary Mechanical Circulatory Support in ardiogenic Shock and the 2023 American Heart Association Scientific Statement on Atrial Fibrillation Occurring During Acute Hospitalization.

He was the Co-Chair for both the 2017 Canadian Cardiovascular Society Position Statement on the Optimal Care of the Post Arrest patient and the 2019 Canadian Cardiovascular Society Guidelines on the Acute Management of STEMI.

He has authored or co-authored over 60 peer reviewed publications.

Dr. Wong has won a number of teaching awards including the Canadian Cardiovascular Society Distinguished Teacher Award, UBC Clinical Faculty Award for Excellence in Teaching, the Vancouver General Hospital Bobby Miller Teaching Prize, the UBC Department of Medicine Master Teacher Award and the UBC Killam Teaching Prize. He was also the 2017 recipient of the Vancouver General Hospital Clinical Excellence Award.

He has 2 boys playing rep hockey each with multiple games and practices, and he tries to cycle as much as he can so he can fit his current set of pants. As a result of all this he tires easily.

# Podium Presentation Adjudicators

## Dr. Myriam Farah MD, FRCPC

Dr. Farah completed her Internal Medicine and Nephrology training at the University of British Columbia and thereafter a two year clinical fellowship in hemodialysis and plasma exchange based at UBC, with exposure at the University of Toronto, and University of Western Ontario. She joined the UBC Division of Nephrology in 2012.

In addition to general nephrology care, her areas of interest include extracorporeal purification, including hemodialysis modalities and plasma exchange, ICU nephrology, and polycystic kidney disease.

Dr. Farah is the Medical Director of the Plasma Exchange program and the Polycystic Kidney Disease clinic at St. Paul's Hospital and chairs the Renal Quality and Safety Committee.

## Dr. Myp Sekhon MD, FRCPC, PhD

Dr. Sekhon is an intensive care physician and clinician-scientist at Vancouver General Hospital (VGH). He is a Clinical Associate Professor in the Division of Critical Care Medicine and Department of Medicine at the University of British Columbia (UBC). He completed his medical school training, internal medicine residency, and critical care medicine sub-specialty fellowship at UBC prior to completing a neurocritical care fellowship at Addenbrooke's Hospital at the University of Cambridge, United Kingdom under the guidance of Professor David Menon. Upon his return to Canada in 2015, he undertook and completed his PhD under Professor Philip Ainslie in cerebrovascular physiology and has spearheaded a state-of-the-art neuromonitoring program at VGH, in which he conducts his research aimed at delineating the pathophysiologic mechanisms underpinning ischemic brain disease.

# Poster Presentation Adjudicators

## Dr. Mitch Lee MD, FRCPC

Dr. Mitchell Lee is a Clinical Assistant Professor within the Division of Community Internal Medicine. He completed his Internal Medicine residency training at the University of British Columbia. He also served as the Chief Medical Resident at the Royal Columbian Hospital in 2011. He currently practices as a Clinical Teaching Unit Attending Physician at RCH and also maintains community-based outpatient Internal Medicine practices in Burnaby and Surrey. He has served in administrative roles as the former Head of Medicine for Burnaby Hospital and represented Internal Medicine physicians in the province as an Executive member of the Society of General Internal Medicine Physicians.

## Dr. Sonny Thiara MD, FRCPC

Dr. Thiara is a Clinical Assistant Professor in the Division of Medicine at University of British Columbia with a MPH in clinical epidemiology from Harvard. He is an Intensivist at VGH and leads ECMO research at VGH. He is a Scientist at VCHRI and was awarded the VCHRI Mentored Clinician Scientist Award. His research interests are ECMO and brain injury.

# Podium Presentations

## *12:30 - 1:45 pm* *Podium Session 1*

*12:30* Opening remarks - Dr. Anita Palepu

*12:40* First-line osimertinib for epidermal growth factor receptor (EGFR) mutant lung cancer: an assessment of real world efficacy/outcomes of clinical trial ineligible patients

*Connor Wells (Med Onc PGY5)*
*Sponsor: Sophie Sun*

*12:53* Long-term outcomes of high-risk stage 1/2 classic Hodgkin lymphoma managed with an advanced stage treatment approach

*Laura Kim (IM PGY3)*
*Sponsor: Kerry Savage*

*1:06* Eligibility and workload impact of introduction of adjuvant nivolumab in patients with resected esophageal and gastroesophageal junction (ESO/GEJ) cancer

*Tae Hoon Lee (IM PGY2)*
*Sponsor: Sharlene Gill*

*1:19* Whole genome and transcriptome analysis broadens precision cancer treatment options

*Alexandra Bohm (IM PGY1)*
*Sponsor: Janessa Laskin*

*1:32* Impact of aging on rheumatic immune-related adverse events secondary to immune checkpoint inhibitors: Experience from the Canadian Research Group of Rheumatology in Immuno-Oncology (CanRIO)

*Jenny Li (IM PGY1)*
*Sponsor: Shahin Jamal*

***1:45*** ***10 minute break***

## *1:55 - 3:00 pm* *Podium Session 2*

*1:55 Zoom* Early predictors of cardiogenic shock amongst patients with ST segment elevation myocardial infarction.

*Cathevine Yang (Card PGY5)*
*Sponsor: Chris Fordyce*

*2:08* Effects of Renin-Angiotensin-Aldosterone-System Inhibitors on Coronary Atherosclerotic Plaques

*Curtis Williams (Card PGY6)*
*Sponsor: Chris Fordyce*

*2:21* Management and outcomes of mitral regurgitation: MitraCure an international registry

*Lam (Card PGY6)*
*Sponsor: Christina Luong*

*2:34* Clinical characteristics and outcomes of patients with mitral valve prolapse and frequent premature ventricular complexes in the absence of structural heart disease

*Jacky Tang (IM PGY2)*
*Sponsor: Marc Deyell*

*2:47* Residual left ventricular outflow tract obstruction associated with hypertrophic cardiomyopathy despite alcohol septal ablation: insights from cardiac imaging

*Fahad Alajmi (IM PGY2)*
*Sponsor: Kevin Ong*

***3:00*** ***20 minute break***

## *3:20 - 4:25 pm* *Podium Session 3*

*3:20* Underutilization of intravenous iron in a contemporary population of ambulatory heart failure patients in Canada

*Fahad Alajmi (IM PGY2)*
*Sponsor: Mustafa Toma*

*3:33* Practice patterns of newly diagnosed severe aortic stenosis in British Columbia (B.C.): Aortic stenosis in B.C. Data (ABCD) study

*Aishwarya Roshan (IM PGY1)*
*Sponsor: Teresa Tsang*

*3:46* Impact of acute diesel exhaust exposure on prothrombotic markers in COPD

*Seo Am Hur (IM PGY1)*
*Sponsor: Chris Carlsten*

*3:59* Simplification of hepatitis C treatment in British Columbia leads to similar treatment efficacy: Lessons from the COVID-19 pandemic

*Shirley Jiang (IM PGY3)*
*Sponsor: Alnoor Ramji*

*4:12* Environmental Literacy for the Nephrologist – A Data-Informed Approach

*Elise Fryml (IM PGY2)*
*Sponsors: Caroline Stigant (UBC)*
*Tamara Glavinovic (University of Ottawa)*

***4:25*** ***10 minute break***

## *4:35 - 5:40 pm* *Podium Session 4*

*4:35* A case series of PKD mass effect: a management dilemma

*Elise Fryml (IM PGY2)*
Sponsors: Myriam Farah
Adeera Levin

*4:48* Early sodium monitoring does not reduce hospital visits with hyponatremia in older adults starting antidepressents: a retrospective cohort study

*Natasha Lane (IM PGY3)*
*Sponsor: Therese Stukel*

*5:01* Characteristics of arterial blood gas in patients with fibrotic interstitial lung disease

*Mira Donaldson (IM PGY2)*
*Sponsor: Chris Ryerson*

***5:20 Reception***

***6:20 Awards Ceremony***

# Poster Presentations

## *12:40 - 1:30 pm* *Poster Session 1*

*12:40* Severity of illness and outcomes in Indigenous patients with pulmonary arterial hypertension in Canada

*Amanda Cheung (IM PGY2)*
*Sponsor: Nathan Brunner*

*12:53* Assessing the safety of an early repatriation strategy for uncomplicated ST-elevation myocardial patients after primary percutaneous intervention

*Shanjot Brar (IM PGY2)*
*Sponsor: Razi Khan*

*1:06* Correlation of ECG and cardiac MRI for assessment of ventricular hypertrophy/dilatation in adults with congenital heart disease

*Shanjot Brar (IM PGY2)*
*Sponsor: Shanta Chakrabarti*

*1:19* High risk non-classical LQTS genotypes: spectrum of genetic and phenotypic features of long QT syndrome

*AbdulKarim AbdulRahman (IM PGY1)*
*Sponsor: Andrew Krahn*

***1:30 20 minute break***

## *1:55 - 3:00 pm* *Poster Session 2*

*1:55* Automating surveillance of Staphylococcus aureus bacteremia in two urban hospitals

*Jason Minh Nguyen (ID PGY5)*
*Sponsor: Victor Leung*

*2:08* Global burden of nontuberculous mycobacteria in the cystic fibrosis population: a systematic review and meta-analysis

*Mosaab Alam (ID PGY5)*
*Sponsor: Bradley Quon*

*2:21* Quality improvement initiative to improve perioperative care for patients undergoing pituitary surgery

*Arshia Beigi (IM PGY2)*
*Sponsor: Brandon Galm*

*2:34* Multiple endocrine neoplasia type 1: a Vancouver-based case series

*Kristy (Hao) Wang (IM PGY2))*
*Sponsor: Breay Paty*

***2:50 30 minute break***

## *3:20 - 4:25 pm* *Poster Session 3*

*3:20* Improvement in quality of life in MDS patients who become transfusion independent after treatment with a hypomethylating agent or lenalidomide

*Angela Wan (IM PGY2)*
*Sponsor: Rena Buckstein*

*3:33* Real-world outcomes in patients with metastatic renal cell carcinoma (mRCC) receiving dualimmune checkpoint inhibitor (ICI-ICI), or immune checkpoint inhibitor / tyrosine kinase inhibitor (ICI-TKI) combinations as first-line therapy: a British Columbia (BC) population-based analysis

*Faisal Alsadoun (IM PGY2)*
*Sponsor: Maryam Soleimani*

*3:46* Review of the Indications and Complications of Intravenous Iron Therapy in the Antepartum and Postpartum Period at BC Women's Hospital, Interim Analysis

*Huaying (Helen) Zhao (IM PGY2)*
*Sponsor: Ellen Miles*

*3:59* Single centre experience using patient-reported outcomes using the Patient-Reported Outcomes, Burdens and Experiences (PROBE) survey following emicizumab initiation in patients with severe hemophilia A without inhibitor

*Ingrid Blydt-Hansen (IM PGY1)*
*Sponsor: Shannon Jackson*

*4:12* *Inflammatory markers in HLH – a single center study*

*Caroline Spaner (IM PGY1)*
*Sponsors: Luke Chen*
*Audi Setiadi*

***4:25*** ***10 minute break***

## *4:35 - 5:30 pm* *Poster Session 4*

*4:35* The prevalence, demographics, and clinical characteristics of Hepatitis Delta Virus in Vancouver, BC: a retrospective chart review

*Valeriya Zaborska (IM PGY2)*
*Alnoor Ramji*

*4:48* Association of air pollution with interstitial lung disease incidence and outcomes: a systematic review

*Sudarshan Bala (IM PGY2)*
*Sponsors: Chris Ryerson, Gillian Goobie*

*5:01* Endoscopic submucosal dissection of gastric adenomas and early carcinomas: outcomes from British Columbia

*Billy Zhao(IM PGY1)*
*Sponsor: Eric Lam*

*5:14* Efficacy of the in-hospital observatory period for IBD patients with flare treated with oral corticosteroids

*Justin Buttar(IM PGY1)*
*Sponsor: Steven Pi*

# Podium presentation Abstracts

# FIRST-LINE OSIMERTINIB FOR EPIDERMAL GROWTH FACTOR RECEPTOR (EGFR) MUTANT LUNG CANCER: AN ASSESSMENT OF REAL WORLD EFFICACY/OUTCOMES OF CLINICAL TRIAL INELIGIBLE PATIENTS

*J. Connor Wells[1], Monica M Mullin[2], Sophie Sun[1]*

*[1]BC Cancer Agency, [2]Dept. of Respirology, UBC*

BACKGROUND
Osimertinib is a third-generation EGFR inhibitor used as first line therapy for EGFR mutant lung cancer based on the results of the FLAURA clinical trial.

OBJECTIVE
To report the real-world outcomes of patients treated with first line osimertinib and compare the outcomes of FLAURA eligible and ineligible patients.

METHODS
Patients were included if they received first line osimertinib between January 2020 and October 2022 in British Columbia. Patients were deemed ineligible for the FLAURA trial if they met one of five criteria: ECOG ≥2, unstable brain metastases, hemoglobin <90, platelet <100, or creatinine clearance <50. Comparisons of overall survival (OS) and time to treatment discontinuation (TTD) were made between using Kaplan-Meier survival curves and log-rank testing. Hazard ratios (HR) are reported using Cox regression adjusting for baseline prognostic factors.

RESULTS
Of 311 patients included, 137 (44%) were considered FLAURA-ineligible. Reasons for ineligibility were poor ECOG (n=120), unstable brain metastases (n=21), anemia (n=7), thrombocytopenia (n=5), and low creatinine clearance (n=9). Baseline characteristics were similar.

At the time of analysis, 103/137 (75%) of ineligible patients had discontinued osimertinib and 87/137 (64%) had died. 82/174 (47%) of eligible patients had discontinued osimertinib and 53/174 (30%) were deceased. The median TTD in the ineligible group was 11.9 months (95% CI 10.5-15.5) vs 26.9 months (95% CI 21.9- 34.6) in the eligible group (p<0.001), HR 2.1 (95% CI 1.5-2.9, p<0.001). The median OS in the ineligible group was 15.8 months (95% CI 12.4 to 21.1) vs NR (95%CI 28.5 to NR) in the eligible group (p<0.001), HR 2.6 (95% CI 1.8-3.7, p<0.001).

CONCLUSIONS
Over 40% of the real-world population receiving first line osimertinib would have been ineligible for the FLAURA clinical trial. The median survival was nearly 2 years shorter in this patient population. This study provides benchmark data to better inform patient prognosis using real-world data.

# LONG-TERM OUTCOMES OF HIGH-RISK STAGE 1/2 CLASSIC HODGKIN LYMPHOMA MANAGED WITH AN ADVANCED STAGE TREATMENT APPROACH

*Kim JL[1], Villa D[2], Tonseth RP[3], Gerrie AS[2], Wilson D[3], Benard F[3], Venner CP[2], Skinnider B[4], Farinha P[4], Slack GW[4], Gascoyne RD[4], Scott DW[2], Connors JM[2], Sehn LH[2], Savage KJ[2].*

*[1]Department of Medicine, UBC; [2]Centre for Lymphoid Cancer and Department of Medical Oncology, BC Cancer; [3]Functional Imaging Department, BC Cancer; [4]Centre for Lymphoid Cancer and Department of Pathology, BC Cancer*

## OBJECTIVE

To evaluate long-term outcomes of patients with stages 1/2 bulky and 2B classic Hodgkin lymphoma (cHL), managed with an advanced stage approach.

## METHODS

Adult patients with stage 1/2A bulky (≥10 cm) or 2B cHL managed with 6 cycles of ABVD and PET-guided radiation therapy (RT) were included. Those with a positive (Deauville 4 or 5) PET scan at the end of treatment (EOT) received consolidative RT. Freedom from treatment failure (FFTF) was measured from diagnosis to progression or death due to disease/ treatment. Overall survival (OS) was measured from diagnosis to death due to any cause.

## RESULTS

From 2005-2020, 295 patients (stage 1/2A bulky n=73, 2B n=133, 1/2B bulky n=89) were identified. Median age was 30 years (17-69y), mass size 10cm (10-20cm), and follow-up was 9.3 years (0.9-17.3y). The 5-year FFTF and OS for all patients were 84% and 94%, and by stage: 90% and 95% for bulky only, 82% and 93% in 2B, and 81% and 94% in 1/2B bulky.

EOT PET was available in 261 patients (80% PET-negative). Stage 1/2B bulky were more likely to have a PET-positive scan (1/2B bulky 32% vs 2B 18% vs bulky only 10%, $p$=0.002). 5-year FFTF was superior in PET-negative cases, 93% vs 49% ($p$<0.001). 5-year OS was not significantly different between PET-negative vs positive, 96% vs 88% ($p$=0.17), but inferior specifically in D5 (D5 77% vs D4 95% vs DX-D3 96%) ($p$=0.005). D5 score was more common in patients with B symptoms: 1/2B bulky 14.5% vs 2B 9% vs bulky only 3% ($p$=0.048).

## CONCLUSION

An advanced stage management approach yielded excellent outcomes and limited RT use, particularly in patients with a negative PET scan. Stage 1/2B bulky cases had higher likelihood of a positive PET scan, and those with B symptoms were more likely to have a D5 score.

# ELIGIBILITY AND WORKLOAD IMPACT OF INTRODUCTION OF ADJUVANT NIVOLUMAB IN PATIENTS WITH RESECTED ESOPHAGEAL AND GASTROESOPHAGEAL JUNCTION (ESO/GEJ) CANCER

*Tae Hoon Lee[1], Sharlene Gill [1, 2]*

*[1] Department of Medicine, [2]BC Cancer - Vancouver*

## OBJECTIVES

The CheckMate (CM) 577 study demonstrated the benefit of 12 months of additional therapy with adjuvant nivolumab in patients with pathologic residual disease following neoadjuvant chemoradiation for ESO/GEJ cancer. Nivolumab is now funded in BC, as per the GIAJNIV protocol. This BC Cancer retrospective study reviews the real-world eligibility and potential resource implications associated with the therapy.

## METHODS

REB-approved chart review of patients who underwent CROSS chemoradiation at BC Cancer from January 2016 to December 2020. Patient eligibility was determined by identifying at least ypT1 or ypN1 and assessed per the CM577 and GIAJNIV criteria. The resource impact of nivolumab was assessed by projecting the number of MD visits, chemotherapy visits, and anticipated G3/4 serious toxicity events per the CM577 study.

## RESULTS

677 patients were identified: 63% esophageal and 37% GEJ, with 74% adenocarcinoma and 25% squamous cell carcinoma histology. 460 patients underwent resection, with 365 patients (79%) with pathologic residual disease. By the CM577 criteria, n=249 (68%) were eligible for adjuvant nivolumab, while n=321 (88%) were eligible per the GIAJNIV criteria. In BC, with conservative assumptions, this translates into an estimated 60 patients/year being eligible for adjuvant nivolumab, resulting in 768 additional new chemotherapy visits and potentially equal number of MD visits, which translates into 254 additional MD workhours annually. Based on a 34% G3/4 toxicity rate, an estimated 20 patients/year would experience a serious toxicity event that requires medical intervention.

## CONCLUSIONS

Adjuvant nivolumab is an important new treatment option for patients with resected ESO/GEJ cancer. Our findings suggest that most patients (88%) with resected ESO/GEJ cancer and residual disease would be eligible for 12 months of adjuvant nivolumab. In addition to treatments costs, additional oncologist workload impact should be considered in the provincial implementation of therapies for new indications.

## WHOLE GENOME AND TRANSCRIPTOME ANALYSIS ENHANCES PRECISION CANCER TREATMENT OPTIONS.

*Alexandra Bohm, Erin Pleasance, Laura M. Williamson, Jessica Nelson, Yaoqing Shen, Melika Bonakdar, Emma Titmuss, Veronika Csizmok, Kathleen Wee, Sina Hosseinzadeh, Cameron J. Grisdale, Caralyn Reisle, Gregory Taylor, Eleanor Lewis, Martin Jones, Dustin Bleile, Sara Sadeghi, Wei Zhang, Anna Davies, Brayden Pellegrini, Tina Wong, Reanne Bowlby, Simon Chan, Karen Mungall, Eric Chuah, Andrew Mungall, Richard A. Moore, Yongjun Zhao, Balvir Deol, Ana Fisic, Alexandra Fok, Dean Regier, Deirdre Weymann, David F. Schaeffer, Sean Young, Stephen Yip, Kasmintan Schrader, Nathalie Levasseur, Sara K. Taylor, Xiaolan Feng, Anna Tinker, Kerry Savage, Stephen Chia, Karen Gelmon, Sophie Sun, Howard Lim, Daniel Renouf, Steven Jones, Marco Marra, Janessa Laskin*

BACKGROUND
Advances in DNA sequencing technologies, targeted drug development, and understanding of cancer drivers are enabling the delivery of precision genomic medicine to cancer clinics. While the majority of genomic medicine approaches are designed to profile panels of selected genes or hotspot regions, the use of comprehensive, integrative data, such as that provided by whole genome and transcriptome sequencing and analysis (WGTA), presents an opportunity to align a much larger proportion of patients to therapies.

METHODS
Samples from 570 patients with advanced or metastatic cancer enrolled in the Personalized OncoGenomics (POG) program underwent WGTA. DNA-based data, including mutations, copy number data, and mutation signatures, were combined with RNA-based data, including gene expression, to generate WGTA profiles. WGTA profiles for all patients were reviewed by a multidisciplinary molecular tumour board to inform systemic therapy and choose clinically actionable alterations. Choices of WGTA-informed therapies and data from therapy responses were collected from charts and correlated with individual WGTA profiles.

FINDINGS
Our analyses identified clinically actionable targets for 83% of patients, 37% of whom received WGTA-informed treatments. RNA data were particularly useful; RNA expression data contributed to 67% of WGTA-informed treatments and 25% of treatments were informed by RNA expression data alone. Of 248 WGTA-informed treatments, 46% resulted in clinical benefit. RNA expression data were comparable to DNA-based data in terms of their ability to align to clinically beneficial treatments. Patients accessed WGTA-informed treatments through clinical trials (19%), off-label use of drugs (35%), and as standard therapies (46%), demonstrating the utility of genomic information to direct use of chemotherapies as well as targeted therapies.

INTERPRETATION
Integrating RNA expression and genome sequence data illuminated possible treatment options for patients that resulted in 46% of treated patients experiencing positive clinical benefit, supporting the use of comprehensive WGTA profiling in clinical cancer care.

**Podium Session 1 - 1:32pm**

# IMPACT OF AGING ON RHEUMATIC IMMUNE-RELATED ADVERSE EVENTS SECONDARY TO IMMUNE CHECKPOINT INHIBITORS: EXPERIENCE FROM THE CANADIAN RESEARCH GROUP OF RHEUMATOLOGY IN IMMUNO-ONCOLOGY (CANRIO)

*Jenny Li [1], Lourdes Gonzalez Arreola[2], Anthony Obrzut[2], Marie Hudson[3], Carrie Ye[4], Janet Roberts[5], Aurore Fifi-Mah[6], May Choi[6], Sabrina Hoa[7], Tom Appleton[8], Janet Pope[8], Nancy Maltez[9], Shahin Jamal[10] on behalf of the Canadian Research Group of Rheumatology in Immuno-Oncology (CanRIO).*

*[1] Department of Medicine, UBC; [2]Arthritis Research Canada, [3]McGill University; [4]University of Alberta; [5]Dalhousie University; [6]University of Calgary; [7]Montreal University; [8]University of Western Ontario; [9]University of Ottawa; [10]Rheumatology Division, UBC*

## INTRODUCTION

Immune-related adverse effects (irAEs) of immune checkpoint inhibitors are prevalent, including rheumatic irAEs (Rh-irAE). However, current research on Rh-irAEs is limited, especially in relationship with age. This study aims to examine whether older patients with Rh-irAEs develop more severe Rh-irAEs or more types of irAEs compared to that of their younger counterparts.

## METHODS

Using a prospective cohort recruited from nine centers across Canada by the Canadian Research Group of Rheumatology in Immuno-Oncology (CanRIO) network, 139 adult patients with Rh-irAEs were included. The severity of Rh-irAE and numbers of irAEs per patient were examined and compared between patients ≥65 years old and their younger counterparts. Other parameters (Eg. irAE treatments, ICI discontinuation) were also described.

## RESULTS

Fifteen of 58 (26%) patients in the younger group (median age 58.5) and 20/81 (25%) of the older group (median 72) had Rh-irAEs with severity of CTCAE Grade ≥3 ($p$-value = 0.875). There was also no significant difference between the number of types of irAEs experienced by patients from the two age groups ($p$-value = 0.283). Among patients with joint-related Rh-irAEs, more younger patients (32% vs. 24%) had severe Rh-irAEs, whereas the opposite was true (12% vs. 26%) for those with non-joint-related Rh-irAEs.

## CONCLUSION

In patients with Rh-irAEs, older patients were not found to have a higher prevalence of severe Rh-irAEs or more types of irAEs compared to their younger counterparts. As the role of immunotherapy continues to expand, further research is needed to characterize specific types of Rh-irAEs and the patients they affect.

*Podium Session 2- 1:55pm*

## PRE-HOSPITAL PREDICTORS OF CARDIOGENIC SHOCK AMONG STEMI PATIENTS WITH AND WITHOUT CARDIAC ARREST: IMPLICATIONS FOR SHOCK TEAMS

*C. Yang[1], T. Lee[2], A. Kochan1, M. Barker1, T. Roston[1], J. Singer[3], B. Grunau[4], J. Helmer[5], GC. Wong[1], J. Cairns[1], CB. Fordyce[1]*

*[1]Division of Cardiology, UBC; [2]Providence Health Care Research Institute (PHCRI; [3]School of Public Health, UBC; [4]Department of Emergency Medicine, UBC; [5]BC Emergency Health Services*

BACKGROUND
Cardiogenic shock (CS) develops in up to 8.6% of patients with ST-elevation myocardial infarction (STEMI) and is associated with poor outcomes. Shock teams are becoming increasingly important in the management of CS. Early identification of patients at risk of developing CS is paramount to enable timely mobilization of shock teams to improve outcomes.

PURPOSE
We set out to identify clinical parameters which are readily available to emergency service providers, both prehospital and in the emergency department, that can predict development of cardiogenic shock in patients presenting with STEMI planned to undergo primary PCI. Using these predictors, we aim to develop a risk score to rapidly identify patients at risk of developing CS to facilitate timely intervention.

METHODS
We performed a retrospective cohort study using prospective data from a centralized STEMI registry of a healthcare system serving 1.25 million people. Patients presenting with STEMI with intent to receive primary PCI between April 1, 2012 to Dec 21, 2020 were included. Logistic regression was used to assess the relationship between predictors and the occurrence of cardiogenic shock at any point from first medical contact to hospital discharge. The prediction model was converted to a risk score by scaling of the regression coefficients.

RESULTS
Among 2736 consecutive STEMI patients with intent to undergo primary PCI, 15.2% (n=415) developed CS. Overall, 10.9% of patients had prehospital cardiac arrest, which was more likely in those with CS (46.5% vs. 4.5%, $p<0.001$). Patients with CS were more likely to have prolonged first medical contact-to-device time per national guidelines (74.7% vs. 53.3%, $p<0.001$) compared to those without CS. Regression analysis identified older age, current dialysis, diabetes, history of heart failure, history of atherosclerotic cardiovascular disease, elevated heart rate and reduced systolic blood pressure on presentation, anterior infarct, and prehospital cardiac arrest to be strong predictors of CS.

CONCLUSIONS
Among STEMI patients with intent to undergo primary PCI, we identified 8 clinical parameters that strongly predict CS. This has been developed into a scoring system which can be easily used by emergency service providers to rapidly identify patients with CS and enable timely triage and shock team activation.

# EFFECTS OF RENIN-ANGIOTENSIN-ALDOSTERONE-SYSTEM INHIBITORS ON CORONARY ATHEROSCLEROTIC PLAQUES

*Curtis Williams[1]; Donghee Han[2]; Christopher B. Fordyce [1], Jonathon A. Leipsic [3]*

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## BACKGROUND AND AIMS

Inhibition of Renin-Angiotensin-Aldosterone-System (RAAS) has been hypothesized to improve endothelial function and reduce plaque inflammation, however their impact on the progression of coronary atherosclerosis is unclear. We aim to assess the effects of RAAS inhibitor on the plaque progression and composition assessed by serial coronary CT angiography (CCTA).

## METHODS

We performed a prospective, multinational study consisting of a registry of patients without history of CAD who underwent serial CCTAs. Patients using RAAS inhibitors were propensity matched to RAAS inhibitor naïve patients based on clinical and CCTA characteristics at baseline. Atherosclerotic plaques in CCTAs were quantitatively analyzed for percent atheroma volume (PAV) according to plaque composition. Interactions between RAAS inhibitor use and baseline PAV on plaque progression were assessed using multivariate linear regression model.

## RESULTS

Of 1248 patients from the registry, 299 RAAS inhibitor taking patients were matched to 299 RAAS inhibitor naïve patients. Over a mean interval of 3.9 years, there was no significant difference in annual progression of total PAV between RAAS inhibitor naïve vs taking patients (0.75 vs 0.79 %/year, $p$ = 0.66). With interaction testing, however, RAAS inhibitor use was significantly associated with lower non-calcified plaque progression (Beta coefficient -0.193, adjusted $p$=0.038) with higher levels of baseline PAV.

## CONCLUSIONS

The use of RAAS inhibitors over a period of nearly 4 years did not significantly impact on the total atherosclerotic plaque progression. However, a significant decrease in progression of non-calcified plaque was observed in patients with a higher burden of baseline atherosclerosis.

***Podium Session 2- 2:21 pm***

# A LOCAL PERSPECTIVE ON MITRACURE (AN INTERNATIONAL REGISTRY ON THE MANAGEMENT AND OUTCOMES OF MITRAL REGURGITATION)

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## BACKGROUND

Mitral regurgitation (MR) is among the most common valvular heart disease that is heterogenous and complex in terms of etiologies, mechanisms, and treatment. Recent epidemiological data suggest that MR is underdiagnosed and undertreated and patients are referred late in the course of disease. Building a registry will improve the ability to better assess the current management and outcomes of patients with MR who underwent a mitral valve intervention with in-depth clinical and echocardiographic characterization and collection of in-hospital and mid-term outcomes.

## OBJECTIVE

To evaluate in-hospital and mid-term outcomes (in-hospital death and complications) of patients who mitral valve interventions according to MR mechanism and etiology.

## METHODS

A retrospective cohort of patients who underwent a mitral valve intervention between January 1st 2019 to September 30th, 2019 was conducted. The patients were identified through established surgical database and/or electronic medical records. Only patients who are younger than 18 years or with a prior history of mitral valve intervention will be excluded. In addition to the usual demographic data, information regarding patients' clinical presentation, mitral valve anatomy and echocardiographic parameters, in-hospital death and complication are also collected through chart review. Data analysis is mostly descriptive where the patients' characteristics and outcomes will be first analyzed overall and according to MR etiology and mechanism or other variable of interest. Repair rates will be analyzed based on mitral valve etiology and anatomy as recorded.

## RESULTS

106 patients who underwent a mitral valve intervention at Vancouver General Hospital between January 1st 2019 to September 30th 2019 were identified. At the time of submission, statistical analysis is still underway – these findings will be presented.

# CLINICAL CHARACTERISTICS AND OUTCOMES OF IDIOPATHIC FREQUENT PREMATURE VENTRICULAR COMPLEXES WITH MITRAL VALVE PROLAPSE

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## BACKGROUND

Frequent premature ventricular complexes (PVCs) in the absence of structural heart disease has high rates of spontaneous resolution with low rates of adverse outcomes. Conversely, patients with mitral valve prolapse (MVP) have a high prevalence of PVCs and may have an increased risk of sudden cardiac death. The clinical characteristics of patients with MVP and idiopathic frequent PVCs is poorly understood, and whether it is associated with poor outcomes is uncertain.

## OBJECTIVE

We studied the clinical characteristics and outcomes of those with MVP and frequent PVCs and compared it to a control group without MVP. We also aim to compare these findings to patients with cardiac arrest and MVP.

## METHODS

Patients with ≥5% PVCs in 24 hours were enrolled in the British Columbia PVC registry between 2012 to 2021, and patients with structural heart disease were excluded from this cohort. Patients with mitral valve prolapse were identified and compared to 2:1 age and sex-matched controls with frequent PVC but without MVP. A separate cohort from the Cardiac Arrest Survivors with Preserved Ejection fraction Registry (CASPER) with a history of cardiac arrest and MVP was identified. Comparisons between clinical characteristics, including co-morbidities, electrocardiographic and echocardiographic features, PVC characteristics, and MVP characteristics were carried out with standard non-parametric statistical testing.

## RESULTS

272 patients met inclusion criteria, with the mean age of 54.3 ± 17.0 years and 55.3% female. The median PVC burden was 17.1% (IQR 10.9, 25.2). 21 patients with MVP and 41 age and sex-matched controls were identified from this cohort. There were no statistically significant differences between the two groups with respect to prevalence of symptoms, co-morbidities, T-wave inversion, QTc prolongation, mitral annular disjunction, or non-sustained ventricular tachycardia. Patients with MVP had a higher prevalence of mitral regurgitation ($p<0.01$) and lower rates of spontaneous resolution defined as <1% PVC burden on follow-up ($p=0.04$) compared to controls. At the time of submission, data extraction for the CAPSER cohort was underway – if available, preliminary data will be presented.

## RESIDUAL LEFT VENTRICULAR OUTFLOW TRACT OBSTRUCTION ASSOCIATED WITH HYPERTROPHIC CARDIOMYOPATHY DESPITE ALCOHOL SEPTAL ABLATION: INSIGHTS FROM CARDIAC IMAGING

*Fahad Alajmi, Ali Husain, James Dundas, Hahn Nguyen, Darwin Yeung, Thomas Roston, Steve Kim, Ron Carere, Kevin Ong*

BACKGROUND
Surgical septal myectomy and alcohol septal ablation (ASA) are both effective treatment options for symptomatic patients with obstructive hypertrophic cardiomyopathy (HCM). However, it is recognized that a proportion of individuals who have undergone ASA will have insufficient resolution of dynamic left ventricular outflow tract obstruction (LVOTO). Therefore, we analyzed the echocardiographic and cardiac MRI findings in these patients to understand the mechanisms resulting in significant residual LVOTO despite ASA.

METHODS
We performed a retrospective review of 44 patients evaluated in the HCM clinic between January 2015 and December 2021 who subsequently underwent ASA. There were 14 patients (31.8%) with a residual LVOT gradient >30 mmHg and 12 of them had a residual LVOT gradient > 50 mmHg. Post ASA, all patients had an echocardiogram, and 8 patients had a cardiac MRI which we retrospectively reviewed.

RESULTS
After ASA, basal septal thickness decreased by an average of only 1.6 +/- 1.2 mm. Overall, 11 of 14 patients improved by one NYHA classification and the remainder experienced no symptom improvement. Post ASA heart block necessitated pacemaker implantation in 3 patients. Post ASA cardiac MRI was performed in 8 patients. One patient had no septal infarction and four only had a subendocardial infarction. There were 3 patients who had a transmural septal infarction but the location of this was not at the optimal site to address the LVOTO.

CONCLUSION
This study demonstrates the utility of echocardiography and cardiac MRI to provide insight into the mechanism of residual LVOT obstruction despite ASA. Patients with residual LVOT gradients >30 mmHg had a non-transmural infarction of the septum or an infarct that was at a suboptimal location along the septum. These findings may help inform future treatment options including candidacy for repeat septal ablation or novel myosin inhibitors.

***Podium Session 3 - 3:20 pm***

# UNDERUTILIZATION OF INTRAVENOUS IRON IN A CONTEMPORARY POPULATION OF AMBULATORY HEART FAILURE PATIENTS IN CANADA

*Fahad Alajmi, Mehima Kang, Abbas Altamimi, Brian Clarke, Margot Davis, Sean Virani, Mustafa Toma*

BACKGROUND
Intravenous iron has been shown to improve quality of life and exercise capacity in patients with heart failure and reduced ejection fraction (HFrEF) with iron deficiency anemia. There is lacking real world data to understand the use of intravenous (IV) iron in this population. Hence, we undertook this study to understand the utilization rates of IV iron in a Canadian heart function clinic.

METHODS
This retrospective analysis was carried out on all heart failure (HF) patients referred to a tertiary care Heart Function Clinic (HFC) who would have been eligible for intravenous iron therapy from January 2020 until December 2022. Our inclusion and exclusion criteria were based on the FAIR HF trial. Inclusion criteria was LVEF of ≤40% for patients with NYHA class II or ≤45% for NYHA class III, hemoglobin level of 95 to 135 g/L, iron deficiency which was defined as a ferritin level <100 μg/L, or a ferritin between 100 and 299 μg/L with a transferrin saturation <20%. The data and decision to recommend IV iron was based on initial HFC consultation and pre-appointment investigations.

RESULTS
Out of 1360 charts reviewed, 920 patients had a complete data set in order to determine eligibility. Of those, 127 (13.8%) met IV iron eligibility criteria as per the FAIR HF trial. Of those eligible, 64.6% were male. HF etiology was 33.1% ischemic, 40.9% nonischemic, and 26.0% mixed/other ($p$=0.518). 98.4% had HFrEF and 1.6% had HFmrEF (p<0.001). The mean LVEF for those meeting criteria for IV iron was 28.3±7.6% vs 36.1±13.7% for those ineligible ($p$<0.001). Mean NYHA class for those meeting criteria for IV iron was 2.3±0.5 vs 2.1±0.7 for those ineligible ($p$<0.001). Only 3 (2.4%) of the eligible patients were recommended or received IV iron, while 2 (1.6%) others had received IV iron prior to HFC visit.

CONCLUSION
Our study demonstrates a significant underutilization of IV iron administration in eligible HFC patients, presenting many missed opportunities to improve patient quality of life. This analysis reveals opportunities to improve comprehensive HF patient care including strategies to complete pre-appointment investigation screening and to create a reliable system of IV iron administration.

**Podium Session 3 - 3:33 pm**

# PRACTICE PATTERN OF NEWLY DIAGNOSED TREATABLE SEVERE AORTIC STENOSIS IN BRITISH COLUMBIA (B.C.): AORTIC STENOSIS IN B.C. DATA (ABCD) STUDY

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## BACKGROUND

Aortic stenosis (AS) is the most prevalent valvular heart disease in Canada, and its incidence is expected to only increase with the rise in aging populations. With the advent of transcatheter aortic valve replacement (TAVR), a therapeutic opportunity is now available for patients who were previously unable to tolerate the demands of open-heart surgery, or surgical aortic valve replacement (SAVR), in addition to mortality and morbidity benefit. Yet, despite the additional eligibility for valvular replacement, few studies have explored the penetration of each valvular replacement modality in hospitalized and non-hospitalized patients and its effect on cardiovascular outcomes.

## METHODS

Following institutional review board approval, a retrospective chart review was performed of all echocardiograms of patients with severe AS diagnosed at the Vancouver General Hospital and University of British Columbia Hospital between the years, 2012 to 2022. Both inpatients and outpatients were included. We determined the total wait times from severe AS diagnosis to TAVR and SAVR assessment, and ultimately AVR. We also evaluated the effect of SAVR/TAVR evaluation on cardiovascular outcomes including 1-year mortality, hospitalization, heart failure hospitalization, stroke/TIA, and development of persistent atrial fibrillation.

## RESULTS

In this preliminary analysis of the 10-year study period (2012-2022), 700 studies were identified to have severe AS for the first time. Being assessed for TAVR and SAVR eligibility were individually noted to be associated with significantly lower mortality rates at 1 year (TAVR: 31.25% vs 46.63%, p-value 0.003; SAVR: 18.18% vs 49.90%, p-value <0.001) compared to not. Moreover, receiving AVR was also found to have significantly lower mortality rates at 1 year compared to no intervention (21.70% vs 67.83%, p-value <0.001). While males were more likely to be referred for TAVR and/or SAVR evaluation, they were also significantly more likely to receive AVR compared to females (62.33% vs 37.67%, p-value 0.001).

## CONCLUSION

This data suggests that evaluation for and receiving valve replacement has mortality and morbidity benefit in patients with severe aortic stenosis. It also reveals a sex-based discrepancy in appropriate referrals to specialized care and ultimately intervention, with females being significantly less likely to receive AVR. Further research is required to analyze whether this lack of referral and intervention on female patients has an effect on cardiovascular outcomes.

## IMPACT OF ACUTE DIESEL EXHAUST EXPOSURE ON PROTHROMBOTIC MARKERS IN COPD

*Seo Am Hur, Min Hyung Ryu, Tina Afshar, Johan Kolmert, Javier Zurita, Craig Wheelock, Christopher Carlsten*

BACKGROUND
Air pollution exposure is a major risk factor in chronic obstructive pulmonary disease (COPD) and is associated with an increased prothrombotic state.

OBJECTIVE
To investigate the impact of acute diesel exhaust (DE) exposure on circulating prothrombotic markers—fibrinogen and plasminogen activator inhibitor-1 (PAI-1)—and urinary eicosanoids in patients with COPD.

METHODS
Twenty-nine research participants were recruited in this randomized, double-blinded, crossover, controlled human exposure study to DE. Participants included former smokers with and without mild-moderate COPD and healthy never-smokers. Each participant was exposed to DE (300 μg/m3 of PM2.5) and filtered air (FA) for 2 hours each on different occasions, in randomized order, separated by a 4-week washout. Blood and urine samples were collected prior to and 24 hours after each exposure. Plasma fibrinogen and serum PAI-1 concentrations were quantified using ELISAs. Urinary eicosanoid concentrations were quantified using liquid chromatography with tandem mass spectrometry. Linear mixed-effects models were used for statistical comparisons.

RESULTS
Participants with COPD showed an increase in plasma fibrinogen (1.21-fold [1.06 to 1.38], p=0.006) after DE exposure relative to FA condition, but no significant DE-associated change in serum PAI-1. Participants with COPD also showed a DE-attributable increase in urinary thromboxane A2 metabolite concentrations as follows: 11-dehydro TXB2 (1.45-fold [1.02 to 2.08], p=0.04); 2,3-dinor-TXB2 (1.45-fold [1.05 to 2.00], p=0.03). These findings suggest patients with COPD may be more susceptible to pollution-attributable prothrombotic response compared to those without COPD. Such evidence supports the development of public health approaches and prevention strategies for reduction of air pollution emission to better protect those living with COPD, who are increasingly recognized as being more susceptible to harmful effects of air pollution.

## SIMPLIFICATION OF HEPATITIS C TREATMENT IN BRITISH COLUMBIA LEADS TO SIMILAR TREATMENT EFFICACY: LESSONS FROM THE COVID-19 PANDEMIC

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BACKGROUND
Minimal monitoring has been proposed to reduce barriers to treatment of hepatitis C (HCV) infection. During the COVID-19 pandemic, HCV treatment in British Columbia was streamlined with fewer pre-treatment investigations and emphasis on telemedicine.

OBJECTIVE
To compare clinical outcomes of HCV treatment during the pandemic compared to prior.

METHODS
Retrospective chart review of the British Columbia HCV Network was conducted. Patients initiated on treatment from 17/3/2018-16/3/20 were designated the pre-pandemic group (pre-PG); those treated 17/3/2020-16/3/2022 were designated pandemic group (PG).

RESULTS
Over a 4-year period, 854 patients were included with 481 (56%) in the pre-PG and 373 (44%) in the PG. Patients treated during the pandemic were younger (mean age 57 compared to 61 pre-pandemic, $p<0.01$) and a greater proportion (84, 23%) were on opioid agonist therapy compared to pre-PG patients (55, 11%; $p<0.01$). Genotypes, viral load, and FIB-4 score was similar in both groups. Most patients were treated with sofosbuvir/velpatasvir (44% pre-PG, 50% PG) and glecaprevir/pibrentasvir (20% pre-PG, 37% PG). Transient elastography was completed within 12 months of treatment for fewer PG patients (135, 36%) compared to pre-PG patients (270, 52%; $p<0.01$). While the number of total appointments was similar between groups (median of 3), PG patients had utilized fewer in-patient appointments (median 1 vs. 3 pre-PG; $p<0.01$) and more telephone appointments (median 3 vs. 1 pre-PG; $p<0.01$). SVR rate was similar during the pandemic (98%) compared to prior (99.9%).

CONCLUSIONS
Patients treated during the pandemic utilized significantly less resources but maintained high rates of SVR. Simplification of HCV treatment can improve resource efficiency and reduce burdens on patients, with the potential to transform HCV elimination efforts.

*Podium Session 3 - 4:12pm*

# ENVIRONMENTAL LITERACY FOR THE NEPHROLOGIST – A DATA-INFORMED APPROACH

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## BACKGROUND

Healthcare is responsible for 5.2% of global greenhouse gas (GHG) emissions. Life cycle assessment (LCA) methodology quantifies a broad range of environmental impacts across the life cycle of products, processes and services and is increasingly applied to clinical care. There is a need for clinician education in LCA methodologies and findings.

## OBJECTIVE

We aim to develop foundational knowledge for clinicians across all specialties to understand existing literature on a broad range of environmental effects of care, by comprehensively reporting LCA data metrics on healthcare products and processes in the HealthcareLCA database. We identified the most commonly reported metrics both overall, and ranked by specialty, and determined the units in which these metrics are reported.

## METHODS

The HealthcareLCA database (https://healthcarelca.com/database) was used to identify published studies that performed LCAs. We reviewed the HealthcareLCA database in March 2023 (n=197 articles). All nephrology articles (5), and a random sample of 20 articles from other specialties were independently assessed by all reviewers to ensure appropriate metrics were captured. The top ten metrics reported are listed, as well as the absolute numbers and percentages of studies within each specialty reporting on each metric.

## RESULTS

The primary outcome reported across all articles and all specialties was global warming potential, measured in units of kilograms of carbon dioxide equivalents (kg CO2eq) (100%). The remaining top reported metrics were potential for ozone depletion (34%), photochemical oxidant creation (27%), acidification (24%), freshwater aquatic ecotoxicity (21%), freshwater eutrophication (19%), human health carcinogenic (17%) and non-carcinogenic effects (16%), eutrophication potential (16%), and water use (16%).

## CONCLUSION

Clinician appreciation of global warming is reflected in CO2 emissions, but numerous other indicators of healthcare emissions exist and are less reported and understood than carbon pollution alone. We plan to use these data toward the creation of infographics to educate clinicians on environmental effects of healthcare.

*Podium Session 4 4:35 pm*

# A CASE SERIES OF PKD MASS EFFECT: A MANAGEMENT DILEMMA

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## BACKGROUND

Progressive mass effect in patients with autosomal dominant polycystic kidney disease (ADPKD) can result in a significant burden of disease. Management options are limited, and there are no guidelines to facilitate decision-making. Currently, there is a lack of clarity on the benefit of or optimal timing of nephrectomy vis-à-vis kidney transplant, particularly in patients with relatively preserved kidney function. The decision to process with a nephrectomy, to reduce the burden of mass effect symptoms, needs to be weighed against harms associated with losing the physiological benefits of residual kidney function.

## OBJECTIVE

We aim to highlight the patient burden of mass effect, guide other clinicians in the management of these symptoms, and discuss the need for an individualized approach to such patients.

## METHODS

We reviewed the charts of 5 patients with ADPKD followed at the St Paul's Hospital Kidney Care Clinic, who have significant symptoms of mass effect impacting their quality of life. Each patient highlights a different management possibility.

## RESULTS

We describe 5 cases with the following management plans: dialysis initiation and subsequent urgent bilateral nephrectomy, expectant management, pre-emptive and early live donor transplant with bilateral nephrectomies, planned and early dialysis start followed by bilateral nephrectomies, and dialysis start at End Stage Kidney Disease followed by bilateral nephrectomy. Our case series highlights the significant burden of mass effect in patients with ADPKD and illustrates several management options available to clinicians. It is evident that, while the decision is shared between the nephrologist and patient, choosing to initiate dialysis is generally guided by the decline in kidney function and ESKD symptom burden while the management of mass effect and its consequences is less well-defined.

***Podium Session 4 - 4:48 pm***

# EARLY SODIUM MONITORING DOES NOT REDUCE HOSPITAL VISITS WITH HYPONATREMIA IN OLDER ADULTS STARTING ANTIDEPRESSANTS: A RETROSPECTIVE COHORT STUDY

*Natasha E. Lane, MD, PhD, Li Bai, PhD, Dallas Seitz, MD, PhD, David Juurlink, MD, PhD, Michael Paterson, MSc, Jun Guan, MSc, Therese Stukel, PhD*

BACKGROUND
To compare risk of ED visits and hospitalizations with hyponatremia among older adults who did versus did not receive serum sodium testing in the week after starting new SSRI/SNRI prescriptions.

METHODS
Retrospective cohort study of Ontario adults aged 66 years or older on April 1, 2013, who received an incident SSRI/SNRI prescription from any physician between April 1, 2013 and January 31, 2020. The index date was the date that the prescription was filled. The exposure was serum sodium testing recorded during the seven days following the index date. The outcome was ED visit or hospitalization with serum sodium <135 or administrative diagnosis codes for hyponatremia recorded 8 to 60 days following initiation of an SSRI/SNRI. Propensity-score overlap weighting was used to minimize confounding by indication in GEE models.

RESULTS
Of the 417,808 patients aged 66+ who were started on SSRIs/SNRIs between April 1, 2013 and January 31, 2020, 25,312 (6.4%) had their serum sodium measured in the week after starting their prescription. ED visit or hospitalization with hyponatremia in the 8-60 days was rare, occurring in only 6,109 (1.5%) people but associated with a median of 4 (1-11) day stays in hospital. In overlap propensity score weighted models, people who had sodium testing in the week after starting their SSRI/SNRI were 2.37 times (95% CI, 2.22-2.53) more likely to present to hospital with hyponatremia in the subsequent seven weeks than those who didn't get early sodium monitoring. Among those who were eventually hospitalized with hyponatremia, sodium values in the first week on an SSRI/SNRI were largely normal.

CONCLUSION
ED visit and hospitalization with hyponatremia is a rare but serious outcome in older adults starting SSRIs/SNRIs. Testing serum sodium in the week following medication administration is unlikely to reduce risk of subsequent hospital visit with hyponatremia.

## CHARACTERISTICS OF ARTERIAL BLOOD GAS IN PATIENTS WITH FIBROTIC INTERSTITIAL LUNG DISEASE

*Mira Donaldson, Chris Ryerson*

BACKGROUND
Fibrotic interstitial lung disease (fILD) is frequently associated with abnormal oxygenation by pulse oximetry (SpO2) and arterial blood gas (SaO2), and less commonly abnormal partial pressure of carbon dioxide (PaCO2). However, little is known on the accuracy of SpO2 compared to SaO2, the factors that influence PaCO2, and the impact of PaCO2 on outcomes in patients with fILD.

OBJECTIVE
To compare SpO2 and SaO2 in patients with fibrotic ILD, identify clinical predictors of discordance between the two, and identify clinical predictors and outcomes associated with abnormal PaCO2.

METHODS
Patients with fILD enrolled in the Canadian Registry for Pulmonary Fibrosis with an available room air ABG were included. Correlation between SaO2 and SpO2 was assessed using a Spearman coefficient (r value), with difference between SaO2 and SpO2 assessed using a paired-t-test. PaCO2was assessed as both a continuous and categorial variable (abnormal vs. normal). Association of baseline characteristics with both the difference between SaO2 and SpO2 and the PaCO2 were assessed on unadjusted using a Spearman's rank correlation, and adjusted analysis multivariable linear or logistic regression, respectively. Cox proportional hazard analysis assessed whether PaCO2 was associated with time to death or transplant.

RESULTS
A total of 532 patients were included, with mean age 68±12 and 56% male. Mean SaO2 was 92±4% and SpO2 was 95±3%. Mean PaCO2 was 38±6mmHg, with 135 patients having PaCO2 < 35mmHg and 62 having PaCO2 > 45mmHg. Correlation between SaO2 and SpO2 was $r = 0.39$, with SpO2 on average 3.0% higher than SaO2. No baseline characteristics predicted a significant difference. Predictors of elevated or abnormal PaCO2 were limited to baseline lung function and smoking pack years.

CONCLUSION
There is moderate correlation between SaO2and SpO2, but with limited ability to identify patients likely to have a greater difference between these measures. Elevated PaCO2 was associated with baseline lung function but not time to death or transplant.

# Poster presentation Abstracts

# SEVERITY OF ILLNESS IN INDIGENOUS PATIENTS WITH PULMONARY ARTERIAL HYPERTENSION IN CANADA

*Amanda Cheung, MD, Nathan Brunner, MD, FRCPC*

## BACKGROUND

Recent observational studies of patients with pulmonary arterial hypertension (PAH) demonstrate that clinical outcomes vary by ethnicity in the United States. There is limited data on outcomes in Indigenous populations in Canada

## METHODS

We used our pulmonary hypertension (PH) registry to evaluate severity of illness on presentation for Indigenous vs. non-Indigenous patients, as determined by baseline right heart catheterization (RHC). We included patients who carried a diagnosis of PAH as defined as a mean PA pressure of >20 mmHg, a wedge pressure of <15 mmHg and a pulmonary vascular resistance of > 3 WU. Parameters evaluated included the mean PA pressure (mPAP), the cardiac index (CI), the pulmonary vascular resistance (PVR), and the mean right atrial pressure (mRAP). This was a collaborative study with members of several nations residing in British Columbia and Alberta.

Of the 425 patients identified with a diagnosis of PAH, 41 patients were of Indigenous background whereas 384 patients were non-Indigenous. Indigenous patients were younger (50.8±13.5 vs. 58.5±15.3 yrs, $p$=0.002), and more likely to be female (90.2% vs. 72.7%, $p$=0.01). At the time of PH diagnosis, baseline RHC measurements showed a higher median mPAP (50 [interquartile range (IQR) 44-54] vs. 44, [IQR 35-52] mmHg, $p$=0.03) and a higher median PVR (9.5 [IQR 6.5-13.8] vs. 7.9 [IQR 4.8-11.3] WU, P=0.06) for Indigenous patients compared to non-Indigenous patients, respectively. There was no clinical significance between the median mRAP and CI between both groups.

## CONCLUSION

We found that Indigenous patients had higher median mPAP and PVR values on baseline RHC at the time of diagnosis compared to non-Indigenous patients. This suggests that Indigenous patients tend to be diagnosed with PH at more advanced stages with greater disease severity than non-Indigenous populations. In-depth evaluation of barriers to PH screening and access to care are urgently needed in this population.

**Poster Session 1 - 12:53pm**

# ASSESSING THE SAFETY OF AN EARLY REPATRIATION STRATEGY FOR UNCOMPLICATED ST-ELEVATION MYOCARDIAL PATIENTS AFTER PRIMARY PERCUTANEOUS INTERVENTION

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[1] *Department of Medicine, UBC,* [2]*Division of Cardiology, Royal Columbian Hospital*

BACKGROUND
Repatriation of patients with ST-elevation myocardial infarction (STEMI) after primary percutaneous coronary intervention (PPCI) is common in Canadian regional health care programs. However, the safety of early repatriation after PPCI in uncomplicated STEMI patients remains unknown. We aimed to compare the outcomes between uncomplicated STEMI patients repatriated early (transfer to home hospital ≤4hrs of PPCI completion) vs. those who remained at the PPCI-hospital until discharge.

METHODS
We performed a retrospective, cohort study examining consecutive, uncomplicated STEMI patients treated with PPCI between 2016-2018 in the Fraser Health Authority. Patients were designated as uncomplicated if there was no evidence of cardiogenic shock, prolonged cardiac arrest or congestive heart failure requiring mechanical ventilation. Outcomes of interest included discharge with guideline-based medical therapy (GBMT) and a composite of 1-year major cardiovascular events.

RESULTS:
A total of 787 patients were included for analysis, with 62% (n=492) being repatriated early. Early repatriated patients were similar in age and baseline characteristics when compared with those discharged from the PPCI-based hospital (table 1). Interestingly, early repatriated patients were more likely to be discharged on GBMT (89% vs. 83%, p=0.015) In multivariate analysis, early repatriation was not associated with worsened 1-year cardiovascular outcomes (OR 1.05, 95% CI 0.6782,1.6521, p=0.80). Independent predictors of 1-year major cardiovascular outcomes included hypertension (OR 1.75, 95% CI 1.0918-2.8349, p=0.02) and discharge with GBMT (OR 0.49, 95% CI 0.2831-0.8465, p=0.01). Amongst the subset of early repatriated patients, primary treatment by cardiologist vs internist did not result in differences in 1-year outcomes (10% vs. 8%, p=0.23) or discharge with GBM (87% vs. 83%, p=0.09).

CONCLUSION
Early repatriation of uncomplicated STEMI patients after PPCI was associated with outcomes similar to those having ongoing care at the PPCI-based hospital. Therefore, early repatriation serves as a safe treatment strategy for regional STEMI programs and may be particularly relevant for PPCI centres with limited bed capacity.

# CORRELATION OF ECG AND CARDIAC MRI FOR ASSESSMENT OF VENTRICULAR HYPERTROPHY/DILATATION IN ADULTS WITH CONGENITAL HEART DISEASE

*Shanjot Brar, MD[1] , Marc Deyell, MD[2] , Zachary Laksman, MD[2], Jason Andrade, MD[2], Matthew Bennett, MD[2], Andrew Krahn, MD[2], John Yeung-Lai-Wah, MD[2], Mehima Kang, MD[1], Amit Sodhi, MD[1], Amanda Barlow, MD[2], Santabhanu Chakrabarti, MD[2]*

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## BACKGROUND

Adults with congenital heart disease (ACHD) patients have a higher incidence of right and left bundle branch block patterns (RBBB/LBBB) on ECG and many have right ventricular hypertrophy/dilatation (RVH/RVD) or left ventricular hypertrophy/dilatation (LVH/LVD). Our objective was to determine the sensitivity/specificity of currently established ECG criteria in detecting RVH/RVD or LVH/LVD on cardiac MRI (cMRI) in the ACHD population.

## METHODS

We included consecutive patients who had a cMRI performed between January-December 2019. ACHD patients with reported LVH, LVD, RVH or RVD on MRI were identified. The ECG to corresponding cMRI was then used to determine RVH/LVH for specificity and sensitivity analysis.

## RESULTS

Our study included 353 patients. 298 patients had RVH/RVD confirmed on cMRI and 88 patients had cMRI proven LVH/LVD. 38 patients had an ECG diagnosis of RVH, and 14 patients had LVH. 190 patients had a diagnosis of RBBB and one had a diagnosis of LBBB. For ECG reported diagnosis, the specificity for LVH was 98.18% (95% C.I. (90.28, 99.95)), and the sensitivity was 12.42% (95% C.I. (8.89, 16.71)). When RBBB was absent, ECG specificity for RVH was 100% (95% C.I. (92.29, 100.00)), and the sensitivity was 18.80% (95% C.I. (12.18, 27.07)). In subjects with RBBB, specificity for RVH was 88.89% (95% C.I. (51.75, 99.72)), and sensitivity was 1.19% (95% C.I. (0.14, 4.23)).

## CONCLUSIONS

The standard ECG voltage criteria have poor sensitivity for detecting right and left ventricular chamber hypertrophy and dilatation in ACHD patients. The presence of RBBB further reduces the sensitivity to detect RVH/RVD.

## HIGH RISK NON-CLASSICAL LQTS GENOTYPES: SPECTRUM OF GENETIC AND PHENOTYPIC FEATURES OF LONG QT SYNDROME

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BACKGROUND
Congenital Long QT syndrome (LQTS) is commonly caused by classical mutations within KCNQ1, KCNH2 or SCNA5. Most gene-positive patients are heterozygous for a single nucleotide change or have a small nucleotide insertion or deletion resulting in a frameshift variant. A subset of patients can have atypical genetic features.

OBJECTIVE
Explore phenotypic features of non-classical genetic mechanisms for LQTS in the Canadian LQTS registry.

METHODOLOGY
This is a retrospective observational study from the prospective National Hearts in Rhythm Organization (HiRO) registry, which includes patients and family members with LQTS. Genotype-positive LQTS cases enrolled across 23 pediatric and adult cardiogenetic clinics across Canada were included. Patients were screened for non-classical genotypes, defined as digenic, compound heterozygous or homozygous, or large deletions or duplications. Phenotypic and genotypic data were summarized and analyzed.

RESULTS
We screened 1284 cases with LQTS and included all 725 genotype positive cases. 91% of cases had a variant in either KCNQ1 (60.6%), KCNH2 (25.8%) or SCN5A (4.6%). Twelve cases had non-classical genotypes. Age and gender were similar in both groups. Most cases with non-classical LQTS were probands (91.7%), while 55.3% of classical LQTS cases were identified through family screening ($p=0.002$). Symptoms were more common in the non-classical LQTS group (58.3% vs 23%, $p=0.01$). The median QTc was longer in the non-classical LQTS cases, 484.9 msec compared to 460.1 msec. Over a median follow up of 13.3 months, non-classical LQTS patients were more likely to develop cardiac outcomes (syncope, appropriate ICD shock, cardiac arrest, or death during follow-up, 33.3% vs. 3.9%, $p<0.001$). In a multivariate logistic regression model, the presence of non-classical genotypes increased the risk of cardiac outcomes by 7.1 times ($p=0.004$).

CONCLUSION
The presence of atypical LQTS variants is associated with a more severe phenotype and affects prognosis. Recognizing these “high risk” genotypes may inform risk stratification and guide management decisions.

# AUTOMATING SURVEILLANCE OF STAPHYLOCOCCUS AUREUS BACTEREMIA IN TWO URBAN HOSPITALS

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## OBJECTIVE

To outline the implementation and automation of a surveillance system for the detection of hospital-acquired S. aureus bacteremia (HA-SAB) in two urban hospitals.

## METHODS

We developed an algorithm for extracting cases that met the temporal case definition of hospital-onset S. aureus bacteremia. All cases which met the definition were followed by more in-depth clinical review by an ICP (infection control practitioner) and/or IPAC physician to ascertain type (hospital-acquired versus community-acquired) and source of infection.

## RESULTS

Between the fiscal years 2015/2016 to 2021/2022, the rate of hospital-acquired S. aureus bacteremia per fiscal year was 12.06-27.26 per 10,000 patient admissions and 1.34-2.8 per 10,000 patient-days. Our automated process effectively screened 2,367 total cases of S. aureus bacteremia between fiscal years 2019/2020 and 2021/2022, and determined that 119 cases (5%) fit the temporal definition of hospital-onset S. aureus bacteremia. In the study period, the most common sources of HA-SAB were central lines (26.3%) and peripheral IVs (22.1%).

## CONCLUSION

An automated process to screen cases of S. aureus bacteremia for surveillance filtered out 95% of cases. This can improve workflow of infection prevention and control programs to enable a sustainable S. aureus bacteremia surveillance program as a quality metric for institutions.

# GLOBAL BURDEN OF NONTUBERCULOUS MYCOBACTERIA IN THE CYSTIC FIBROSIS POPULATION: A SYSTEMATIC REVIEW AND META-ANALYSIS

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## BACKGROUND

People living with cystic fibrosis have an increased risk of lung infection with nontuberculous mycobacteria (NTM), the prevalence of which is reportedly increasing. We conducted a systematic review of the literature to estimate the burden (prevalence and incidence) of NTM in the cystic fibrosis population.

## METHODS

Electronic databases, registries and grey literature sources were searched for cohort and crosssectional studies reporting epidemiological measures (incidence and prevalence) of NTM infection or NTM pulmonary disease in cystic fibrosis. The last search was conducted in September 2021; we included reports published since database creation and registry reports published since 2010. The methodological quality of studies was appraised with the Joanna Briggs Institute tool. A random effects meta-analysis was conducted to summarise the prevalence of NTM infection, and the remaining results are presented in a narrative synthesis.

## RESULTS

This review included 95 studies. All 95 studies reported on NTM infection, and 14 of these also reported on NTM pulmonary disease. The pooled estimate for the point prevalence of NTM infection was 7.9% (95% CI 5.1–12.0%). In meta-regression, sample size and geographical location of the study modified the estimate. Longitudinal analysis of registry reports showed an increasing trend in NTM infection prevalence between 2010 and 2019.

## CONCLUSION

The overall prevalence of NTM infection in cystic fibrosis is 7.9% and is increasing over time based on international registry reports. Future studies should report screening frequency, microbial identification methods and incidence rates of progression from NTM infection to pulmonary disease.

## QUALITY IMPROVEMENT INITIATIVE TO IMPROVE PERIOPERATIVE CARE FOR PATIENTS UNDERGOING PITUITARY SURGERY

*Arshia Beigi, Brandon Galm*

### BACKGROUND

The pituitary gland plays a critical role in regulating various hormones. After pituitary surgery, patients may develop hormone deficiencies that require close monitoring and prompt treatment. Despite endocrine guidelines recommending outpatient sodium and cortisol monitoring on postoperative day 7 (POD7), there is currently no standardized postoperative protocol in place at VGH, which can lead to late detection of complications like diabetes insipidus (DI) and adrenal insufficiency (AI) and hospital readmissions.

### OBJECTIVE

To evaluate the percentage of patients who have outpatient bloodwork on POD7 at baseline and after implementation of a standardized endocrine testing protocol.

### METHODS

We retrospectively reviewed the data of all patients who underwent pituitary surgery at VGH from September 1, 2021 to August 31, 2022. The data included demographic information, tumor pathology, dates of postoperative outpatient bloodwork and the endocrine tests included in each blood test. We used these data to determine what percentage of patients are undergoing recommended postoperative bloodwork. In the intervention phase (starting on January 1, 2023), we created a standardized endocrine testing protocol and a patient handout that provides clear instructions for patients upon discharge, including lab requisitions. We compared the percentage of patients who had POD7 bloodwork between the controls and the intervention patients. We also contacted intervention patients for feedback on the process and their perioperative course.

### RESULTS AND CONCLUSIONS

Of the 52 identified patients in the baseline cohort, only 9 (17%) had POD7 bloodwork. The intervention phase is currently ongoing, and to date, 8 of 11 patients (73%) have completed the recommended POD7 bloodwork. This improvement is significant because early detection of endocrine complications such as DI and AI can enable timely intervention, thereby reducing visits to the emergency department, hospital readmissions and the potential for patient morbidity. The eight patients who consented to being contacted expressed high satisfaction with the process and found the discharge instructions to be clear and comprehensive.

# MULTIPLE ENDOCRINE NEOPLASIA TYPE 1: A VANCOUVER CASE SERIES

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*[1]Department of Medicine, [3]Division of Endocrinology, UBC [2]Department of General Surgery, St. Paul's Hospital*

## BACKGROUND

Multiple Endocrine Neoplasia type 1 (MEN1) is a rare, heritable disorder characterized by neuroendocrine tumor development in the parathyroid, pituitary and adrenal glands as well as duodenal/pancreatic/thorax. There is minimal Canadian epidemiological data and a lack of consensus regarding appropriate tumor screening and monitoring.

## OBJECTIVE

To identify MEN1 epidemiology and tumor screening practices by endocrinologists in Vancouver, BC.

## METHODS

A retrospective chart review was completed for MEN1 patients followed by Vancouver endocrinologists and 7 cases were identified.

## RESULTS

4/7 patients were referred to medical genetics; data was unavailable for the other 3 patients. Parathyroid adenoma was the most common tumor type observed, followed by duodenopancreatic tumors. 3/5 patients had recurrence of hyperparathyroidism despite parathyroid resection. Mortality was caused by metastatic neuroendocrine tumors in the pancreas or thorax. Screening practices varied in frequency between providers and was less frequent overall in comparison to guidelines. Patient-led hiatuses in follow-up reduced screening frequency in 3 out of 7 cases. Only one patient who was concomitantly followed by gastroenterology had routine screening of all tumors per guidelines.

## CONCLUSION

Local epidemiology of MEN 1 is comparable to the published literature. MEN1 tumor screening practices vary among Vancouver endocrinologists and adherence to guidelines was limited to 1/7 cases. A multidisciplinary approach and increased adherence to current guideline-recommended screening may be beneficial for these patients. The hypothesized benefits of a multidisciplinary MEN1 program need to be validated with further study with a larger MEN1 population.

# CHANGES IN QUALITY OF LIFE IN MDS PATIENTS WHO SWITCH TRANSFUSION DEPENDENCE DURING TREATMENT

*Bo (Angela) Wan, Rena Buckstein*

## BACKGROUND

One main objective of treating lower risk MDS is to improve cytopenias, reverse transfusion dependence (TD) and in the process, (hopefully) improve QOL. However, the association between treatment, achievement of transfusion independence (TI), and improvement of QOL is not clear.

## OBJECTIVE

To utilise the prospective MDS-CAN Canadian registry to look for an association between QOL and changes in transfusion status (i.e. from TD to TI, or from TI to TD) during the course of a patients' treatment.

## METHODS

We conducted a prospective cohort analysis of QOL in patients enrolled in the MDS-CAN registry (NCT02537990). Patients were included if they were either initially transfusion dependent but became transfusion independent (TD to TI, group A), or who were initially transfusion independent but became transfusion dependent (TI to TD, Group B). QOL scores were obtained pre-treatment and at the first instance after a change in transfusion status. A general linear mixed model was used to identify significant associations between QOL scores and the switch in transfusion dependence in either direction.

## RESULTS

There were 1120 patients analyzed in the mds-can registry. There were 54 patients in group a and 151 patients in group b. In group a, there was only significant improvement on the eortc-c30 overall qol with trends towards improved component scores in physical function and social function. In group b, there were significant decreases across multiple global qol measures, including the eq-5d global scale, the eq-5d vas, the eortc-c30 overall, and the qualms. There was significantly increased fatigue measured on multiple instruments. Our results suggest the following: 1. More patients become td than ti while undergoing treatment. 2. While the achievement of ti after being td is associated with improvements in selected but not all qol metrics, becoming td after ti has a much greater negative impact on overall qol.

# REAL-WORLD OUTCOMES IN PATIENTS WITH METASTATIC RENAL CELL CARCINOMA (MRCC) RECEIVING DUAL IMMUNE CHECKPOINT INHIBITOR (ICI-ICI), OR IMMUNE CHECKPOINT INHIBITOR / TYROSINE KINASE INHIBITOR (ICI-TKI) COMBINATIONS AS FIRST-LINE THERAPY: A BRITISH COLUMBIA (BC) POPULATION-BASED ANALYSIS

*Antoine M. Coulombe[1], Faisal Al-Sadoun[2], Xin Ye2, Maryam Soleimani[1], Lucia Nappi[1,2,3], Bernhard Eigl[1,2,3], Kim N. Chi[1,2,3] and Christian Kollmannsberger[1,2,3]*

BACKGROUND
Ipilimumab-nivolumab (ICI-ICI) is a first-line treatment option for mRCC approved in BC, Canada for intermediate- and poor-risk patients by International mRCC Database Consortium (IMDC) criteria. Pembrolizumab-axitinib (ICI-TKI) is a competing first-line option for mRCC of all IMDC risk groups. While both regimens are superior to sunitinib, they have not been directly compared in a prospective trial and limited data exists in the real-world setting

OBJECTIVES
1. Evaluate reasons motivating regimen (ICI-ICI vs ICI-TKI) selection in real-world setting
2. Assess and compare clinical outcomes (response rate, safety, and survival outcomes) in patient populations in which indications for these regimens overlap

METHODS
We identified 319 mRCC patients who were treated with first-line ICI-ICI or ICI-TKI regimens between January 2019 and March 2022 through BC Cancer pharmacy data and patient access programs queries. We reviewed patients' charts and imaging records for demographic and pathological data, treatment toxicity, rationale for treatment choice and survival outcomes.

RESULTS
Evaluable patients on ICI-TKI were more likely to experience objective response (75.6% vs 57.3%, p=0.012). Evaluable patients on ICI-ICI were more likely to experience primary progression (31.5% vs 11.5%, p=0.001). These results did not substantially differ when restricting analyses to intermediate- and poor-risk patients. With respect to overall survival, in intermediate- and poor-risk patients per IMDC, there was no difference between regimens in our dataset. With respect to progression-free survival, there may be a NS trend favouring ICI-TKI With respect to delaying next treatment line, ICI-TKI was superior in a statistically significant fashion.

CONCLUSIONS
ICI-TKI combination yielded more objective radiographic responses and fewer primary progressions compared to ICI-ICI. In intermediate- and poor-risk patients by IMDC, ICI-TKI combination resulted in statistically significant improvement in time-to-next-treatment, and may have produced a non-significant favourable trend in progression-free survival, but there was no difference in overall survival.

# REVIEW OF THE INDICATIONS AND COMPLICATIONS OF INTRAVENOUS IRON THERAPY IN THE ANTEPARTUM AND POSTPARTUM PERIOD AT BC WOMEN'S HOSPITAL, INTERIM ANALYSIS

*Dr. Huaying (Helen) Zhao, Dr. Ellen Miles, Dr. Amanda Huynh, Dr. Susan Purkiss, Dr. Tessa Chaworth-Musters, Dr. Wee-Shian Chan*

## BACKGROUND

Iron deficiency anemia is common, affecting one third of pregnancies. It is associated with increased morbidity and mortality. Adverse maternal and neonatal outcomes, include preterm delivery and low birth weight. First line treatment is oral iron supplementation, however, efficacy may be limited by intolerance or poor response. Second line treatment is IV iron infusion. However, IV iron has increased cost and the potential of infusion reactions. At our local centre, IV iron is limited due to need for maternal and fetal monitoring.

## OBJECTIVE

To review the indications and complications of intravenous iron therapy at BC Women's Hospital in the antepartum and postpartum period

## METHODS

A retrospective cohort study of 298 adult patients who received IV iron at BC Women's Hospital between January 2017 and December 2019. Data points collected included patient demographics, etiology of anemia, index hemoglobin and ferritin, timing of IV iron administration (antepartum or postpartum), symptoms, delivery outcomes, and adverse events during IV iron administration. Antepartum anemia was classified as per WHO criteria as mild (Hb 100-109 g/L), moderate (Hb 70-99 g/L), or severe (Hb <70 g/L). Iron deficiency was classified as possible (Ferritin >30 ug/L), probably (Ferritin 15-29 ug/L) or definite (Ferritin <15 ug/L).

## RESULTS

IV iron therapy is administered for indications of moderate to severe anemia with the most common etiologies being iron deficiency and postpartum hemorrhage in the antepartum and postpartum period respectively. Most women see a significant improvement in the severity of their anemia. Administration of IV iron is well tolerated with few adverse events.

**Poster Session 3 - 3:59 pm**

# SINGLE CENTRE EXPERIENCE USING PATIENT-REPORTED OUTCOMES USING THE PATIENT-REPORTED OUTCOMES, BURDENS, AND EXPERIENCES (PROBE) SURVEY FOLLOWING EMICIZUMAB INITIATION IN PATIENTS WITH SEVERE HEMOPHILIA A WITHOUT INHIBITORS

*Ingrid Blydt-Hansen[1], Michelle Bech[2], Zainab Al-Housni[3], Frederico Germini[3], Shannon Jackson[1,2,4]*

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## BACKGROUND

People with severe hemophilia A (PWHA) have conventionally required regular FVIII infusions as bleeding prophylaxis. Emicizumab is a monoclonal antibody that mimics FVIII, and Emicizumab prophylaxis has been demonstrated to be more effective at decreasing bleeding episodes. The Patient-Reported Outcomes, Burdens, and Experiences (PROBE) survey enables the measurement of health outcomes beyond bleeding rates.

## AIMS

The project aim was to gain insight into the feasibility of assessing patient outcomes and experience following the introduction of Emicizumab in severe PWHA in 1 Hemophilia Treatment Centre clinic using the PROBE survey, and to explore the trend in the participants' quality of life and burden of the disease after transitioning using the PROBE survey.

## METHODS

Individualized de-identified survey links were generated and provided to all transitioning patients who consented to the survey. Responses were shared with the clinic and matched with clinical data. Results were summarized using descriptive statistics. Higher PROBE scores (/1) and VAS scores (/100) are associated with better health status.

## RESULTS

65 of 85 eligible (76%) BC patients transitioned as of April 1, 2023. 54 patients (mean age 39.3, median 36 and age range of 19-69) completed a baseline PROBE survey prior to the Emicizumab transition. 26 patients completed PROBE surveys at 0 and 3 months and 11 patients completed PROBE surveys at 0, 3 and 6-month intervals. Mean PROBE scores at 0, 3 and 6 months for the n=11 cohort were 0.80, 0.89 and 0.90 and mean VAS scores were 81, 80 and 90, respectively.

## CONCLUSION

It was feasible to use the PROBE survey to ensure outcomes beyond bleeding rates are continuously assessed. These results demonstrate a positive trend in patient-reported outcomes following Emicizumab initiation and this project furthers our understanding of the feasibility of assessing patient-reported outcomes to reflect quality-of life parameters in PWHA.

# INFLAMMATORY MARKERS IN HLH – A SINGLE CENTER STUDY

*Mariam Goubran*, Caroline Spaner*, Kamran Shojania, Amanda Li, Sophie Stukas, Myp Sekhon, Cheryl Wellington, Adi Zoref-Lorenz, Michael B. Jordan, Luke Y.C. Chen, Audi Setiadi (*co-first authors)*

## BACKGROUND

Hemophagocytic lymphohistiocytosis (HLH) is a syndrome of pathological immune activation that can be difficult to distinguish from other cytokine storm syndromes such as Adult-Onset Still's disease (AOSD) and COVID-19 cytokine storm (CCS). The HLH-2004 criteria and HScore are the best available diagnostic criteria but have important limitations. Many of the tests included in the current HLH-2004 criteria, such as flow cytometry for NK cell cytotoxicity and cytokine analysis, are only available in specialized centers, and while useful in pediatric populations, are less so in adult HLH. Inflammatory markers such as ferritin, are not specific for HLH and can be seen in several hyperinflammatory syndromes.

## OBJECTIVE

To analyze patterns of elevation in CRP to help clinicians distinguish HLH from other cytokine storms.

## METHODS

A retrospective chart review was conducted for 41 adult and pediatric patients with HLH, 10 patients with AOSD, and 13 patients with CCS. Inflammatory biomarkers including CRP and sIL2r levels were collected if drawn within 72 hours of acute episode that led to the diagnosis, and prior to treatment. The Kruskal- Wallis test was used to compare CRP in the HLH, AOSD, and CCS groups, and CRP in HLH subgroups by underlying trigger (infection, malignancy, autoimmune, and idiopathic).

## RESULTS

C-reactive protein is significantly lower in adult secondary HLH (Mdn = 81.1) compared to AOSD (Mdn = 141.0, p = 0.006) and CCS (Mdn = 132.8, $p = 0.017$). CRP levels in malignancy-associated HLH (MAHS) were not significantly different than AOSD or CCS, while CRP levels were significantly lower in the non- MAHS groups (Mdn = 60.8, $p = 0.001$) compared to AOSD and CCS ($p = 0.003$), particularly when compared to infection-associated HLH (IAHS). There was no statistically significant difference between pediatric HLH CRP values compared to adult HLH, AOSD, or CCS.

## CONCLUSION

C-reactive protein is significantly lower in HLH compared to AOSD and CCS, specifically in non-MAHS, and may be a useful and easily accessible biomarker aiding in the differential diagnosis of HLH.

# PREVALENCE CLINICAL CHARACTERISTICS OF HEPATITIS DELTA VIRUS (HDV) INFECTED INDIVIDUALS IN BRITISH COLUMBIA

*Dr. Valeriya Zaborska, Dr. Hin-Hin Ko, Dr. Edward Tam, Dr. Alnoor Ramji*

## BACKGROUND

Globally, HDV is reported in 4.5-13% of chronic hepatitis B (CHB) patients. HDV and HBV co-infection is associated with progression to cirrhosis and higher risk of hepatocellular carcinoma (HCC). HDV prevalence in Canada is not fully elucidated.

## PURPOSE

To describe the prevalence and clinical characteristics of HDV infection in CHB patients in a tertiary care centre.

## METHOD

Retrospective study of HBsAg-positive patients >18 years of age tested for HDV Ab between April 2013 and October 2022. Data collected included HDV Ab status, patient demographics, comorbidities, alcohol use, fibrosis stage, and therapies utilized.

## RESULTS

Among 663 HBsAg-positive patients tested for HDV Ab,10/663 (1.5%, 95% CI 0.58-2.44) were HDV-Ab (+), with 8/10 (80%, 95% CI 0.55-1.05) of those confirmed HDV RNA(+). Average age of HDV patients was 57.8 (95% CI 52.7-62.9) years, similar to HBV patients. Compared to HBV mono-infected patients, HBV-HDV co-infected patients were more likely to be male (90.0% vs 57.6%; $p$=0.04), have decompensated liver disease (30.0% vs 1.4%; $p$<0.0001) and less likely to be Asian ( 50.0% vs 80.9%; p =0.014). One HBV-HDV co-infected patient was also HIV/HCV co-infected, and two had cleared HCV. One HDV patient had a known history of IVDU (10% ,95% CI -0.09 – 0.28). Mean ALT in HDV patients was 55.9, vs. 34.3 in HBV mono group (p=0.0508). 50% of HDV patients consumed any lifetime alcohol compared to 31.9% of HBV mono-infected patients (p=0.22). HDV patients were more likely to have liver stiffness measurements >9.0 kPa 30% vs 8.9%, $p$=0.02), and equally likely to have HCC 10% vs 2.5% ($p$=0.13)

## CONCLUSION

The prevalence of HDV positivity in CHB patients in this tertiary care centre was 1.5%. Persons with HDV were more likely to be male, and have decompensated liver disease and less likely to be Asian than those with HBV mono-infection. Further studies to understand the burden of disease in other regions are needed.

*Poster Session 4 - 4:48 pm*

# ASSOCIATION OF AIR POLLUTION WITH INTERSTITIAL LUNG DISEASE INCIDENCE AND OUTCOMES: A SYSTEMATIC REVIEW

*S. Bala[1], M. Donaldson[1], G. Fernandez[2], KA. Johannson[3], CJ. Ryerson[4,5], GC. Goobie[4,5,6]*

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## RATIONALE

Airborne pollutants (ozone (O3), carbon monoxide (CO), nitrogen dioxide (NO2), sulfur dioxide (SO2), and particulate matter μ2.5um (PM2.5) and μ10um (PM10) in diameter) have been increasingly recognized as contributors towards interstitial lung abnormality (ILA) and interstitial lung disease (ILD) development and progression. We performed a systematic review evaluating the relationship between air pollution and ILD incidence and outcomes.

## METHODS

Studies evaluating the outcomes of ILA/ILD incidence, baseline/decline in lung function, acute exacerbations (AE-ILD), and mortality were identified by a literature search of Medline, EMBASE, and the Cochrane Library. Assessment of each citation was performed in duplicate, followed by systematic collection and summary of relevant data from eligible publications including air pollution estimation methods.

## RESULTS

The search identified 2865 citations, of which 72 were included after title and abstract screening, with 21 studies meeting criteria after full-text screening. The incidences of ILA/ILD were higher in people with greater levels of air particulate exposure, with higher incidence of rheumatoid arthritis (RA)-associated ILD in patients with RA who had greater exposure to PM2.5 constituents except sea salt. Several studies found harmful associations between both gaseous pollutants and PM2.5 constituents, and baseline and future decline of forced vital capacity (FVC) and diffusion capacity of the lung for carbon monoxide (DLCO). Higher gaseous and particulate pollutant exposure was associated with increased frequency of AE-ILD. Most cohorts reported increased mortality with greater particulate pollutant exposure, with a recent multi-national study demonstrating that some human-derived PM2.5 constituents (sulfate and ammonium) and black carbon have the largest effects.

## CONCLUSION

Previous studies demonstrate that gaseous pollutants are associated with AE-ILD, and particulate pollutants are associated with ILD incidence, AE-ILD, and mortality. Organic PM2.5 constituents were less frequently associated with worse outcomes except black carbon. Broader global coverage of air pollution studies in patients with ILD is required, as well as exploration of optimal air pollution exposure estimation methods in these populations.

# ENDOSCOPIC SUBMUCOSAL DISSECTION OF GASTRIC ADENOMAS AND EARLY CARCINOMAS: OUTCOMES FROM BRITISH COLUMBIA

*Billy Zhao, Hyun Jae Kim, Roberto Trasolini, Daljeet Chahal, Eric Lam*

## INTRODUCTION

Management of gastric adenoma and early gastric cancer requires endoscopic resection such as endoscopic mucosal resection (EMR). EMR is safe and effective, but it is often completed piecemeal, leading to indeterminant margins and higher rates of recurrences. Endoscopic submucosal dissection (ESD) is a more advanced endoscopic resection technique that has been shown to be more effective than EMR at en-bloc resection. However, ESD requires high technical proficiency and has been utilized less in western countries. Here, we report on the outcomes of gastric ESD completed at St. Paul's Hospital.

## METHODS

Retrospective data were collected on all gastric ESD procedures completed in St. Paul's Hospital from May 7th, 2015 to Aug 30th, 2022. Inclusion criteria were all adults who have undergone ESD for resection of a gastric lesion. Exclusion criteria were patients younger than 18. Data collected included demographic variables, polyp characteristics, procedural outcomes, and complications.

## RESULTS

49 ESD procedures were completed. Technical success, defined as successful resection of all polypoid tissue, was achieved in 48/49 procedures (98.0%). The rate of both en bloc and R0 resection was 42/48 (87.5%) Curative resection, defined as technically successful ESD with an R0 margin and no lymphovascular invasion, was achieved in 41/49 (83.7%) of the cases. 8 patients had adenocarcinoma, 5 of which had a curative resection with no recurrence. There were no intra-procedural or delayed perforation. 5/49 (10.2%) patients had clinically significant post-endoscopic resection bleeding. The recurrence rate was 3/37 (8.1%). All recurrences were managed endoscopically. 4/49 (8.2%) of patients required surgery post-ESD.

## CONCLUSION

ESD is an effective treatment for gastric lesions with a high rate of technical success and curative resection and low rate of complication. Although ESD requires high technical proficiency, its favorable outcomes along with low rates of complication make ESD highly feasible for the resection of gastric lesions.

*Poster Session 4 - 5:01 pm*

# EFFICACY OF THE IN-HOSPITAL OBSERVATORY PERIOD FOR IBD PATIENTS WITH FLARE TREATED WITH ORAL CORTICOSTEROIDS

J Buttar, B Chou, A Habibi, S Pi, K Atkinson

## BACKGROUND

Inflammatory Bowel Disease (IBD) is a chronic, debilitating collection of diseases with significant impairment to patient quality of life and hospital burden. Patients with acute flare of their disease are managed with IV corticosteroids and transitioned to an oral equivalent. Despite no formal guideline recommendation, some patients remain in hospital on oral corticosteroids, primarily for observation. The utility of an observatory period for patients recently switched to oral corticosteroids has not yet been studied and may be unnecessarily increasing hospital stays and costs to the Canadian medical system.

## PURPOSE

- Analyze the efficacy of observing patients in hospital after successful transition to oral corticosteroids after an acute IBD flare.
-Primary outcome was re-hospitalization rates stratified by presence of an observatory period.
-Secondary outcome was identifying risk factors that predispose patients to re-hospitalization.

## METHOD

Retrospective cohort study including patients diagnosed with IBD admitted to a tertiary care hospital under the Gastroenterology service for acute flare of their disease from June 1, 2010 to June 30th, 2022.

## RESULTS

-97 patients were identified, representing 240 hospital admissions. 49 female, 48 male. 28 patients were diagnosed with IBD before age of 25. 24 patients had > 4 hospitalizations.
-Of the 240 hospitalizations, 158 included an observatory period, with 39 less than 24hr and 119 greater than 24hr
-The relative risk of patients without an observatory period returning to hospital within 14 and 28 days compared to those with an observatory period was 1.23 and 1.01, respectively.

## CONCLUSION

An in-hospital observatory period of oral corticosteroids did not significantly change re-hospitalization rates. Further robust studies are required to bolster this preliminary data, which suggests that patients with IBD flare can be discharged earlier, reducing lengths of hospital stay.


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