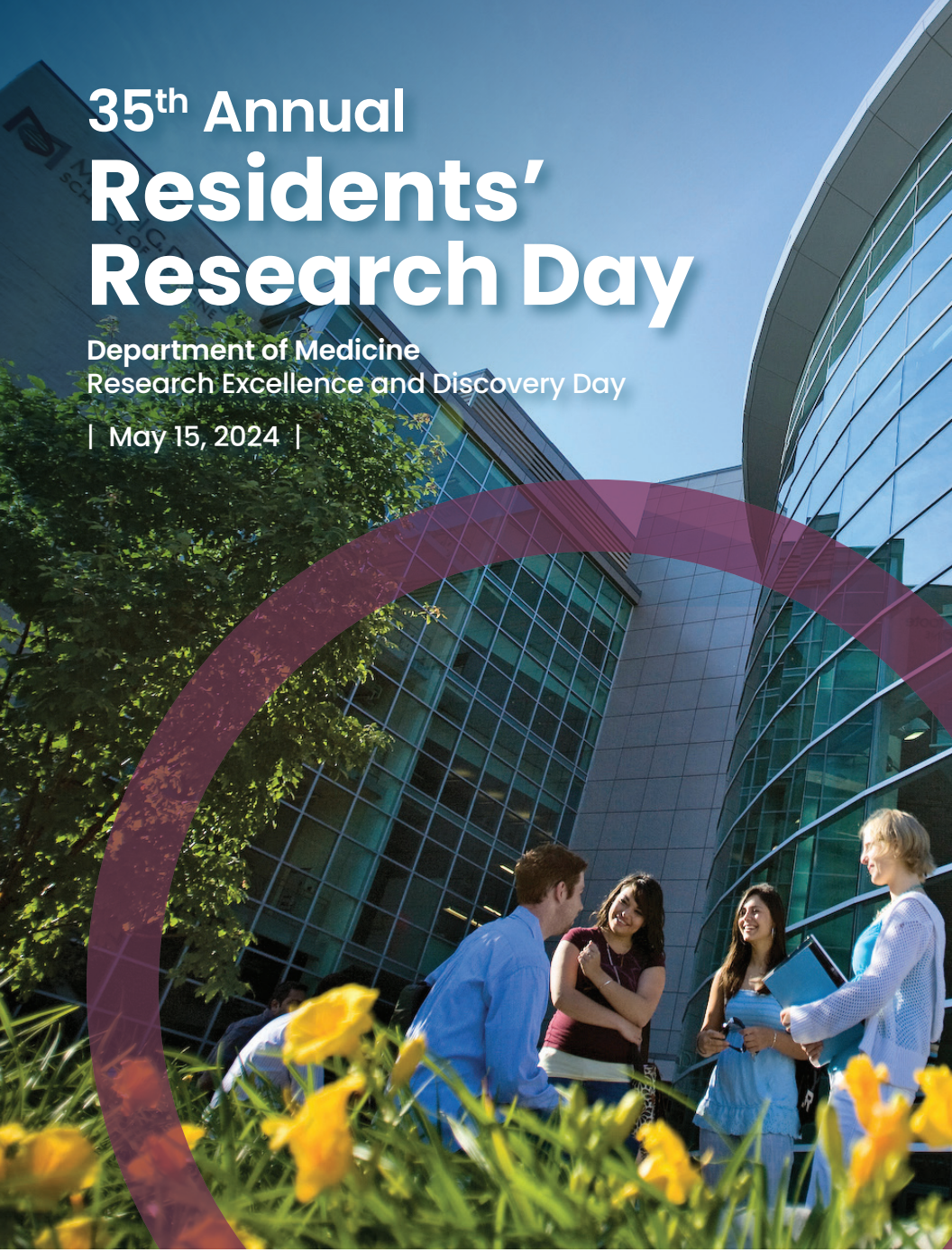
35th Annual Residents' Research Day

Department of Medicine
Research Excellence and Discovery Day

| May 15, 2024 |



Brighter World

HEALTH SCIENCES
Department of Medicine

McMaster University

McMaster University
Faculty of Health Sciences

Department of Medicine
35th Annual
Residents' Research Day in Medicine

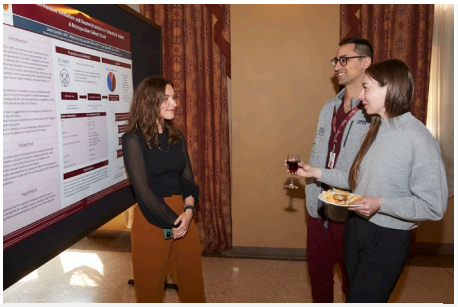
May 15, 2024

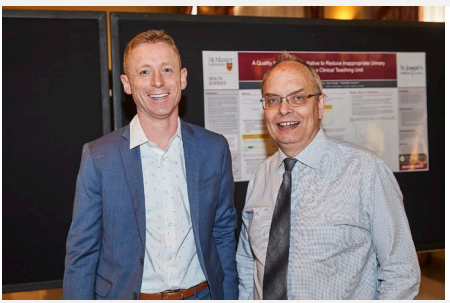
Director Resident Research
Darryl Leong

Special thanks to our judges

Scientific: J. Dionne, A. Holbrook, Z. Punthakee
Clinical: N. Aghel, F. Cirne, J. Tsang
Medical Specialty: W. McIntyre, J. Roberts, B. Rochwerg
Timekeepers: J. Lopez, F. Carandang, G. Cavalli

Celebrating Resident Research





Program

Poster Presentations - Morning

12:15 **Resident Luncheon and Internal Medicine Program Awards**

1:45 **Oral presentations**

4:00 **Poster viewing and hors d'oeuvres**

5:00 **Keynote address – Dr. PJ Devereaux**
"Our Past and Our Potential Future"

5:30 **Awards Ceremony**
Research Day awards
2024 Grants announced
Faculty teaching awards
Faculty role recognitions

ORAL PRESENTATIONS

POSTERS - SCIENTIFIC

POSTERS – CLINICAL

POSTERS – MEDICAL SPECIALTIES

Oral Presentations

1 – 8

1 - O Meaningful Endpoints in Patients with Advanced Melanoma Being Considered for Adjuvant Systemic Therapy

Background: Landmark adjuvant melanoma trials demonstrated disease-free survival (DFS) but no overall survival (OS) benefits. Given patients' values were rarely incorporated in clinical trial designs, we aimed to understand patients' perception of meaningful study endpoints and magnitude of treatment benefits.

Methods: This prospective, online-survey study enrolled all consecutive patients at the Juravinski Cancer Centre with resected stage IIB-IV cutaneous melanoma and considered for adjuvant systemic therapy. Primary outcome was the most important perceived study endpoint. Trade-offs (e.g. side effects, quality of life) were explored in secondary outcomes.

Results: From May 2023 to February 2024, the survey had a completion rate of 46% (36/79). 22% of patients had resected stage IIB/C melanoma. OS (42%) was the most important perceived study endpoint by our patients, followed by quality of life (28%) and DFS (28%). While 63% would consider treatment for DFS with unknown OS benefit, only 20%, 14%, and 14% remain interested in treatment without OS benefit after weighing against its potential 10-15% severe toxicity risks, 35% long-term toxicity risks, and diminished quality of life risks, respectively. Patients with stage IIB/C and stage III/IV melanoma were willing to tolerate adjuvant therapy with no more than 21% and 22% risk of significant side effects, respectively, while gaining minimum DFS absolute benefits of 16% over 2 years and 30% over 5 years, respectively.

Conclusion: Our study highlighted a diverse patients' perceptions of meaningful study endpoints, magnitude of treatment benefits, and treatment-related risks tolerance. These insights underscore the importance of integrating patient preferences into trial designs and treatment discussions to ensure patient-centered care in the management of advanced melanoma.

Author: Daniel Goldshtein, PGY2
Supervisor: Dr. B. Kartolo

2 - O Disparities in the Enrollment of Racialized, Ethnic Minority, and Older Adults in Randomized Trials of Acute Myeloid Leukemia: A Systematic Review

Background: There are significant racial and ethnic disparities in hematologic malignancy patient survival. Understanding discrepancies in enrollment in randomized controlled trials (RCTs) based on race/ethnicity is important to better understand access to care and generalizability of existing RCTs.

Objective: Systematically review the literature on enrollment of ethnic minorities into RCTs of acute myeloid leukemia (AML) and compare this to population characteristics.

Methods: Phase II/III RCTs reporting efficacy/safety outcomes of disease modifying therapies for AML in adults were included. The proportion of trials reporting race/ethnicity were determined. For U.S. trials, enrollment incidence ratios (EIRs) were calculated by dividing the proportion of members of a racial subgroup in a trial by US population-based incidence in the corresponding subgroup using the Surveillance, Epidemiology, and End Results (SEER 20) database. A random-effects meta-analysis was conducted to pool EIRs.

Results: Of the 90 included studies 21 (23.3%) reported on race/ethnicity. Of these 15 (71.4%) had data on African American/Blacks, 21(100%) Whites, 14 (66.7%) Asian or Pacific Islanders, 2 (9.52%) American Indian and Alaskan Native, and 4 (19.0%) Hispanics. African/Black, 7.2% Asian or Pacific Islander, 0.1% American Indian and Alaskan Native, and 0.8% Hispanic. Of the 14 US trials, only 4 (28.6%) reported on race. Hispanic patients (EIR 0.28; 95%CI 0.15 to 0.50, I2=46.9%), and Asian patients (EIR 0.16; 95%CI 0.09 to 0.28, I2=0%) were significantly underrepresented while White patients (EIR 1.23, 95%CI 1.13 to 1.35, I2=0%) were significantly overrepresented. Confidence intervals were wide for EIR of Black patients (EIR 0.95, 95%CI 0.43 to 2.09, I2=87.4%).

Conclusion: Most trials did not report data on race and ethnicity. Hispanic and Asian patients were significantly underrepresented while White patients were overrepresented.

Authors: Anshika Jain PGY1, Nathalie Loeb PGY2, Parsa Tahvildar PGY1
Supervisor: Dr. A. Garcia-Horton

3 - O Diagnostic Accuracy of Erythropoietin And Jakpot in Predicting JAK2-Positive Erythrocytosis: A Retrospective Cohort Study

Background: Erythrocytosis affects 0.5–4% of ambulatory Canadians, however, few patients are ultimately diagnosed with a JAK2-positive myeloproliferative neoplasm. The new JAKPOT score (Chin-Yee et al), incorporating platelet, neutrophil, and erythrocyte count, shows promise at identifying patients at low risk of JAK2-positive erythrocytosis but lacks external validation.

Methods: This is a retrospective cohort study that includes all patients who had EPO and JAK2 molecular testing for undifferentiated erythrocytosis at a tertiary care hospital in Hamilton, Canada, between Dec. 2014 and Dec. 2022. Demographics, comorbidities, medications, and laboratory parameters were collected. Sensitivity (Sn), and specificity (Sp) of EPO and JAKPOT were determined by Chi-square tests.

Results: 237 patients (74 female, mean age 57.7) were included. Low EPO (<3.8 mU/mL) had a Sn of 0.76 (95% CI, 0.61 – 0.86) and Sp of 0.97 (95% CI, 0.94 – 0.99) for the diagnosis of JAK2-positive erythrocytosis. A JAKPOT score ≥ 1 had a Sn of 0.84 (95% CI, 0.71-0.92) and Sp of 0.66 (95% CI, 0.59 – 0.72) to diagnose JAK2-positive erythrocytosis. A JAKPOT score ≥ 1 or EPO < 3.8 mU/mL had a Sn of 0.91 (95% CI, 0.79–0.96), which increased further to 0.95 (95% CI, 0.83-0.99) after excluding 24 patients (10%) who had donated blood or had been phlebotomized prior to testing. Restricting JAK2 testing to patients with a JAKPOT score ≥ 1 or low EPO level would have led to 55% fewer molecular tests.

Conclusion: Low EPO and JAKPOT ≥ 1 had modest sensitivity for JAK2-positive erythrocytosis. However, combining EPO and JAKPOT increased sensitivity to 95% and could identify patients at low-risk of JAK2-positive erythrocytosis. This finding has the potential to lessen low-yield molecular testing.

Author: Justin Senecal PGY2
Supervisor: Dr. S. Mithoowani

4 - O Surgical Vs Percutaneous Left Atrial Appendage Occlusion (LAAO) in Atrial Fibrillation - A Systematic Review And Meta-Analysis of Randomized Trials

Background: Atrial fibrillation (AF) is the most common type of cardiac arrythmia worldwide. It is associated with a 5-fold increased risk of stroke. First line therapy to reduce stroke risk are oral anticoagulants (OAC) however, OAC increase bleeding risk which negatively affects adherence and dosing. The most common site for thrombus formation is the left atrial appendage and surgical or percutaneous occlusion of this site has been investigated as a nonpharmacological alternative or adjunct to reduce stroke risk.

Objective: To evaluate the efficacy and safety of LAAO (surgical and percutaneous) in AF with a systematic review and meta- analysis of randomized controlled trials.

Methods: Randomized controlled trials comparing either surgical or percutaneous LAAO to no occlusion (medical management) in AF patients were retrieved from MEDLINE, EMBASE, Cochrane Library. Outcomes of interest included ischemic stroke, all-cause mortality, and major bleeding. We pooled data using a fixed-effects model when LAAOS III (dominant trial) was included and used a random effects model otherwise.

Results: A total of 13 trials were included from 2,080 reviewed references. Seven trials (total n: 5,171) evaluated surgical LAAO, of which 5 did it in parallel with OAC treatment. The remainder six trials (total n: 2,004) evaluated percutaneous LAAO against OAC. With an average follow up of 3 years, surgical LAAO reduced the risk of ischemic stroke by 36% compared to medical management alone (relative risk [RR]: 0.64, 95% confidence interval [CI]: 0.51-0.81, I2: 0%). There was no difference in all-cause mortality or major bleeding events (RR 0.99, 95%CI 0.90-1.10, I2: 0%; RR: 0.93, 95%CI: 0.79-1.10, I2: 0%). Conversely, percutaneous LAAO did not reduce the risk of ischemic stroke nor bleeding events compared to OAC treatment (RR: 1.34, 95%CI: 0.82-2.16, I2: 0%; RR: 0.91, 95%CI: 0.72-1.14, I2: 0%). Percutaneous LAAO was associated with 21% reduction in all-cause mortality compared to OAC (RR: 0.79, 95%CI: 0.66-0.96, I2: 0%).

Conclusion: In patients with AF, surgical LAAO effectively reduces stroke risk by 36% presenting an alternative and complimentary therapy to OACs. The benefit of percutaneous LAAO remains uncertain; limitations center around the lack of investigations evaluating the effect of percutaneous LAAO in parallel with OAC treatment.

Author: Julieta Lazarte PGY1
Supervisors: Dr. E. Belley-Côté

5 - O Investigating the Clinical and Therapeutic Implications of RyR2 Truncating Variants

Background: Catecholaminergic polymorphic ventricular tachycardia (CPVT) is an inherited arrhythmia syndrome that predisposes to sudden cardiac death. Approximately 60% of CPVT cases have a culprit gain-of-function variant within the RyR2 gene. RyR2 encodes the cardiac ryanodine receptor -an ion channel that mediates calcium release from the sarcoplasmic reticulum. Partially silencing RyR2 via CRISPR or an antisense oligonucleotide could potentially represent a way to eliminate arrhythmic risk in CPVT patients, however haploinsufficiency for most cardiac ion channels is not tolerated.

Objectives: To investigate the potential safety of partial RyR2 silencing, we sought to determine if rare RyR2 truncating variants associate with cardiac disease, including ventricular and atrial arrhythmias, heart failure, coronary artery disease, and myocardial infarction, using population-based human genetic data.

Methods: The UK Biobank is a population-based study of 200,000 individuals that have undergone exome sequencing. We used prediction tools to annotate rare (minor allele frequency <0.1%) RYR2 truncating variants. We evaluated for associations between RyR2 variants and a curated set of cardiac phenotypes (including ventricular arrhythmias and sudden cardiac death [VT-SCD], atrial fibrillation [AF], heart failure [HF], coronary artery disease [CAD]), myocardial infarction [MI]) and a composite group of all the cardiac phenotypes using logistic regression models. The analysis was adjusted for age, sex, and the first 20 principal components of ancestry.

Results: The study included 162,138 participants of Western European ancestry. In total, there were 67 rare truncating variants (frameshift ins/del and stopgain). 79 (0.05%) individuals were heterozygous carriers of a RyR2 truncating variant and 24,599 (15.71%) had a form of cardiac disease. RyR2 truncating carrier status was not associated with VT-SCD (P=0.92), AF (P=0.97), HF (P=0.53), CAD (P=0.86) and/or MI (P=0.67). Furthermore, RyR2 LOF carrier status was not associated with the composite cardiac disease [VT-SCD, AF, HF, CAD and MI] (P=0.40).

Conclusions: RyR2 truncating variants were not associated with cardiac disease, suggesting RyR2 haploinsufficiency may be tolerated. These findings, in addition to providing clarity regarding the clinical significance of RyR2 truncating variants (currently classified as variants of unknown significance), suggests that partial RyR2 silencing via CRISPR or antisense oligonucleotides may be a safe method for treating CPVT.

Author: Julieta Lazarte PGY1
Supervisors: Dr. J. Roberts

6 - O Direct Laryngoscopy versus Video Laryngoscopy for Intubation in Critically Ill Patients: A Systematic Review, Meta-Analysis, And Trial Sequential Analysis of Randomized Trials

Background: Given the uncertainty regarding the optimal approach to laryngoscopy for the intubation of critically ill adult patients, we conducted a systematic review and meta-analysis to compare video laryngoscopy (VL) versus direct laryngoscopy (DL) for intubation in Emergency Department (ED) and Intensive Care Unit (ICU) patients.

Methods: We searched MEDLINE, PubMed, Embase, Cochrane Library, as well as unpublished sources, from inception to February 27, 2024. We included randomized controlled trials (RCTs) of critically ill adult patients randomized to VL compared with DL for endotracheal intubation. Reviewers screened abstracts, full texts, and extracted data independently and in duplicate. We pooled data using a random effects model, assessed risk of bias using the modified Cochrane tool and certainty of evidence using the Grading Recommendations Assessment, Development, and Evaluation approach. We pre-registered the protocol on PROSPERO (CRD42023469945).

Results: We included 21 RCTs (n = 4,622 patients). Compared with DL, VL probably increases FPS (relative risk [RR] 1.12; 95% CI, 1.06-1.19; moderate certainty) and probably decreases esophageal intubations (RR 0.47; 95% CI 0.27-0.82; moderate certainty). VL may result in fewer aspiration events (RR 0.53, 95% CI 0.80-1.22; low certainty) and dental injuries (RR 0.32, 95% CI 0.19-1.11; low certainty) and may have no effect on mortality (RR 0.97, 95% CI 0.88-1.07; low certainty) compared with DL.

Conclusions: In critically ill adult patients undergoing intubation, the use of VL, compared with DL, probably leads to higher rates of FPS and probably decreases esophageal intubations. VL may result in fewer dental injuries as well as aspiration events compared with DL with no effect on mortality.

Author: Garrett McDougall PGY2, Emergency Medicine
Supervisors: Drs. S. Sharif & B. Rochwerg

7 - O Screening Rates of Primary Aldosteronism in Outpatient Subspecialty Clinics at Hamilton Health Sciences

Patients with primary aldosteronism are at an increased risk of cardiovascular morbidity and mortality as compared to patients with primary (essential) hypertension matched for age, sex, and degree of blood pressure elevation. The Endocrine Society Primary Aldosteronism Guideline published in 2016 recommends screening for hyperaldosteronism in patients with resistant hypertension and/or spontaneous or diuretic-induced hypokalemia. Despite this, studies suggest that fewer than 5% of patients with primary aldosteronism are ever screened or diagnosed.

We conducted an observational study using the Hamilton Health Sciences' EPIC electronic medical record tool "slicer-dicer" to determine the number of patients with a diagnosis of hypertension and laboratory evidence of hypokalemia (reference range 3.5 - 5.2mmol/L) who also had a renin and/or serum aldosterone level checked between September 1, 2022 - January 31, 2024. Only outpatient encounters in the departments of Endocrinology, Diabetes, Cardiology, Neurology (stroke prevention clinics), and General Internal Medicine were included in our analysis.

The total number of patients seen in the departments of Endocrinology, Diabetes, Cardiology, Stroke, and General Internal Medicine between September 1, 2022, and January 31, 2024 was 55,975. Out of the 55,975 patients, 19,721 (35.2%) had a documented diagnosis of hypertension. Of 5906 patients with both hypertension and hypokalemia, 103 (1.7%) had a renin and/or aldosterone level checked. The screening rates for primary aldosteronism at Hamilton Health Sciences in all subspecialty clinics are extremely low and similar to the screening rates reported by many other academic institutions. Screening rates were highest among patients who were seen by endocrinologists. Greater efforts are required to improve screening rates so that appropriate management can be offered to patients with primary aldosteronism to reduce cardiovascular morbidity and mortality.

Author: David Kishlyansky PGY5, Endocrinology & Metabolism
Supervisor: Dr. M. Pigeyre

8 - O Assessment of Intermediate Coronary Stenoses for Percutaneous Coronary Intervention: A Systematic Review and Network Meta-Analysis of Randomized Trials

Background: The optimal modality in the catheterization laboratory to determine intermediate coronary stenosis significance is unclear. We aimed to determine the comparative efficacy of all available modalities in guiding the decision to perform percutaneous coronary intervention (PCI).

Methods: We searched Medline, Embase, and CENTRAL until October 5, 2023. We included trials that randomized patients with intermediate stenosis undergoing potential PCI and reported major adverse cardiovascular events (MACE). We performed a frequentist random-effects network meta-analysis and assessed the certainty of evidence using the GRADE approach.

Results: We included 15 trials with 16,333 patients. Quantitative flow ratio (QFR) was associated with a decreased risk of MACE compared to coronary angiography (CA) (Risk ratio (RR) 0.68, 95% Confidence Interval (CI) 0.56, 0.82; high certainty), fractional flow ratio (FFR) (RR 0.73, 95%CI 0.58, 0.92; moderate certainty), and instantaneous wave-free ratio (iFR) (RR 0.63, 95%CI 0.49, 0.82; moderate certainty), and ranked first for MACE (88.1% probability of being the best). FFR (RR 0.93; 95%CI 0.82, 1.06; moderate certainty) and iFR (RR 1.07, 95%CI 0.90, 1.28; moderate certainty) likely did not decrease the risk of MACE compared to CA. Intravascular imaging (IVI) may not be associated with a significant decrease in MACE compared to CA (RR 0.85; 95%CI 0.62, 1.17; low certainty) when used to guide the decision to perform PCI.

Conclusions: A decision to perform PCI based on QFR was associated with a decreased risk of MACE compared to CA, FFR and iFR. This hypothesis-generating finding should be validated in large, randomized, head-to-head trials.

Author: Zain Cheema PGY1
Supervisor: Dr. S. Jolly

Poster Presentations

Scientific

1 – 15

1 - S Variability in Human Brown Adipose Tissue Activity is Not Explained by the Gastrointestinal Microbiome

Background: In rodents, lower brown adipose tissue (BAT) activity is associated with metabolic diseases and is partially regulated by changes in the gastrointestinal microbiome. Little is known about the relationship in humans between BAT activity and the gastrointestinal microbiome.
Method: We conducted a cross-sectional study to examine whether BAT is associated with gastrointestinal microbiota in humans (n = 91; 60 adults, 31 children). We assessed cold-stimulated BAT activity in humans using magnetic resonance imaging and assessed the microbiome with 16S amplicon sequencing.
Results: While variability in human BAT activity was observed, we did not observe a significant correlation between BAT activity and the microbiome.
Conclusion: These data suggest that, while BAT activity varies in humans, it is unlikely to be mediated via the gastrointestinal microbiome.

Author: Saad Syed PGY1
Supervisor: Dr. K. Morrison

2 - S Temporary Interventions for Acute Symptomatic Bradycardia: A Systematic Review

Background: When symptomatic bradycardia occurs acutely, it can result in symptoms and hemodynamic instability. Guideline-directed options for acute treatment include vasoactive/chronotropic drugs and temporary cardiac pacing. However, there is a lack of strength and consistency in the recommendations and evidence supporting the use of individual agents or pacing methods.

Methods: Systematic searches of observational and randomized studies with at least ten adult participants experiencing acute bradycardia were conducted on MEDLINE, CINAHL, and EMBASE. Studies were included for screening if they assessed interventions with either intravenous chronotropic/vasoactive agents or some type of temporary pacing. Abstract screening, full text screening, and data extraction were each performed by two independent reviewers, and conflicts were resolved by a third independent reviewer when needed. This study was divided into two phases. Phase 1 aims to assess commonly reported PICO questions in the literature in order to inform the next phase. Phase 2 aims to assess the data on the commonly-reported outcomes as well as various pre-determined outcomes. If two or more studies shared similar PICO questions, pairwise or network meta-analysis may be considered.

Results: A total of 12435 abstracts were identified for screening, of which 254 were identified for full-text review. Though full-text review is still underway (albeit almost complete), currently 93 studies have met criteria for inclusion. The PICO questions of included studies will be extracted and assessed.

Conclusions: Overall, this review aims to evaluate and compare the use of individualized agents and temporary pacing methods in acute symptomatic bradycardia. The results of this study may be able to inform the use of various vasoactive/chronotropic agents and pacing methods in patients experiencing acute bradycardia with symptoms or hemodynamic compromise.

Authors: Paul Mundra PGY1, Stephanie Nguyen PGY2
Supervisor: Dr. W. McIntyre

3 - S Development of Occult Myeloproliferative Neoplasm in Patients with Venous Thromboembolism and JAK2 Positive Mutation: A Systematic Review

Background: JAK2-positive myeloproliferative neoplasms (MPN), such as polycythemia vera and essential thrombocythemia, are commonly associated with atypical site thromboembolism (TE). Given this common association, patients presenting with atypical thromboses often have JAK2 testing, even without cell count changes that would suggest an MPN. The clinical relevance of JAK2 positivity in these patients and the risk of progression to MPN is unclear. Aims Perform a systematic review assessing progression to MPN in patients with TE and JAK2 mutations.

Methods: MEDLINE, EMBASE, and CENTRAL was searched from inception to October 2023. Studies were screened independently and in duplicate at abstract and full-text levels. Any English language study assessing patients with venous TE, JAK2, and MPN status was included. Two reviewers independently and in duplicate extracted data, including baseline characteristics, details of thrombosis events, JAK2 mutation status, MPN status, and intervention details.

Results: Of 2951 titles screened, 49 studies were included, with a total of 6940 patients. Of these patients, 760(10.9%) were JAK2 positive, of which 429(56.4%) did not meet the diagnostic criteria for MPN. JAK2 mutation was prevalent in patients with Budd-Chiari Syndrome (19%,119/623). 36 studies followed patients after initial thrombosis event for a median of 48 months. Of 429 patients who were initially JAK2+ and MPN-, 92 patients (21.4%) progressed to MPN at an average of 43.7 months. There was limited information on anticoagulation regimens or recurrent TE.

Conclusion: There is a high rate of progression to MPN in patients with JAK2 positivity and thrombosis, demonstrating the importance of close monitoring for disease progression in this population. Further studies are required to investigate the optimal population to test, anticoagulation duration, and initiation of MPN modifying therapy.

Authors: Nathalie Loeb PGY2, Ali Eshaghpour PGY3
Supervisor: Dr. M. Crowther

4 - S Evaluation of An Obstetric Medicine Curriculum for Obstetric Trainees at McMaster University: A Quality Improvement Project

Background and Purpose: Pregnant patients are becoming more medically complex, requiring a multidisciplinary approach with obstetrics, obstetric medicine (OBM) and other medical specialties. This highlights the need for obstetric trainees to have a basic approach to medical diseases, knowledge of the disease interplay with pregnancy, and the skillset to collaborate in multidisciplinary teams. To meet this need, the core Internal Medicine (IM) curriculum was re-designed for first year Obstetrics and Gynecology (OBGYN) residents at McMaster to include a clinical OBM rotation and fixed academic deliverables. Our aim was to evaluate this curriculum to improve the learner experience and to assess the achievement of core competencies including entrustable professional activities (EPAs).

Methods: Pre- and post-rotation anonymous surveys were sent to trainees between July 2021-April 2023. A focus group was conducted with residents to gain further insight.

Results: Survey response rate was 51%. All trainees reported greater knowledge of OBM conditions post-rotation with achievement of personal learning objectives. Notably, all trainees felt at least moderately comfortable with their management of core OBM presentations such as hypertensive disorders, liver disorders, anemia and nausea/vomiting during pregnancy. Due to their early exposure to OBM, OBGYN residents expressed being able to apply their knowledge to future rotations. Positive feedback was provided regarding the utilization of diverse teaching forms to ensure a balanced service-to-education ratio. Although OBGYN residents identified having the opportunity to complete EPAs, completion rate was variable. Obstacles included lack of awareness of relevant EPAs and comfort level.

Conclusions: Early introduction of OBM into core OBGYN training is a novel curriculum addition that was well received by trainees. We have identified actionable areas to improve the rotation and EPA completion.

Author: Kelsey MacEachern PGY3
Supervisor: Dr. A. Huynh

5 - S Implementation of a Multicomponent Bedside Board to Reduce Delirium in Orthopedic Inpatients: A Quality Improvement Project

Background & Purpose: Delirium is common in orthopedic inpatients and is associated with significant adverse health outcomes. Multicomponent, nonpharmacological interventions reduce delirium occurrence, but are challenging to implement in routine care. This third phase of a quality improvement (QI) project evaluates a multi-purpose bedside board designed to prompt staff to implement the six components of the Hospital Elder Life Program (HELP), with the goals of reducing delirium prevalence, enhancing communication, and promoting delirium education.

Methods: Boards were installed beside 15 orthopedic beds at a single academic hospital in Hamilton, Ontario from December 1, 2022 to August 1, 2023. The QI model of PDSA cycles involved audits, surveys, informal interviews, and educational sessions to evaluate and optimize board design and utilization by staff. Delirium prevalence was determined through retrospective chart review using the CHART-DEL tool.

Results: Board completion rate stabilized at 69.2% over the 8-month study period. Of 141 charts reviewed, there was a non-significant reduction in delirium prevalence from 30.6% to 22.8% (p=0.390) pre- versus post-installation. Mean implementation rate of hearing-related prompts was 90.7% (86.2%-95.2%; 95% CI), and 79.7% (75.2%-84.3%; 95% CI) for vision-related prompts. Staff and care partners reported the board was useful for providing care and improving communication. The proportion of staff-reported "excellent" delirium prevention knowledge improved from 19.2% to 29.6% (p=0.016).

Discussion & Conclusion: This QI project successfully integrated a bedside tool to prompt delirium prevention strategies and communicate patient information within the HELP domains. Although reduction in delirium was not statistically significant, the board is a feasible and well-received tool in the care of orthopedic older adults. It is currently being adapted across multiple Hamilton Health Sciences sites including Medicine wards.

Author: Shannon Gui PGY3
Supervisor: Dr. C. Patterson

6 - S Asthma Inhaler Reliever (Rescue) Therapies: Systematic Review and Network Meta-Analysis of Comparative Efficacy and Safety

Background: Asthma is a chronic respiratory illness characterized by airway inflammation and bronchoconstriction. Reliever therapies are used to rapidly improve asthma symptoms. The optimal inhaled reliever, a short-acting bronchodilator, long-acting bronchodilator, or either with concomitant inhaled corticosteroids, remains unclear.

Objective: To determine the comparative efficacy and safety of reliever therapies for asthma.

Methods: We searched MEDLINE, Embase, and CENTRAL from January 1st, 2020 to September 1st, 2023 for randomized control trials addressing patients with asthma comparing different reliever therapies at similar intensities of maintenance therapy in terms of Global Initiative for Asthma (GINA) 2022 treatment step. We performed forward and backward citation analysis using the Web of Science. A multidisciplinary panel of clinicians and patient partners prespecified efficacy and safety outcomes. Paired reviewers screened studies, extracted data, and assessed outcome-level risk of bias in duplicate. Random effects network meta-analyses will synthesize continuous and dichotomous outcomes under guidance of Grading of Recommendations Assessment, Development and Evaluation (GRADE).

Results: We identified 3858 relevant references and ultimately included 23 randomized control trials enrolling 42667 patients. The median of reported mean age of patients was 40.02 years (range 10.75-49.40). The median proportion of female patients was 59% (range 40%-84%). Included studies focused on a variety of reliever therapies, including inhaled terbutaline, salbutamol, formoterol, budesonide/formoterol, beclomethasone/formoterol, and beclomethasone/salbutamol.

Conclusions: The availability of data in over 40,000 patients with asthma will permit conducting random effects network meta-analyses to determine the optimal reliever strategy in terms of patient-reported important efficacy and safety outcomes. These results will inform updated asthma guidance including the upcoming American Academy of Allergy, Asthma & Immunology/American College of Allergy, Asthma and Immunology severe asthma guidelines.

Author: Dario Ferri PGY1
Supervisor: Dr. D. Chu

7 - S Redefining Mild-Moderate UC

Background: Mild-moderate ulcerative colitis (UC) is conventionally defined as a total Mayo Clinic score of at least 4 with a Mayo Endoscopic Score (MES) of 2 and Rectal Bleeding Score (RBS) of at least 1. This study aims to explore whether UC patients with lower endoscopic burden but active histology have comparable outcomes to those with 'conventional' mild-moderate UC.

Methods: This was a post-hoc analysis from the VARSITY study (Clinicaltrial.gov: NCT02497469). Patients who completed induction (at week 14) with mild-moderate UC based on the conventional definition were compared to patients with histologically active MES 1 for achieving histoendoscopic mucosal improvement (HEMI) at week 52, defined as MES ≤1 and Geboes highest grade <3.2. Secondary outcomes included endoscopic remission (ER), histologic improvement and clinical remission (CR). Histologically active disease was defined as Geboes highest grade >3.2 (>50% of neutrophil crypt involvement in the epithelium).

Results: Week 52 outcomes were comparable among patients with mild-moderate UC compared to those with histologically active disease and MES 1. At week 52, a similar proportion of patients achieved HEMI [19/79 (24.1%) vs. 28/113 (24.8%), p=0.908], ER [23/79 (29.1%) vs. 35/113 (31.0%), p=0.782], histologic improvement [23/79 (29.1%) vs. 36/113 (31.9%), p=0.685] and CR [38/79 (48.1%) vs. 66/113 (58.4%), p=0.158].

Conclusions: Disease outcomes were comparable in patients with MES 1 and Geboes highest grade >3.2 to those with conventional mild-moderate UC. This should prompt clinical trialists to revisit and expand the current definition of mild-moderate UC. Further validation of these findings is recommended.

Author: Nazmus Khan PGY1
Supervisor: Dr. N. Narula

8 - S Clinical and Serological Characteristics of Vaccine-Associated ITP Following COVID-19 Vaccination

Background: Vaccine-associated immune thrombocytopenia (VA-ITP) is a serious hematological complication that re-emerged during COVID-19 vaccine campaigns. The mechanisms of VA-ITP are unknown, and the associated laboratory and clinical outcomes have not been described with sufficient follow up. We hypothesized that among VA-ITP patients, thrombocytopenia is severe, with a prolonged, relapsing course.
Methods: In this retrospective cohort study, we evaluated short- and long-term outcomes in COVID-19 VA-ITP. All new adult thrombocytopenia diagnoses (platelet count <100x10^9/L) within 3 months of vaccination were included. Patients were identified through the McMaster thrombocytopenia registry between December 1, 2020 – January 1, 2024, and eligibility was confirmed by medical record review. Platelet antibody testing, platelet counts, vaccine information, and treatments were collected for all patients. The data will be summarized using descriptive statistics.
Results: Seven COVID-19 VA-ITP patients were identified, mean age was 50 years (range 28–70) at the time of vaccination,
2 (28.5%) were female, and median platelet count pre-vaccination was 248x10^9/L (IQR 52x10^9/L). VA-ITP was observed after ChAdOx1 nCoV-19 (n=4, 56.2%), and BNT16B2b2 (n= 3; 42.8%). Patients developed VA-ITP after the first vaccination (n= 5; 71.4%), third (n=1;14.2%), and fourth (n=1; 14.2%). Thrombocytopenia post-vaccination was observed within a median of 19 days (IQR 11 days). The median platelet count at presentation was 12x10^9/L (IQR 51x10^9/L) and the median lowest platelet count was 8x10^9/L (IQR 22x10^9/L). The median number of treatments per patient was 3 (IQR 1.5), 6 received corticosteroids and IVIg, 3 TPO receptor agonists (eltrombopag; 2, romiplostim; 1), 2 rituximab, and 1 required splenectomy.
Conclusion: VA-ITP occurred more frequently after adenoviral than mRNA vaccination. While thrombocytopenia in VA-ITP is severe, bleeding is usually mild and standard ITP therapies are effective.

Author: Reid Gallant PGY1
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9 - S Corticosteroids in Cardiogenic Shock: A Retrospective Analysis of the MIMIC-IV Database

Background: While corticosteroid administration in septic shock has been linked to faster shock reversal and lower short-term mortality, the role of corticosteroids in the management of cardiogenic shock remains uncertain.

Methods: In this retrospective observational study, we included all adult patients diagnosed with cardiogenic shock from the Medical Information Mart for Intensive Care-IV (MIMIC-IV) database, a database of critical care admissions. We considered exposure based on receiving any systemic corticosteroids from 6 hours before to 24 hours after critical care admission. We calculated Cox proportional hazards for 90-day mortality (primary outcome). We also estimated corticosteroids' impact on secondary outcomes including hospital length-of-stay, ventilator free days (VFDs), vasopressor-free days, ventilator-associated pneumonia, central-line associated bloodstream infections, and hyperglycemia.

Results: We included 2,000 patients admitted to a critical care unit with cardiogenic shock, 143 (7.2%) of whom received systemic corticosteroids. Corticosteroid-treated patients were younger (67.72 vs. 71.15 years, $p=0.006$), had higher baseline SOFA scores (9.45 vs. 7.80, $p<0.001$), and more often required life support including vasopressors (78% vs. 63%, $p<0.001$) and invasive mechanical ventilation (73% vs. 45%, $p<0.001$) within 48 hours of admission. Corticosteroid use within 24 hours of critical care admission was associated with increased mortality in the multivariate analysis (hazard ratio [HR] 1.39, 95% confidence interval [CI] 1.05-1.85, $p=0.022$). Additionally, corticosteroid use was associated with lower VFDs (2.8 days less, 95% CI 0.35 to 5.26) but was not associated with differences in other secondary outcomes.

Conclusions: Use of corticosteroids is associated with increased 90-day mortality and a reduction in VFDs in patients admitted to critical care with cardiogenic shock. These findings suggesting potential harm of corticosteroids in cardiogenic shock require confirmation in well-designed randomized clinical trials.

Author: Ghazal Haddad PGY2
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10 - S 'Mock Wards': Incorporating a Theoretical Framework to Create a Virtual Clinical Reasoning Education Platform

Background: Virtual Wards (VW) was piloted in 2020 when in-person learning (IPL) was limited during the COVID-19 pandemic. Medical students covered topics in virtual resident-facilitated small groups. 93% of students found VW useful in complementing existing medical curricula. However, VW did not assess clinical reasoning (CR) development or translation to IPL. We created Mock Wards (MW), a novel blended IPL and virtual learning (VL) platform, to qualitatively analyze CR development through VL versus IPL.

Methods: Eight in-depth semi-structured interviews of first-year medical students in MW were transcribed and underwent directed qualitative content analysis with descriptive coding. The Milestones of Observable Behaviors for CR Framework informed interview questions. Translational coding and HyperRESEARCH™ software generated mind maps for theme development.

Results: Three themes emerged: (1) tailoring pedagogical frameworks to learning modalities, (2) learning through interactivity, and (3) balancing accessibility with learner engagement. Pedagogy suitability, learning environment, and facilitator quality were essential to CR development. Students valued facilitators' interactiveness, knowledge, and mentorship in aiding CR skill acquisition. IPL was favourable over VL in facilitating stronger social interactions, spontaneous communication, and non-verbal comprehension, which improved CR domains, including generating hypotheses and differential diagnoses, group problem-solving, and self-reflection. Students identified VL as providing superior accessibility through facilitating distributed learning and balancing concurrent obligations. VL also decreased engagement due to social awkwardness, distractibility, technological difficulties, and social fidelity deterioration.

Conclusion: Small-group VL and IPL each offer unique CR development benefits. Future blended medical education initiatives should focus on modality -tailored pedagogy, group interactability, and weighing the accessibility of VL against decreased engagement. A scaffolding approach, beginning with IPL and transitioning to VL, may align closer to a learner's zone of proximal development.

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11 - S The Impact of the After-Hours Carechart Program in Assessing and Triaging After-Hours Patient Inquiries and an Analysis of the Changes to Service Access Over the Course of the COVID-19 Pandemic

Background: Oncology patients have limited access to their clinical team after hours, leading to increased use of emergency services and avoidable hospitalizations. A pilot project, CAREchart, employing a nurse-led after-hours telephone service, reduced ED visits and was subsequently implemented provincially including at the Juravinski Cancer Centre (JCC).

Methods: In this retrospective cohort study, data were abstracted from electronic records including patient and disease characteristics, reason for calling the CAREchart program and outcomes of the call between Oct 2019 and April 2021. Patients included were aged 18 or older receiving systemic/radiation therapy at JCC. The primary outcome was the proportion of patients accessing CAREChart referred to the ED and admitted to hospital. Secondary outcomes covered the impact of the COVID pandemic wave 1 and 2 on the primary outcome.

Results: A total of 636 calls were made to the CAREChart program from October 2019 to April 2021. Among these, 199 (31.3 %) of calls were directed to ED, 154 (24.4%) visited ED, out which 93 (14.6%) required admission. This finding was consistent across different time periods: pre-COVID-19, COVID-19 Wave 1, and COVID-19 Wave 2, with 30.8%, 30.8%, and 31.7% of patients directed to the ED, respectively. Similarly, 10.8%, 15.4%, and 15.6% of patients required admission during the pre-COVID-19 period, COVID-19 Wave 1, and COVID-19 Wave 2, respectively. Forty patients (6.3%) visited ED and 27 patients required admission (4.2%), when not initially advised to go to ED through CAREChart.

Conclusions: The CAREChart program provides a unique avenue for JCC cancer patients to access care after hours. The program was successful in avoiding >65% of potential ED visits thus reducing hospitalizations in these patients.

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12 - S Setting Priorities and Partnerships for Chronic Cough in Canada (CAN-COUGH)

Background: Chronic cough is a common troublesome condition which significantly impacts patients' quality of lives. For providers, treatment is challenging, with centrally acting cough suppressants often posing significant side effects, and non-pharmacologic interventions being understudied and difficult to access. This study, funded by a CIHR planning and dissemination grant, surveyed patients and healthcare providers (HCPs) to assess research, training and knowledge dissemination priorities on various domains of chronic cough.

Methods: Two surveys were developed by members of the Canadian Thoracic Society's working group on Chronic Cough, which includes HCPs, researchers, and patient partners. One survey was for HCPs and the second for patients. Surveys were conducted through the platform LimeSurvey between September 2023 and January 2024. Patients and HCPs rated items related to research, education, and knowledge dissemination on a 7-point Likert scale. Results were summarized using descriptive statistics. Comparisons were conducted to assess differences in priorities between HCPs and patients, and within subgroups for sex and physician status. For comparisons, statistical analysis was assessed using Mann-Whitney U Score, with significance defined as $P < 0.05$.

Results: 70 patients and 62 HCPs completed the surveys. Patients scored most domains highly, with highest rated priorities including researching new treatments for chronic cough, improving diagnosis of coexisting conditions, and increasing knowledge dissemination via websites and information repositories. HCPs had similar priorities, including focusing research on new treatments, increasing education/training on nonpharmacologic strategies, and developing new clinical practice guidelines.

Conclusion: This is the first priority setting project for chronic cough in Canada. Patients and HCPs describe priorities across research, education, and knowledge dissemination domains. The findings aim to shape future education and research endeavors in chronic cough.

Author: Saif Samari PGY1
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13 - S Towards Personalized Medicine: A Scoping Review of Immunotherapy in Sepsis

Background: Despite significant progress in our understanding of the pathophysiology of sepsis and extensive clinical research, there are few proven therapies addressing the underlying immune dysregulation of this life-threatening condition. The aim of this scoping review is to describe the literature evaluating immunotherapy in adult patients with sepsis, emphasizing on methods providing a "personalized immunotherapy" approach, in which a patient's immune profile is used to guide treatment.

Methods: In line with our previously published protocol, studies were identified by searching PubMed, Embase, Cochrane CENTRAL and ClinicalTrials.gov, from the first paper available until January 29th, 2024. Inclusion criteria were 1) randomized controlled trials or cohort studies; 2) immunomodulatory therapies, in 3) adults with sepsis. Studies regarding COVID-19 were excluded. Screening, inclusion and full-text review was performed by two independent investigators.

Results: The search resulted in 15,853 studies. Title and abstract screening resulted in 1409 studies (9%), assessed for eligibility; 771 studies were included, of which 282 (37%) were observational and 489 (63%) interventional. A personalized approach was incorporated in 70 studies (9%). Trials often showed conflicting results, possibly due to the lack of patient stratification or the potential influence of severity and timing on immunomodulatory therapy results. When patient enrichment was applied, trends of clinical benefit for several interventions emerged.

Conclusion: Despite decades of investigation into immunomodulatory treatments in sepsis, a significant breakthrough in this field of research has yet to be achieved. Several treatments hold promise for future clinical trials using personalized immunotherapy.

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14 - S Financial Conflicts of Interest among Phase III Randomized Controlled Trials (RCTs) Evaluating Immune Checkpoint Inhibitors for Genito-Urinary Malignancies

Immune checkpoint inhibitors (ICIs) are high-grossing medications in oncology. Similarly high-grossing medications in other fields have been associated with financial conflicts of interest (FCOI) among research study authors. The aim of this study is to determine the prevalence of FCOI among authors of RCTs of ICIs in common GU malignancies.

We ran a systematic search on EMBASE, Ovid, and Cochrane Library for phase III RCTs investigating ICIs in common GU malignancies (bladder cancer, prostate cancer, & renal cell carcinoma). The primary endpoint was prevalence of relevant FCOI among authors (defined as payments from pharmaceutical manufacturers of the investigated ICIs). FCOI were stratified according to disclosure status and payment type (general, research, and/or stock/ownership). Undisclosed FCOI to US-based physicians were identified using the Centre for Medicare and Medicaid Services (CMS) Open Payments Database.

Twenty-five RCTs were identified. FCOI were found in 80.5% of author entries (528 of 656). Seventy-two percent disclosed FCOI from the ICI manufacturer(s) (424 of 656). Among authors with CMS Open Payments accounts, 38% had additional undisclosed FCOI (54 of 142). The most common FCOI were general payments (438, 66.8%), followed by research payments (222, 33.8%) and stock/ownership (89, 13.6%). The average dollar value per author of FCOI was $44,505 ($15 - $1,540,000) in general payments, $3,499 ($277 - $13,681) in research payments, and $1,340,185 ($8,054 - $14,397,759) in associated research funding. Median conflict dollar value (excluding study-related research funding) was $13,790 (IQR: $4,133 to $36,179).

FCOI were highly prevalent among authors. There was a high burden of undisclosed FCOI. Increased disclosure is needed to ensure greater transparency in research investigating ICIs. We recommend stronger adherence to standardized reporting guidelines for conflict payments.

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15 - S The Quality of Heart Failure Management on Internal Medicine and Cardiology Teaching Units— A Retrospective Chart Review

Background: Heart failure (HF) is a debilitating condition with progressive deterioration of cardiac reserve and frequent worsening of symptoms causing repeated hospitalizations. It serves as major source of morbidity and mortality in Canada, with 40,000+ hospital admissions occurring due to acute decompensations. A broad range of pharmacologic and non-pharmacologic therapies exist, stratified predominantly by left ventricular function. These include guideline-directed medical therapies (GDMT) and process-of-care (PoC) measures such as daily weight measurements, sodium and fluid restriction.

Methods: We conducted a retrospective chart review of patients admitted with acute decompensated HF to both medical and cardiology inpatient wards at Hamilton General Hospital, from February to December 2018. Exclusion criteria included end-stage HF managed with palliative intent and HF secondary to structural heart disease or coronary artery disease requiring procedural intervention. Baseline demographics and therapies, rates of GDMT initiation and PoC measures were recorded.

Results: 312 charts were identified of which 201 met the inclusion criteria. Patients were admitted to internal medicine in 51 cases (25.4%) and cardiology in 150 cases (74.6%). Baseline demographics and rate of GDMT initiation were broadly similar between disciplines. There was a clinically significant difference in prescription of all process of care measures between internal medicine and cardiology, including daily weights (33% vs 86.7%), salt restriction (47% vs 77%) and fluid restriction (39% vs 62%).

Conclusions: HF is a significant source of illness in the inpatient population on cardiology and internal medicine units. Our single centre cohort study identifies an important care gap in HF management with regards to PoC measurements on medicine wards compared to cardiology and can be used to develop a quality improvement initiative for HF care.

Author: Pranali Raval PGY3
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Poster Presentations

Clinical

1 – 8

1 - C Vitamin C Deficiency Manifesting as a Hematoma of the Spleen

Background: Vitamin C deficiency impairs collagen formation and vascular fragility but may be overlooked in the differential for bleeding. We present a case of a spontaneous splenic hematoma in the context of vitamin C deficiency.

Case presentation: A 45-year-old Caucasian male with a history of significant alcohol use (but no liver dysfunction) presented to the hospital with abdominal pain. He was found to have an atraumatic large subscapular hematoma of the spleen (6.6 x 7.1 x 11.8 cm) with capsular rupture resulting in a moderate hemoperitoneum. There was no reported splenic rupture. There was no splenomegaly or any abnormal radiographic characteristics noted of the spleen. The patient also had no known hematologic conditions or bleeding diathesis (unremarkable ISTH BAT score). He did have loose teeth and bleeding gums. Otherwise, he did not have fatigue, weight loss, corkscrew hairs, arthralgias or any other symptoms related to vitamin C deficiency. CBC showed HGB 104, WBC 8.4, PLT 206, INR 1.1, aPTT 29, fibrinogen 5.7. Albumin was 29 but otherwise normal liver enzymes and normal renal function. The only abnormality was a vitamin C level of 8 umol/L (normal is >=25 umol/L). He was advised to initiate Vitamin C 300mg po daily. He underwent IR embolization of the mid splenic artery due to active extravasation, hemoperitoneum and increasing abdominal pain. He was discharged home 5 days later.

Conclusion: Vitamin C deficiency should be considered in patients presenting with abnormal bleeding of unclear etiology.

Author: Marina Atalla PGY2
Supervisor: Dr. S. Ning

2 - C The Not So Hidden Allergen — A Case Report on Lupine Anaphylaxis

Background:
Lupine is an ancient legume originally from the Mediterranean region and Africa. Lupine has been reported in many food products and is a common food substitute for individuals with lactose intolerance or who require gluten-free diets. This has made Lupine a rising "hidden allergen" especially due to its cross-reactivity with other food allergens including peanuts.

Case Presentation:
We describe a 60 year old female who presented to our Allergy Clinic following an anaphylactic episode from lupine flour and lupine flakes in March of 2022. The patient purchased lupine flour and lupine flakes at a popular bulk foods store on account of its high protein content and gluten-free nature. Immediately after consuming lupine, the patient developed anaphylaxis with respiratory and gastrointestinal involvement. She required one dose of epinephrine, steroids and was given Benadryl. Her symptoms improved immediately after epinephrine was given. She later had allergy testing and skin-prick testing was positive for both lupine flour and lupine flakes. She was advised to avoid lupine products in the future and prescribed epinephrine injectors.

Conclusion:
Based on current dietary trends towards high protein foods, population desire for gluten-free foods, and availability of Lupine products in popular food stores, allergic reactions to lupine may become more ubiquitous in Canada. It will be important in the future for allergists, healthcare providers, regulatory bodies and the wider Canadian community to know about this emerging food allergen.

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3 - C An Atypical Case of a GBS: Facial Diplegia, Distal Paraesthesia, Abdominal Weakness and Dysautonomia

Background:
Guillain-Barré syndrome (GBS) is an autoimmune polyradiculoneuropathy characterized by ascending limb weakness and areflexia, often accompanied by dysautonomia. We describe a variant of GBS with facial diplegia, distal paraesthesias, prominent abdominal weakness, and dysautonomia, not yet described in the literature.

Case Presentation:
A 38-year-old man presented with a 2-week history of abdominal pain, constipation, distal extremity and facial paraesthesias beginning 1 week after an upper respiratory illness. Past medical history was significant only for ADHD, on lisdexamfetamine. Clinical examination revealed bilateral lower motor neuron facial palsies with reduced pinprick sensation in the face, distal limbs, and abdomen. There was also significant abdominal weakness despite preserved reflexes and strength in his limbs. He had autonomic dysfunction characterized by mydriasis, tachycardia, hypertension, and constipation, which persisted throughout his hospitalization. MRI with gadolinium revealed bilateral facial nerve enhancement. Albuminocytologic dissociation was present on CSF. Lyme, syphilis, HIV, HSV, and VZV serology were negative. Investigations for sarcoidosis, porphyria, and brainstem lesions returned negative. Clinical improvement was noted 2 weeks after IVIg 2g/kg with near resolution at 2-month follow-up.

Conclusion:
This case closely resembles the rare facial diplegia and paraesthesia (FDP) variant of GBS due to the facial diplegia and distal paraesthesias. However, our patient also presented with prominent abdominal weakness and numbness suggestive of thoracic polyradiculopathy, as well as autonomic dysfunction, which are not typical of the FDP variant. Therefore, it could be argued this represents an atypical presentation of the FDP variant, or perhaps a novel GBS variant with predominant craniothoracic involvement. More clinical cases of this nature are needed to further classify these examination findings and identify a clear GBS subtype.

Author: Lori Israelian PGY2
Supervisor: Dr. A. Cheung

4 - C Recurrent Pericardial Effusions and Intrapericardial Thrombi of Unknown Etiology: A Case Report

Case Presentation: A 76-year-old male presented with two-week history of pleuritic chest pain, dyspnea, electrical alternans on ECG, pericardial effusion on echocardiography, elevated CRP, and serosanguinous pericardiocentesis. He was diagnosed with idiopathic pericarditis and discharged home with therapy. Three months later, he had recurrence of symptoms and pericardial effusion, but with a 7cm intrapericardial mass characterized as thrombus on CT. Fluid analysis was exudative, but culture and cytology were otherwise unremarkable. He underwent urgent sternotomy to evacuate the mass, and pathology demonstrated fibrin-rich thrombus and non-specific reactive pericardial changes. After discharge, he re-presented 3 days later. Repeat imaging demonstrated another 11cm mass, again suspicious for thrombus. The CT images were reviewed by dedicated cardiac radiologists, who expressed concern for bleeding from the right atrium. Cardiac surgery took the patient back to the OR to evacuate the clot, and identified a small heterogenous mass that was actively bleeding at the atrioventricular junction. The lesion was suspicious for angiosarcoma on cardiac MRI, which was confirmed on surgical biopsy. Unfortunately, the patient's functional status significantly declined, and he requested palliative care.

Conclusion: Overall, the diagnosis of cardiac tumours is difficult due to the non-specific symptoms. Our patient's interval of first healthcare contact to diagnosis was 5 months, similar to the reported literature. To shorten this interval, we recommend high index of suspicion in patients with recurrent symptoms, serosanguinous pericardiocentesis, and masses or clots on imaging. Further, we suggest careful attention for contrast pooling on CT scans, which might indicate active bleeding. Similarly, early cardiac MRI or PET might differentiate tumours sooner. Finally, if within the goals of care, we recommend early referral to a cardiac surgeon with experience in cardiac tumours.

Authors: Paul Mundra PGY1
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5 - C Newest Member of the 1000s Club: A Case Report of Severe Transaminitis Secondary to EBV Infection

Background: The differential for severe hepatocellular transaminitis, defined as alanine aminotransferase (ALT) and aspartate aminotransferase (AST) greater than 1000 IU/L are generally narrow. The differential typically includes drug-induced liver injury (often acetaminophen), viral hepatitis (A, B, D, or E), and vascular etiologies including shock or budd-charri disease. Less common etiologies include acute obstructions within the bile ducts, autoimmune hepatitis, and rarely, Wilson's disease. Timely identification of the etiology of the enzyme elevation is critical in informing subsequent management as strategies can vary from supportive to urgent transplant assessment. We present a case of severe transaminitis secondary to non-hepatitis viral infections.
Case Presentation: A 28-year-old male returning traveller presented to SJH ED AST/ALT levels of ≥ 4000 IU/L and marked jaundice (conj. bili 239 ; unconj 89) and a mildly elevated INR (1.7). An extensive history revealed some freshwater and antibiotics exposure. He had previous exposure to this antibiotic and no other ingestions, so drug-induced toxicity was ruled out. A CT AP revealed no liver lesions and moderate fatty infiltration. Based on his recent travel history and subjective fevers, a septic work up including blood and urine cultures, NPS, Malaria, Zika, and Chikungunya ,CXR, CBC, and CMP was sent off and was negative. A thorough and expanded work-up of acute hepatitis was negative aside from positive monoinfectious nucleosis spot testing. The Gastroenterology team was consulted for transplant assessment. The patient was subsequently diagnosed with atypical presenting EBV-associated hepatitis as he did not present with classic EBV symptoms and was managed conservatively.
Conclusion: Acute viruses other than hepatitis A-E can also cause liver enzymes to be elevated, such as Cytomegalovirus (CMV), Epstein-Barr virus (EBV), or Herpes Simplex Virus (HSV). While these viruses, such as EBV, may result in a milder hepatocellular derangement, they typically do not present with severe transaminitis or cholestatic elevation. Even in the absence of classic EBV symptoms such as oropharnginitis, hepatosplenomegaly, and lymphadenopathy, clinicians should have a low index of suspicion to order monospot testing to assess for acute infectious mononucleosis in younger patients presenting with severe hepatocellular enzyme derangements.

Author: Parsa Tahvildar PGY1
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6 - C A Case of Pediatric Serum Sickness Like Reaction (SSLR) After A 2-Month Re-Exposure to Amoxicillin

Background: Serum-sickness like reactions (SSLRs) to amoxicillin have been documented in the medical literature. Beta-lactams are important and commonly used medications in the pediatric and adult population. Often, SSLRs present within days of ingestion of the offending agent. We described a unique case of a 4-year-old boy who presented with symptoms of amoxicillin SSLR following his second course of amoxicillin with only 2 months and 10 days between his two courses.

Case Presentation: A 4-year-old boy presented to hospital with a pruritic rash on day 7 of a 10-day course of amoxicillin for otitis media accompanied by fever. He presented to the ED with an erythematous, raised, pruritic lesions with central clearing on his sternum, torso, back, legs, and face, emesis, hypotension, angioedema, and joint pain. His bloodwork demonstrated a neutrophilic leukocytosis of 18.6 x109 g/L and thrombocytosis with a platelet count of 653 x109 g/L.
He was treated with 5 mg oral cetirizine daily and 1 mg/kg oral prednisone which improved his rash and angioedema. He was assessed in our outpatient clinic as an outpatient and penicillin skin testing was unremarkable. A diagnosis of a probable SSLR to amoxicillin was made.

Conclusion: Although it is not uncommon for amoxicillin SSLRs to develop after previous exposure to the drug, this case is unique because of its short time course of 2 months and 10 days months between drug courses. Penicillins are commonly used in both the pediatric and adult population. Therefore, it is important to correctly characterize adverse drug reactions to broaden our understanding of SSLRs, prevent unnecessary avoidance of the triggering agent, and improve patient management for both the adult and children population.

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Supervisor: Dr. S. Waserman

7 - C Case Report: Axitinib-associated Cardiotoxicity as a Cause of LV Dysfunction in Combination VEGF Receptor Tyrosine Kinase Inhibitor and Immune Checkpoint Inhibitor Therapy on Renal Cell Carcinoma

Case Presentation: We describe a case of a 70-year-old man with metastatic renal cell carcinoma treated with pembrolizumab (an immune checkpoint inhibitor (ICI)) and axitinib (a vascular endothelial growth factor (VEGF) receptor tyrosine kinase inhibitor) who presented with a 2-week history of progressive dyspnea and peripheral edema, found to have a new diagnosis of heart failure with reduced ejection fraction on a background of recent hypothyroidism thought to be an immune adverse effect from pembrolizumab. At presentation, bloodwork revealed troponin I-HS 71 ng/L and NT-proBNP 1791 ng/L. His CRP was 12.6 mg/L. ECG showed a first-degree AV block with anterolateral T wave inversion. His chest X-ray did not show pleural effusion, pulmonary edema, or consolidations. His echocardiogram showed LVEF 30% with global hypokinesis with no discrete wall motion abnormalities or significant valvular disease. No baseline echocardiogram was available. Given the mortality risk with delayed treatment of ICI-related myocarditis, the patient was promptly started on high-dose pulse corticosteroids. However, cardiac MRI failed to reveal classic findings of ICI-related myocarditis, challenging the initial diagnosis. The more likely cause of his LV dysfunction was presumed to be axitinib. A more rapid corticosteroid taper was planned and the patient may be eligible for ongoing ICI therapy.
Conclusion: This case represented a diagnostic and management dilemma owing to the different mechanisms of cardiotoxicity and potential sequelae that can be caused by an ICI versus a VEGF receptor tyrosine kinase inhibitor such as axitinib.

Authors: Yi Tao Chan PGY1, Mary Xie PGY1
Supervisor: Dr. D. Leong

8 - C More Than a Sore Throat: A Case of Lemierre's Syndrome

Background:
Lemierre's syndrome is an "anaerobic post-anginal sepsis" due to Fusobacterium necrophorum causing septic internal jugular vein (IJV) thrombophlebitis and metastatic abscesses in the lung, joints, bones, and meninges.1,2 A 2008 study in Denmark reported an annual incidence of Lemierre's syndrome of 3.6 cases per million people, with an annual rate of 14.4 cases per million in people aged 14-24 years.3

Case Presentation:
A previously healthy 18-year-old male presented to hospital with 3 weeks of high-grade fevers, pharyngitis with tonsillar exudates, worsening dyspnea, and pleuritic chest pain. His investigations revealed a leukocytosis of 15.8, CRP 390.2, and CTPE showing numerous cavitary and non-cavitary nodules suggestive of pulmonary embolic events. A broad infectious and autoimmune workup was sent, which were unrevealing including negative mono-spot testing and throat swabs for GAS. An echocardiogram was also unremarkable for the source of septic emboli.

Subsequently, his blood cultures grew anaerobic gram-negative bacilli and a diagnosis of Lemierre's syndrome was suspected. This was confirmed when the cultures speciated to Fusobacterium necrophorum. While an ultrasound and CT neck did not reveal IJV thrombi, it was hypothesized that the septic thrombi had embolized to the lungs. The patient was treated with IV antibiotics with piperacillin-tazobactam and oral step-down to amoxicillin-clavulanate for 6 weeks total treatment duration.

Conclusion:
Lemierre's syndrome is a challenging clinical diagnosis given the broad differential of pharyngitis and delayed presentation of clinical sequelae one to three weeks later.4 Responsible for 10% of oropharyngeal infections, Fusobacterium necrophorum is an anaerobic gramnegative rod and culture speciation takes 5-8 days, delaying antimicrobial treatment.2,4 A high clinical suspicion is warranted in patients with primary oropharyngeal infections, subsequent septicemia, and features of metastatic infection.

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Poster Presentations

Subspecialty

1 – 11

1 - MS-C Novel Variant in the C3 Gene Resulting in a Broad C3 Deficiency Clinical Presentation

Background: Complement deficiencies are rare inborn errors of immunity. The complement activation plays a critical role in the development of adaptive T and B cell immunity as well as mediating its interactions with antigens. It also serves in the regulation of tolerance. The presence of complement deficiencies results in mild to serious bacterial infections and autoimmune diseases with the clinical spectrum being quite variable.

Aim:
To broaden the understanding of the genotypic and phenotypic spectrum of the complement deficiency.

Case Presentation: We present a case report of a patient with C3 deficiency due to a novel autosomal recessive mutation in the C3 gene. Our patient, a 16-year-old Arabic male born to consanguineous parents, presented with biopsy proven recurrent leukocytoclastic vasculitis. His other infectious history consists of recurrent otitis media at the age of 10. Genetic testing through Next Generation Sequencing demonstrated a novel homozygous c.1990C>T (p.Gin664*) variant in the C3 gene not previously reported in the literature. The patient has three cousins with known clinical C3 deficiency. His female cousin has a similar recurrent cutaneous eruption, while one of his male cousins has lupus nephritis and is currently on dialysis. His other male cousin died from complications of lupus nephritis at the age of 13.

Conclusion:
This report highlights the variable clinical presentation of C3 deficiency in the context of this novel genetic variant. This variation may be the result of epigenetic factors, environmental factors, B cell activation redundancy, and the interferon pathway.

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2 - MS-C Neurologic Symptoms Associated with Localized Scleroderma En Coup de Sabre - A Case Study

Background: En coup de sabre (ECDS) is a rare variant of localized scleroderma that affects the head and can be associated with neurologic symptoms. Little is known about the disease course and histopathology of brain lesions. We describe two patients with a known history of ECDS who developed worsening neurologic symptoms after deepening of their preexisting skin lesions with evidence of inflammatory pathology on brain biopsy.

Case presentation: Our first patient was diagnosed with ECDS at age 46. Concurrently, neuroimaging showed right frontal and temporal brain lesions in the context of symptoms of vertigo and headache. At age 50, he developed deepening of his skin lesions followed by new generalized tonicclonic seizures and behavioral changes. MRI brain revealed worsening of his brain lesions and brain biopsy confirmed focal perivascular lymphocytic reaction consistent with immune-mediated vasculitis. He was treated with pulse steroids and cyclophosphamide with improvement in his symptoms. Our second patient was diagnosed with ECDS at the age of 12 and treated with D-penicillamine. He represented to care at age 34 with new indentation of the occipital bone in conjunction with new neurologic symptoms of ataxia, cranial nerve IV palsy, and cognitive decline. MRI brain revealed multiple brain lesions. Brain biopsy showed increased perivascular foci of reactive Tlymphocytes consistent with a lymphocytic inflammatory process. He was treated with pulse steroids and mycophenolate with stabilization of his symptoms and brain lesions on imaging.

Conclusion: Neurologic symptoms associated with ECDS are a rare but important association. In our centre's experiences, deepening of skin lesions closely preceded the onset of worsening neurologic symptoms. Our case series also documents inflammatory processes on brain biopsy which can successfully be treated with immunosuppressive medication.

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3 - MS-C Hematologic malignancies: a rare cause of hypopituitarism

Background: Hypopituitarism due to a sellar mass is most commonly secondary to a benign pituitary adenoma. Conversely, hematologic malignancies are very rare causes of sellar masses and hypopituitarism.

Case Presentation: We report two cases of hypopituitarism due to sellar masses from hematologic malignancies. The first patient was found to have central hypothyroidism, central hypogonadism, and central adrenal insufficiency but initial non-gadolinium enhanced magnetic resonance imaging (MRI) sella did not demonstrate a mass. Subsequent gadolinium-enhanced MRI demonstrated a 1.4 x 2.8 x 1.4 cm sellar mass with invasion into the right cavernous sinus. Transsphenoidal biopsy confirmed a diagnosis of intravascular lymphoma. A fluorodeoxyglucose-positron emission tomography (FDG-PET) scan demonstrated avidity in the sella turcica. Treatment with systemic chemotherapy resulted in resolution of abnormalities on MRI. The second patient had a known diagnosis of chronic lymphocytic leukemia (CLL), and presented with severe hyponatremia requiring hospital admission in the setting of central hypothyroidism, central adrenal insufficiency, and central hypogonadism. MRI sella demonstrated a 2.0 x 1.8 x 1.6 cm lobulated sellar mass with biopsy of the mass demonstrating CLL. Treatment with ibrutinib, acalabrutinib, and stereotactic radiosurgery resulted in resolution of abnormalities on MRI. Both patients were treated with hormone replacement for hypopituitarism, which did not resolve with systemic treatment.

Conclusion: These cases highlight that hematologic malignancies should be suspected as causes of sellar masses/hypopituitarism in patients with symptoms atypical for a pituitary adenoma (e.g. constitutional symptoms), known diagnoses of hematologic malignancies, or rapid tumour growth and invasion on imaging. Gadolinium-enhanced MRI should be pursued if non-enhanced MRI is non-diagnostic. FDG-PET and transsphenoidal biopsy can be considered for diagnosis. Malignancy-directed systemic therapy may improve hypopituitarism and radiographic abnormalities on MRI.

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4 - MS-S Prosthetic Rehabilitation Outcomes in the Oldest Old Age Group: A Retrospective Chart Audit

Background: The oldest old age group (OOAG; ≥80 years) is the fastest growing segment of the population. These patients have characteristics and comorbidities that negatively affect prosthetic rehabilitation. However, there's a paucity of research investigating rehabilitation outcomes for the OOAG.

Objectives: Primary: Describe demographic and clinical characteristics of the OOAG that attend rehabilitation for major lower limb amputation (LLA). Secondary: Investigate differences in rehabilitation outcomes for older adults, stratified by age. Methods: Medical charts of patients ≥65 years, admitted for rehabilitation between January 1, 2014, and December 31, 2021, were reviewed. Admission medical characteristics, L Test of Functional Mobility (L Test), Activities-Specific Balance Confidence (ABC) Scale, 2-Minute Walk Test (2MWT), Socket Comfort Score (SCS), fall frequency, prosthetic care and length of stay were investigated. ANOVA and Chi-square tests explored between group comparisons and associations, respectively.

Results: 226 patients were included in the study, 48 in the OOAG. No between group differences existed for admission characteristics, L Test, 2MWT, ABC Scale, fall frequency, length of stay or independence with donning. At discharge, rollator walker use was proportionally higher for the OOAG than the 65-69 age group ($p = 0.03$). For sock adjustment, a higher proportion of the OOAG needed assistance compared to the 65-69 age group ($p = 0.01$).

Conclusion: The OOAG required more supportive gait aids and assistance with sock adjustment compared to the 65-69 age group. Other outcomes of prosthetic rehabilitation were comparable across groups. The OOAG can make functional rehabilitative gains comparable to other groups of older adults.

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5 - MS-S Survey Study of Canadian Screening Practices in Rheumatoid Arthritis Related Interstitial Lung Disease

Background: Interstitial lung disease (ILD) is a well-documented extra-articular manifestation of rheumatoid arthritis (RA) with significant associated morbidity and mortality. There is agreement on the need for therapeutic agents in RA-ILD patients with the objective of slowing lung function decline. However, identifying patients with RA-ILD who would benefit from these interventions remains a challenge. Although risk factors for the development of RA-ILD, such as male sex, older age, smoking status, higher disease activity, and positive Anti-Citrullinated Peptide Antibody (ACPA)/Rheumatoid Factor (RF) status have been described, there remains no specific consensus guidelines in Canada for the screening, diagnosis, or management of RA-ILD. This study aimed to better understand the current practice patterns of rheumatologist in Canada caring for patients with RA at risk of developing ILD and patients with RA-ILD.

Methods: All adult rheumatologist who were members of the Canadian Rheumatology Association were invited to complete an anonymous online survey. Data included both quantitative metrics as well as qualitative free text. Responses were analyzed using descriptive statistics.

Results: 47 rheumatologists completed the survey. 27 (56%) identified as community physicians, 14 (29%) as academic physicians and 7 (15%) had a mixed community/academic practice. Most respondents screen patients for dyspnea at every visit (42%) or if patients report respiratory symptoms (30%). In terms of clinical exam, 47% of respondents auscultate the chest for crackles at every visit. Most respondents (59%) do not check oxygen saturation. 96% of respondents do not routinely screen for ILD with pulmonary function testing (PFT), with most (67%) doing so only if the patient reports dyspnea. 45% of respondents will order CT chest for patients with crackles on exam or PFT abnormalities while 27 (55%) will do so if patients present with features high risk for RA-ILD in addition to abnormal physical exam or PFT findings. 32% of respondents were unsure of features associated with an increased risk of RA-ILD, which were not specified in the question stem of the survey. 29% of rheumatologists work closely with a Respirologist, 59% have easy access to Respirology and 12% have limited access to Respirology.

Conclusion: The results of this survey suggest that there are inconsistent screening practices by Canadian rheumatologist caring for adult patients in the screening and investigation for ILD in patients with RA. These findings suggest areas for targeted continuing medical education for Canadian rheumatologists as new data emerges to provide evidence-based approaches for screening ILD in RA patients.

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6 - MS-S Improving Pre-Conception Counselling and Family Planning in General Rheumatology: A Quality Improvement Study

Background: We aim to utilize quality improvement (QI) methodology to improve the rates of family planning discussions by 50% in a high volume general rheumatology clinic in Burlington, Ontario. Multiple international guideline bodies recommend routine pre-conception counselling for patients with rheumatologic diseases 1-3. Pre-conception counselling should be routinely offered to patients given obstetrical complications associated with rheumatologic disorders and their treatment in accordance with international guidelines.

Methods: A retrospective chart review was completed to determine baseline frequency of documented family planning discussions for female patients aged 18-45 in the preceding 1-year period between September and May 2023. We concurrently performed purposive sampling via interviews of patients and rheumatologists to describe local practice patterns in family planning and contraception counselling. A reminder-based approach and documentation tool were designed as the initial intervention and were edited based on feedback from iterative plando-study-act (PDSA) cycles. The intervention was applied to visits with female patients aged 18-45. Frequency of documented discussions was depicted via run chart for graphical representation and analysis.

Results: The baseline frequency of documented discussions prior to the start of the intervention was 19%. After the first intervention, it averaged 34.7% (PDSA 1) and 26.7% (PDSA 2). The number of patients eligible ranged from 2 to 5 per clinic day.

Conclusions: We report interim results of a QI initiative aimed at increasing rates of family planning discussions in a general rheumatology clinic. The frequency of discussions around family planning is currently low and a reminder-based intervention alone is insufficient to achieve improvement. Iterative improvement cycles are currently in progress on a monthly cycle to achieve our aim of increasing discussion rates by 50%.

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7 - MS-S Kidney Transplantation Outcomes Among Patients with Multiple Myeloma – Systematic Review of Case Reports and Case Series

Introduction: Kidney transplantation (KT) is rarely performed for patients with multiple myeloma (MM) and end stage kidney disease due to concerns for poor kidney and overall outcomes.

Method: Comprehensive search on electronic databases (MEDLINE, PubMed and EMBASE) from inception to March 19, 2024 were carried out using appropriate keywords and Medical Subject Headings (MeSH) terms. We included case reports and case series of individuals fulfilling diagnosis of MM and received treatment with or without autologous stem cell transplant (ASCT) before KT. We also included 8 patients of our own experience into data analysis.

Results: A total of 15 articles and 63 KTs were included in the analysis. 49 patients (77.8%) had an ASCT prior to KT. Prior to KT, MM remission status of complete remission (CR), very good partial remission (VGPR), and partial remission (PR) were achieved in 37 (58.7%), 14 (22.2%) and 4 (6.3%) patients respectively. Median wait time to KT after MM treatment was 36 months. Overall survival at 1, 3 and 5 years were 96.7%, 71.0%, and 62.3% respectively. MM relapse-free survival at 1, 3, and 5 years were 75.9%, 54.1%, and 48.8% respectively. Death-censored graft survival at 1, 3 and 5 years were 93.5%, 87.8%, and 78.8% respectively. MM relapse was the main cause of death and graft loss. Rejection was reported in 16 patients (25.3%). Wait time to KT after MM treatment shorter than 24 months did not affect patient survival, graft survival, nor MM-relapse rate.

Conclusion: Outcome of MM patients receiving KT are acceptable but significant morbidity remains. Shorter wait time to KT after MM treatment is not associated with poorer outcome and may be considered.

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8 - MS-S The Use of Slicer Dicer as a Potential Tool for Guided Self-Assessment

Background: Self-assessment is a crucial competence for physicians, yet the evidence suggests that physicians have limited ability to do so, and competence assessment requires external feedback. Slicer Dicer is a self-service reporting tool on Epic that enables physicians to apply various filters and "slices" to collect patient data, providing a potential tool to self-assess practice patterns. Our hypothesis-generating study aims to explore whether Slicer Dicer can feasibly collect meaningful data for physicians to practice self-assessment. We piloted this question by collecting data on prescribing patterns of sodium-glucose co-transporter 2 inhibitors (SGLT2i) in the nephrology clinic in patients with diabetes mellitus (DM) and chronic kidney disease (CKD), aligning with current care standards for this cohort.

Methods: Slicer Dicer was used to collect data from July 1, 2023 to December 31, 2023. These patients were captured using filters by provider, context, visit type, and medical history. "Slices" by medications were created to determine the proportion of these patients who were on an SGLT2i.

Results: Slicer Dicer captured 1357 patients in the nephrology clinic amongst thirteen nephrologists with a diagnosis of DM who may benefit from an SGLT2i. After "slicing" the data, 627 (46.2%) of these patients were found to be on an SGLT2i. The percentage of patients on an SGLT2i ranged from 32.9% to 61.4% amongst the nephrologists.

Conclusions: We highlight the potential for Slicer Dicer as an innovative method to collect data using easily accessible EMR tools. Future directions will be aimed at how physicians can use this objective data to self-assess their practice by closer analysis of patients who are not meeting current care standards.

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9 - MS-S Case Series of Multiple Myeloma and Kidney Transplant Outcome: Clinical Characteristics and Long-term Follow-up

Introduction: Registry data do not provide sufficient information on appropriate waiting time before kidney transplantation (KTx) among patients with multiple myeloma (MM) after autologous stem cell transplantation (ASCT), acceptable MM treatment response prior to KTx, and the outcomes after KTx.

Methodology: We retrospectively reviewed the characteristics and outcomes of MM patients who underwent KTx at our centre between 2010 to 2023.

Results: 8 patients were included in the study. All patients were staged as International Staging System III. Five were in complete remission (CR) before KTx, 2 were in very good partial remission (VGPR), and 1 had MM relapse after ASCT requiring lenalidomide/dexamethasone and achieved VGPR prior to KTx. Median waiting time to KTx after ASCT was 42 months (range 28-64 months). Maintenance therapy was present for 3 patients at time of KTx (each received ixazomib, dexamethasone and thalidomide respectively). During median follow up of 41 months (range 14 to 127 months), 3 patients developed biopsy proven acute rejection at 2, 8 and 25 months respectively. Four (50%) patients had MM relapse at 6, 8, 17 and 26 months respectively. There were 2 graft losses, both were secondary to MM relapses. Deathcensored graft survival at 1, 3 and 5 years after KTx were 100%, 83%, and 83% respectively. Overall survival at 1, 3 and 5 years after KTx were 100%, 67% and 50% respectively. Remission status prior to KTx did not differ in MM relapses and overall survival.

Conclusion: Early MM relapse after KTx is common. Compared to patients who achieved CR prior to KTx, those who achieved VGPR had similar outcomes after KTx. KTx provides reasonable survival benefit to MM patients.

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10 - MS-S Transition to End Stage Kidney Disease and Renal Replacement Therapy Choices and Outcomes for Patients with Autosomal Dominant Polycystic Kidney Disease (TEAPKD)

Background: Autosomal dominant polycystic kidney disease (ADPKD) accounts for 10% of patients with kidney failure. We sought to identify ADPKD-specific factors impacting the transition from chronic to end stage kidney disease (ESKD).

Methods: We identified 73 ADPKD patients who transitioned from chronic to ESKD followed in the McMaster Nephrology program. A retrospective chart review collected medical and surgical history, diagnostic imaging, choice of kidney replacement therapy (KRT), and complications.

Results: Thus far, data for 35 of 73 identified ADPKD patients have been abstracted, 10 (29%) were male and 25 (71%) were female. The average kidney length on imaging was 21 cm and 14 patients (40%) underwent a nephrectomy in preparation for kidney transplantation. ADPKD related-complications included liver cysts (23 patients, 66%), urinary tract infections (17 patients, 49%) and cyst hemorrhage (14 patients, 40%). 23 patients were followed in multi-disciplinary care kidney clinic with an average 14 months between first visit and KRT initiation. The most popular KRT modality at initiation was in-center hemodialysis (23 patients, 66%), followed by peritoneal dialysis (8 patients, 23%). Only 1 patient was started on home hemodialysis. 3 (9%) patients had pre-emptive transplant and 19 (59%) later received a kidney transplant after an average 31 months of KRT.

Conclusion: Patients with ADPKD typically present before ESKD creating the opportunity for improved planning of the CKD to ESKD transition. Large kidney size creates specific problems with regard to KRT modality and transplantation. Unfortunately, the preferred and optimal ESKD treatment – pre-emptive kidney transplant – was only found in 3 of 35 patients and home modalities were only used in 9 of 35 patients.

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11 - MS-S Design and Rationale of the DiastologY-guided maNAgement of decoMpensated Heart Failure – A Pilot RandomIzed, Controlled Trial (DYNAMIC)

Background: More than 30% of people hospitalized with decompensated heart failure (HF) return to the hospital within 90 days. Pulmonary artery pressure-guided titration of medications with an implanted monitor decreased the rate of HF hospitalization at 6 months by 28%. Hemodynamic monitoring with echocardiography and an evidence-informed therapeutic protocol may achieve a similar impact at a lower cost with fewer complications.

Research Objective: This abstract outlines the design and rationale of a pilot randomized, controlled trial called DiastologY-guided maNAgement of decoMpensated heart failure – a pilot randomIzed, Controlled trial (DYNAMIC) that will determine the feasibility and acceptability of an echocardiogram-guided heart failure management strategy for patients, physicians, and stakeholders.

Methods: DYNAMIC will include adult patients (age ≥18 years) admitted to the hospital with decompensated heart failure with reduced ejection fraction (≤40%) in sinus rhythm. The pilot trial will exclude patients with (1) moderate or severe mitral annular calcification, (2) moderate or severe aortic or mitral valve disease (including a history of prosthetic mitral valve replacement), (3) current atrial fibrillation or flutter, (4) history of non-diagnostic transthoracic echocardiograms, or (5) ongoing hemodialysis. We will randomize 30 participants to the control or intervention arms in a 1:1 fashion using a computer algorithm. All participants will undergo a baseline transthoracic echocardiogram within 24 hours of randomization if one has not been completed during the current admission. Thereafter, each participant will undergo a focused echocardiogram (up to a maximum of 10) every 24 hours (except for weekends when a single echocardiogram will be performed on one of the days). The results of the echocardiogram will not be disclosed for participants in the control arm. For patients in the intervention arm, the study team will contact the treatment team to recommend the up-titration, maintenance, or down-titration of diuresis based on the degree of diastolic dysfunction following a pre-specified study protocol. Cardiology residents from the Medical Diagnostics Unit of the Hamilton General Hospital will perform the bedside diastology assessment. We will follow the participants for 90 days after hospital discharge with an interim follow-up visit at 30 days.

Discussion: DYNAMIC is the pilot stage of an explanatory trial designed to assess the efficacy of titrating diuresis and guideline-directed medical therapy based on echocardiographic estimates of the left ventricular filling pressure. Demonstrating benefit in this specific population can inform the design of future, pragmatic trials for participants with different co-morbidities and phenotypes (for instance, persistent atrial fibrillation and preserved left ventricular ejection fraction). By evaluating the feasibility of this strategy, DYNAMIC can refine the management of decompensated heart failure and evaluate a potential strategy for precision medicine.

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