6th Annual

McMaster Medical Student Research Day

Wednesday April 15, 2015
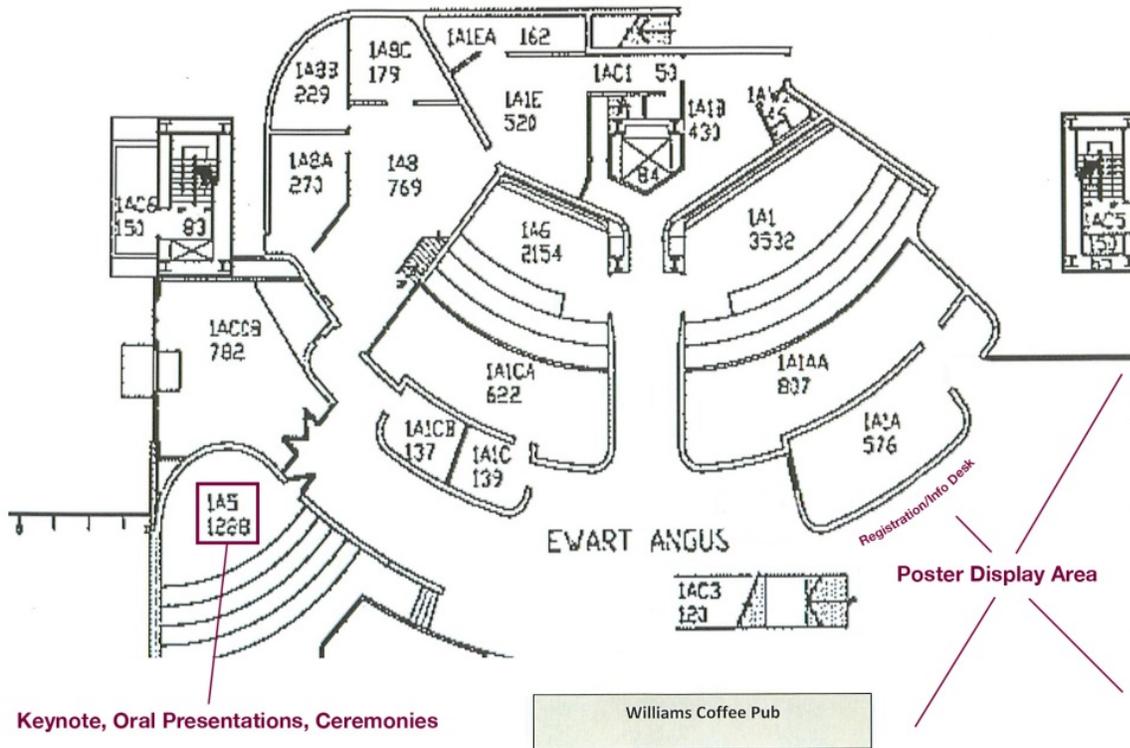
MMSC
McMaster Medical Student Council

Michael G. DeGroote
SCHOOL OF MEDICINE

McMaster University
HEALTH SCIENCES

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MMSRD Map

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MMSRD History

McMaster Medical Student Research Day (MMSRD) was first founded in 2010 by Alex Kaplan (MD Class of 2012) to highlight the importance of research in bridging the bench-to-bedside gap. By providing a platform for interdisciplinary dialogue, critical appraisal and networking, MMSRD became an avenue to promote educational values that extended beyond the classroom, encouraging participants and attendees to harness both the scientific method and creative thinking to solve medical issues in all domains of health care.

MMSRD has now grown in scope and capacity, building upon previous years of experience led by the following medical student co-chairs: Alex Kaplan and Fareeha Qayyum (2010/11), Calvin Yeh and Stephanie Kletke (2011/12), Branavan Manoranjan and Zamin Ladha (2012/13), and Ilana Hanes and Derek Chan (2013/2014).

This year, Emerson Marinas and Rebecca Rodin (2014/15) have designed a new theme to better recognize the diversity of research interests within medicine including the basic sciences, clinical research, medical education, population health, quality improvement, and health policy. Moving forward, MMSRD will hopefully continue to grow and provide important cross-talk opportunities for medical students and the broader community.

Co-Chair Welcome

Dear Students, Faculty, and McMaster community members,

Welcome and thank you for joining us at the 6th annual McMaster Medical Student Research Day (MMSRD)!

Our current understanding of health and disease has come from the tireless efforts of countless physicians, researchers, and other health professionals who study the intricate nature of the human body. Although there is still much work to be done, many illnesses and diseases that were once life threatening are now a distant memory and insights provided by current research promise to one day lessen the impact of some of today's greatest illnesses.

This year, in addition to a series of oral and poster presentations delivered by medical students, Dr. Peter Margetts (BSc, MD, PhD, FRCPC) will deliver a keynote address, in which he will share about his research in the mechanisms of fibrosis, mainly in the context of the peritoneum and peritoneal dialysis.

As the fields of medical and health research continue to grow, our minds and hearts continue to be set on improving the well-being of individual patients and populations as a whole. With this mindset, we hope that you will enjoy the opportunity to partake in the many conversations today and to gain insights into the progresses achieved to date in various research fields.

Thank you once again for your support of this year's MMSRD!

Rebecca Rodin and Emerson Marinas
Co-Chairs, MMSRD 2014/2015

Keynote Speaker

Dr. Peter Margetts
BSc, MD, PhD, FRCPC

Dr. Margetts is an Associate Professor in the Department of Medicine under the Division of Nephrology. He is also the director of McMaster University's MD/PhD program. His main area of research aims to investigate the mechanisms of fibrosis, mainly in the context of the peritoneum and peritoneal dialysis.

Schedule

8:30 – 9:15 am	Check-in, Poster setup, & Breakfast
9:15 – 9:30 am	Welcome, Introduction, & Schedule overview
9:30 – 11:00 am	Oral presentations – Morning session
11:00 – 12:00 pm	Poster presentations – Morning session
12:00 – 1:00 pm	Keynote speaker & Lunch
1:00 – 2:30 pm	Oral presentations – Afternoon session
2:30 – 3:30 pm	Poster presentations – Afternoon session
3:30 – 4:00 pm	Closing ceremony & Presentation of awards

Acknowledgements

Co-Chairs

Joseph Emerson Marinas & Rebecca Rodin (Junior)

Derek Chan & Ilana Hanes (Senior)

Judging Subcommittee	Abstracts Subcommittee
Ben Kim	Carina Hoang
Kelly Sun	Jared Paty
	Ankit Garg

Logistics Subcommittee

Rhea D'Costa

Keynote Speaker

Dr. Peter Margetts

Judges

Dr. Andrew Costa	Dr. Haider Saeed	Dr. Gabriel Ronen
Dr. Bradley Doble	Dr. Jason Profetto	Dr. Jennifer Tsang
Branavan Manoranjan	Derek Chan	Dr. Lori-Ann Linkins
Mat Mercuri	Dr. Matthew Kwan	Dr. Peter Margetts
Dr. Rolf Sebaldt		

Event Sponsorship and Special Thanks

Undergraduate MD Education Office

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Oral Presentations – Abstracts

Clinical non-angiographic and non-clinical predictors of the mode of revascularization for patients with coronary artery disease (CAD) - A bi-centre study of Chinese and Canadian physicians' approach

Louisa Xiao Xue Hong* (1), Victor Fan Chu (2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Department of Surgery, McMaster University, Hamilton, Ontario, Canada

Background: Coronary artery bypass grafting (CABG) and percutaneous coronary intervention (PCI) are two competing options for patients with stable, complex coronary artery disease that is not amenable to medical therapy[1-3]. The choice is often dictated by patients' pathological presentation, however, many non-anatomical factors influence decision-making[1-8]. This study assesses Canadian and Chinese physicians' opinions on the weight of non-angiographic factors when formulating revascularization recommendations.

Methods: A survey containing 31 5-point Likert-scale questions to assess participants' preference for CABG/PCI and 2 short answer questions on physicians' opinions on the current utilization of CABG and PCI were developed based on existing guidelines and literature[4,9-13]. Cardiac surgeons and cardiologists affiliated with Hamilton Health Sciences (HHS) and Fuwai Hospital in Beijing were invited to participate between July and November 2014.

Results: Responses were received from 7/7 cardiac surgeons and 18/46 cardiologists at HHS, and 10/13 cardiac surgeons and 10/15 cardiologists at Fuwai Hospital. Canadian cardiac surgeons and cardiologists reported differing opinions on 12 of the 31 Likert-scale items, with cardiac surgery participants rating these in favour of CABG and cardiology participants rating the same factors in favour of PCI ($p < 0.05$). This inter-specialty discrepancy was not observed at the Chinese site.

A comparison of Canadian and Chinese physicians's responses showed that they differed only in the extent of preference rather than the choice of revascularization method ($p < 0.05$).

In addition, 14 of 20 Chinese participants reported an overuse of PCI in Beijing due to physicians' financial interests, while their Canadian counterparts perceived a more appropriate balance in Hamilton.

Conclusions: There is discrepancy between the opinions of Canadian cardiologists and cardiac surgeons regarding the mode of revascularization for patients who can potentially undergo either CABG or PCI. It accentuates the importance of a multidisciplinary team approach to non-urgent revascularization decision-making.

Development of a screening tool to assist in the early identification of bacteremia in elderly patients 80 years of age and older

Heather Bannerman* (1), Sandra A.N. Walker (1), Marion Elligsen (1), Lesley Palmay (2), Lawrence Jackson (2), Evelyn Williams (2), Barbara Liu (2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Sunnybrook Health Sciences Centre (SHSC), Toronto, Ontario, Canada

Background: Diagnosing infection in elderly patients is challenging because typical manifestations seen in younger adults are often more subtle, or nonexistent, in the geriatric population, resulting in a delayed diagnosis. A delay in diagnosis of bacteremia in geriatric patients occurs in > 20% of cases, and misdiagnosis occurs in 35%. The objective of this study was to identify predictors of bacteremia in elderly patients to provide clinicians with a practical tool to aid in the diagnosis of bacteremia in the elderly to: 1) minimize unnecessary exposure to antimicrobials; and 2) improve early identification of elderly patients who require antibiotic treatment for bacteremia.

Methods: A retrospective chart review of patients $\geq$80 years old admitted to hospital over a 4-year period was conducted. One hundred and five bacteremic patients (cases) were matched to non-bacteremic controls for gender, age, hospital ward, length of stay, and date of stay on the matching unit. Bivariate logistic regression was used to identify laboratory and clinical parameters that were significantly associated with infection ($p<0.05$; adjusted odds ratio (OR)) and Classification and Regression Tree (CART) analysis was used to identify breakpoints for these parameters.

Results: Statistically significant parameters and their corresponding breakpoints that were determined to be associated with infection were maximum temperature (Tmax)(>37.55C) (OR=42.575), neutrophils (>7.95)(OR=1.923), a change in level of consciousness (LOC)(Yes = 1, No = 0)(OR=1.571), blood urea nitrogen (BUN)(> 10.05)(OR=1.359), glucose (>7.35)(OR=1.167), albumin ($\leq$33.5)(OR=1.038) and alanine aminotransferase (ALT) (>19.5)(OR=1.005). The significant regression equation determined was: Ln(odds of infection) = - 150.299 + 3.751(Tmax) + 0.654(neutrophils) + 0.452(change in LOC) + 0.307(BUN) + 0.154(glucose) + 0.038(albumin) + 0.005(ALT).

Conclusions: The derived parameters, regression equation, and breakpoints may be useful in improving the predictive capability of diagnosing infection in patients $\geq$80 years old and will be evaluated and further refined in a prospective study.

Is serum albumin a measure of volume status in septic intensive care unit (ICU) patients?

Paula Pop*(1), Bram Rochwerg (2), Jason Cheung (2), Christine Ribic (1,2,3) , Trevor Wilkieson (3), Peter Margetts (1,2,3), Azim Gangji (1,2,3).

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Department of Medicine, McMaster University, Hamilton, Ontario, Canada
(3) Division of Nephrology, McMaster University, Hamilton, Ontario, Canada

Background: Albumin is an important plasma protein in maintaining oncotic pressure and it is often used in determining volume status. In sepsis, albumin levels typically fall therefore its role in predicting volume status in critically ill patients is unknown. Bio-impedance analysis (BIA) is a method of determining volume status at the bedside. The aim of this study is to determine if an association exists between serum albumin levels and BIA and other measures of volume.

Methods: A post-hoc exploratory analysis of data from a prospective observational study which looked at BIA measurement is septic ICU patients was undertaken looking at the association of serum albumin levels and BIA, N-BNP, CVP, edema scale and net fluid balance. Association between serum albumin and clinical outcomes was also completed. Correlation was determined based on Spearman's Rho. A logistic regression analysis was performed with serum albumin as the dependent variable (dichotomizing serum albumin levels based on mean) and measures of volume as independent variables.

Results: Data was obtained from 48 patients. Mean serum albumin level was 28 g/L (SD 5.17). The edema score was significantly correlated with albumin level (p=0.006). Logistic regression did not demonstrate an association with serum albumin.

Conclusions: It is not known whether serum albumin is a marker of volume status. Although an association was identified with the edema score, no other significant relationships were present. This may be a reflection of the small sample size or serum albumin measures may represent inflammation or malnutrition. Future studies would need to examine the role of albumin in broader context.

The health gap: exposing inconsistencies between global disease burdens and prevalence of related news and research publications

Nicole Jedrzejko* (1), Steven J. Hoffman (2), Lathika Sritharan (3), Muhammad Ali Hashmi (4), Julia Belluz (5)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Faculty of Law (Common Law Section), University of Ottawa, Ottawa, Ontario, Canada
(3) Global Strategy Lab, University of Ottawa, Ottawa, Ontario, Canada
(4) Massachusetts Institute of Technology, Cambridge, Massachusetts, USA
(5) Vox Media Inc., Washington, DC, USA

Background: The global gaps between disease burdens, their respective media coverage and research contributions have not been fully elucidated, meaning the likelihood of significant disproportionate public attention and prioritization for diseases is not understood. This study aims to quantify and analyze news media, research publication priorities and its relationship to the global burden of diseases affecting countries of varying development and health status. This relationship will be quantified to demonstrate the extent of each country's "health gap" between disease burden and the prevalence of respective news media and research publications. This health gap index is the first of its kind to cross-examine disease burden, news media coverage, and health research interest on a multinational scale.

Methods: Disease burden statistics from USA, India, UK, Philippines, Bangladesh, and Canada were compared with prevalence of relative news media and research publications. The most recent data available (2004, 2010)describing the prevalent disease causes of DALYs and mortality was collected from W HO and IHME. News media publication data was collected from LexisNexis newspaper index, and research publication data was collected from MEDLINE. To determine if significant correlations existed between the three variables, a Pearson correlation coefficient was calculated.

Results: The correlations for DALYs vs. news media coverage are significant for USA ($p=0.035$) and India ($p=0.024$), DALYs vs. research publications are significant for India ($p=0.0043$) and the Philippines ($p=0.028$), and news media coverage vs. research publications are significant for for India ($p=0.0051$). The Pearson's correlation coefficient was more significant in LMICs (all variables for India, one variable for Philippines) compared to high-income countries (only one variable for USA). A number of ratio and correlation figures have been prepared to show cross-country trends in health gap.

Conclusions: Results have shown that health gaps are definitely prevalent in these countries. The efforts to provide the public with news and research that prioritizes health issues is not apparent in any of these countries and exhibits the need for an open-access Health Gap Repository tool for health journalists and decision-makers to make efficient and equitable health publication prioritizations in the post-2015 development era.

30-day re-intervention rates for interventional radiology patients in a tertiary care centre

Hussam Kaka* (1), Tommy Stuleanu* (1), Sriharsha Athreya (2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Department of Radiology, McMaster University, Hamilton, Ontario, Canada

Background: St. Joseph's Hospital (SJH) is a tertiary care center in Hamilton, ON that serves the city and surrounding regions. It is a large thoracic surgery and transplant centre for the area, and has a busy interventional radiology (IR) department that performs a wide gamut of procedures, from abscess drainage to uterine artery embolization. Re-interventions are costly and increase the likelihood of adverse events. We sought to characterize the procedures performed and assess the ones that require a re-intervention.

Methods: We collected the reports of all IR procedures performed at SJH over a 6-month period and extracted the number of patients who had a re-intervention within 30 days of the initial procedure. Data collection was automated to allow for a large sample size and minimize human error. We then compared re-intervention rates by procedure type, radiologist, patient location, and patient demographics.

Results: Between March 1st and August 31st, 2014, 2021 IR procedures were performed over 1586 patients. Of those, 300 had at least one re-intervention and 215 had a re-intervention within 30 days. The most commonly performed procedure was CT-guided chest biopsy (n=221). Ten patients underwent the procedure more than once in a 60-day period, and 6 in a 30-day period. The most common re-intervention was percutaneous nephrostomy (30-day n=18 pairs, 60-day n=21 pairs).

Conclusions: IR procedures cover a wide range of purposes. We sought to quantify the various procedures performed at our institution, and to look at the need for re-intervention. A larger data set (greater time period) will allow us to perform subgroup analyses and compare statistical trends with the clinical indication for these radiology interventions. Ultimately, we hope to compare re-intervention rates in IR to those in surgical alternatives, and in particular compare that relationship to cost saving and adverse event reduction.

Understanding the pregnant woman's experience of carrying a small for gestational age and/or growth restricted baby

Sheiry Dhillon (1,2), Brenda Kelly (2), Sara Ryan (3), Stephen Kennedy (2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Department of Obstetrics and Gynaecology, University of Oxford, Oxford UK
(3) Department of Primary Health Sciences, University of Oxford, Oxford UK

Background: The patient involvement in helping to shape care pathways in perinatal health has largely focused on structural and/or chromosomal abnormalities. In contrast, the patient's views about Small for Gestational Age (SGA)/Fetal Growth Restriction (FGR), one of the most common pregnancy complications, have rarely been researched. There is an urgent need to record this important perspective so that care can be delivered in a more compassionate and holistic manner.

Methods: We are conducting a longitudinal qualitative study, at the John Radcliffe Hospital, Oxford, to explore the patient experience following a prenatal diagnosis of SGA/FGR, using a maximum variation sampling technique. Clinical and socio-demographic selection criteria were defined *a priori* to ensure diverse sampling. Semi-structured interviews are being conducted towards data saturation (anticipated to be 10 women). Thematic analysis is being undertaken in collaboration with the Health Experiences Research Group, Oxford University.

Results & Conclusion: To date, we have interviewed and analysed data from seven women from different ethnic and socioeconomic backgrounds, all of whom reported heightened anxiety following the diagnosis. Themes, such as emotional distress, marital tension, guilt and self-blame, were common. Women expressed concerns about continuity of care, access to adequate patient information, and the immediate postnatal and long-term implications of the diagnosis. Most voiced a need for a "road map" to remedy these deficiencies. Our preliminary findings suggest that patient resources, support and education must be improved to deliver better care.

Improved management of type 2 diabetic patients in communities through the expansion of paramedical roles under a chronic care model

Daniel E. Sidalak* (1), Ian R Drennan (1,2,3,4), Jinbaek Kim (1), Paul Hoogeveen (4), Marlene Gray (3), Chris Spearen (3), Laurie J. Morrison (1,5)

(1) Rescu, Li Ka Shing Knowledge Institute, St. Michael's Hospital, Toronto Canada
(2) Institute of Medical Science, Department of Medicine, University of Toronto, Toronto, Canada
(3) York Region Emergency Medical Services, Ontario, Canada*
(4) Sunnybrook Centre for Prehospital Medicine, Sunnybrook Health Sciences Centre, Toronto, Canada
(5) Division of Emergency Medicine, Department of Medicine, University of Toronto, Toronto, Canada

Background: The Canadian healthcare system ineffectively manages chronically ill patients. Chronic care models (CCM) have been proven to effectively and affordably manage chronically ill patients. CCMs involve teams of interdisciplinary healthcare professionals conducting routine in-home visits to the chronically ill patient population. Community paramedics (CPs) are trained practitioners experienced treating chronically ill patients in the out-of-hospital setting, but they typically are not involved in CCMs. This study investigates the effectiveness of a CCM incorporating CPs on patient outcomes.

Methods: 231 chronically ill patients were recruited to an RCT evaluating the effectiveness of CP involvement in a CCM for the health of chronically ill patients. The intervention group received four CP visits throughout the year at three-month intervals. We conducted a case series of three patients in the intervention group to investigate the potential benefits of CP involvement in a CCM for the health of chronically ill patients.

Results: The first case is of a 60-year-old patient with poor self-management of his diabetes. CPs during their intervention aided the patient in obtaining financial assistance to afford diabetic kits, and educated him in proper self-management. As a result, the patient's blood glucose levels dropped significantly over the year. The second case was a 55-year-old patient with transient cardiac related symptoms. During the intervention, CPs were concerned and obtained an ECG, which found significant coronary occlusion. The patient was taken for emergency surgery and is now at significantly less risk of a heart attack. The third case is a 60-year-old diabetic patient whose family physician feared that CP intervention would deter the patient from utilizing primary care health services. Contrarily, the patient attended the highest recorded number of appointments with these services following CP intervention.

Conclusions: A CCM incorporating CPs has the potential to improve the overall quality of life and self-management of patients with chronic illnesses.

Characterizing a novel spinocerebellar ataxia variant involving the ATXN7 gene

Siddharth Nath* (1), Nicholas Caron (2), Mina Falcone (1), Mark Tarnopolsky (3), and Ray Truant (1)

(1) Department of Biochemistry and Biomedical Sciences, Michael G. DeGroote School of Medicine, Faculty of Health Sciences, McMaster University, Hamilton, Ontario, Canada
(2) Centre for Molecular Medicine and Therapeutics, University of British Columbia, Vancouver, British Columbia, Canada
(3) Division of Neurology, Department of Medicine, Department of Pediatrics, Michael G. DeGroote School of Medicine, Faculty of Health Sciences, McMaster University, Hamilton, Ontario, Canada

Background: Spinocerebellar ataxia type 7 (SCA7) is an autosomal dominant neurodegenerative disorder characterized by severe ataxia in concert with retinal and cerebellar degeneration. Pathology in SCA7 results from a CAG triplet repeat expansion in excess of 37 within the first exon of the ATXN7 gene, leading to an expanded polyglutamine tract in its protein product, ataxin-7. Here, we describe the cellular biology of a novel SCA variant observed in a patient (patient 13CG990 herein), presenting as ataxia in the absence of retinal degeneration, due to a Q35P mutation within a non-polyglutamine-expanded ataxin-7, along with mutations in the mitochondrial type I topoisomerase, TOP1MT gene.

Methods: Experiments were conducted in primary human skin fibroblasts sourced from patient 13CG990, his mother and father, as well as a SCA7 patient, and a healthy individual. Mutations in the proband were determined via whole exome sequencing. Ataxin-7 subcellular localization was assessed through immunofluorescence, and MitoTracker® probes were used to characterize mitochondrial morphology. A conformational Förster resonance energy transfer (FRET) sensor encoding ataxin-7, fused at both its amino and carboxyl-termini with fluorophores, was used to observe the effects of a Q35P mutation on the structure of ataxin-7.

Results: We demonstrate that ataxin-7 nuclear localization is enhanced (an indicator of pathology in SCA7) in patient 13CG990 cells when compared to SCA7 patient cells and wildtype cells, and that mitochondrial morphology is altered in patient 13CG990 cells. Through FRET studies, we also demonstrate that the Q35P mutation within ataxin-7 drastically alters its structure, and compare this to a polyglutamine tract expansion.

Conclusions: This work suggests that there exists another SCA variant, caused by mutations within ATXN7 that are not a CAG triplet repeat expansion, in concert with mutations in TOP1MT, and offers novel insight into the biology of ataxin-7, the mitochondria, and pathogenesis of neurodegenerative disease.

In silico screen identifies candidate drugs that induce differentiation of adipose progenitor cells into beige adipocytes

Sam D. Chorlton* (1)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada

Background: Beige adipocytes, a specialized cell type that dissipate energy to produce heat, play an important role in the regulation of energy balance. Recent evidence suggests that physiologic growth of beige adipocyte populations derives from differentiation of adipose progenitor cells. Stimulating the generation of new beige adipocytes could present an effective means to combat obesity and other metabolic disorders. In this work, I perform an in silico screen of 2331 approved and investigational drugs that may induce differentiation of adipose progenitor cells into beige adipocytes.

Methods: Methods for recombinant expression of PGC-1a in bone-derived mesenchymal stem cells (BMSCs), RNA isolation and microarray hybridization have been previously described. For LINCS signature generation, raw microarray data was fRMA processed and confounding variables identified using Surrogate Variable Analysis. Differential expression was calculated with the limma R package and gene set enrichment was performed with DAVID. Only the adipose-derived stem cell line in the Library of Integrated Cellular Signatures (LINCS) was queried.

Results: Of the 10 638 probesets measured in the LINCS database, 49 were upregulated and 38 were downregulated in the PGC-1a expressing BMSCs compared to control BMSCs. Gene set enrichment of the upregulated genes revealed significant enrichment of cellular component term "mitochondrion" ($p=6.14\times10^{-7}$) and biological process terms "tricarboxylic acid cycle" ($p=8.47\times10^{-5}$) and "acetyl-CoA catabolic process" ($p=8.47\times10^{-5}$). Compared with two other published models of brown adipocyte differentiation (3,4), 26/34 (76%, cumulative binomial $p=0.001$) RNA transcripts and 37/54 (68%, cumulative binomial $p=0.004$) genes show concordant direction of fold change, confirming the reproducibility of the differentially expressed genes.

Conclusions: LINCS, a database of drug-induced gene expression changes, was queried to find drugs that induce a transcriptional change similar to the differentiation of BMSCs into beige adipocytes. The top ranked drugs include SYK-inhibitor and ruxolitinib, a JAK inhibitor, which have both been shown to induce browning of white adipocytes.

Categorization of dermatologic condition manifestations to elucidate pathomechanisms and develop a modified dermatology curriculum

Joseph Emerson Marinas* (1), Qi Wang (2), Hermenio Lima (3)

(1) Michael G. DeGroote School of Medicine, McMaster University Hamilton, Ontario, Canada
(2) Department of Family Medicine, McMaster University, Hamilton, Ontario, Canada
(3) Division of Dermatology, Department of Medicine, McMaster University, Hamilton, Ontario, Canada

Background: Dermatology is a visual discipline in which specialists diagnose lesions using rapid pattern recognition. Diagnosis of these conditions requires a gestalt of clinical, histological, immunological, genetic, and morphological features which may present in a characteristic pattern. This information may be implemented in a modified dermatology curriculum for learners.

Methods: Commonly presenting dermatologic issues (n=584) were used to determine patterns for changes in colour, shape, and topography. The proportion of each type of presentation was calculated accordingly. Correlations were determined by observing trends within paired characteristics.

Results: Colour changes within the studied conditions were due to changes in pigmentation (16.6%) and vascular components (65.1%). Topographically, conditions presented with elevated lesions (66.1%), flat (18.8%), depressed (5.8%), lacked structure (6.8%), or had no structural change (2.6%). Elevated lesions presented as papules/plaques (57.8%), nodules (17.4%), vesicles (17.1%), scaly (4.1%), thickened (0.01%) or scars (0.01%). Flat lesions presented as macules/patches (100%). Pigmented lesions were histologically in the dermis (49.4%) and epidermis (48.4%) with the remainder affecting hair colouration; and topographically presented as flat (60.8%), elevated (33.0%), and depressed (0.06%). Pigmented lesions also presented as macules/patches (60.8%), papules/plaques (25.8%), nodules (5.2%), atrophy (6.2%), and scaly (2.1%) . Vascular lesions were histologically found in the dermis (76.0%), epidermis (16.4%), and hypodermis (15/379); and presented as elevated (270/379%), flat (48/379%), depressed (4.0%), or lacked structure (10.3%).

Conclusions: Lesions presented with clusters of traits in a characteristic manner within the commonly presenting skin conditions analyzed. Conditions more commonly present as elevated lesion in the form of papules. Vascular lesions were more often elevated and found within the dermis. Recognition of these visual patterns can be used to elucidate underlying pathomechanisms rapidly. These findings can be used to develop a modified dermatology curriculum to improve medical education and diagnosis.

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Mohamed Hussein

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Poster Presentations – Abstracts

Improving safety and effectiveness of peripherally inserted central catheter (PICC) practices: a multidisciplinary quality improvement approach

Bridget Campbell (1), Geoffrey Sokolowski (2), Joseph Emerson Marinas* (1), Gina Fleming (3), Madelyn Law (2), Jennifer LY Tsang (1, 3, 4)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Brock University, St. Catharines, Ontario, Canada
(3) Niagara Health System, St. Catharines, Ontario, Canada
(4) Department of Medicine, McMaster University, Hamilton, Ontario, Canada

Background: Peripherally inserted central catheters (PICCs) are a subset of vascular access devices used for the delivery of medications, resuscitative fluids, and nutritive substances. Despite their advantages, PICCs may incur complications that burden patients and health systems (1), including central line associated blood stream infection (CLABSI), thrombosis, and mechanical issues. PICCs are widely used in our organization. Employing a quality improvement approach, we will develop targeted, scalable interventions with the goal of improving the safety and effectiveness, as defined by the Institute for Healthcare Improvement, of PICC use in the Niagara Health System.

Methods: A single centre retrospective observational study will provide information on PICC use and adverse events. Process mapping will help understand practice variation between three settings of PICC use (oncology, radiology, and intensive care), while a staff questionnaire will elicit knowledge and practices at the individual level. This multimodal evaluation of PICC practice will be used to direct quality improvement efforts. To target identified gaps, small-scale interventions will be engineered to optimal effect using Plan-Do-Study-Act (PDSA) methodology, informed by evidence-based practice guidelines (2).

Results: Data collection and process mapping is in process, results to follow.

Conclusions: The literature suggests reduction in adverse events can be achieved through minimizing unnecessary catheter-days and standardizing PICC care using evidence-based practice guidelines (3-5). Current evidence in concert with local data will inform the development of interventions with the goal of achieving sustainable improvement scalable to multiple centres.

Implementation of an indication for use column to the medication reconciliation discharge plan-prescription to promote safe and efficient care transitions from the Niagara Health System

Jamileh Shaffaf (1), Clara Sellers* (1), Almohannad Atyani (2), Alicia Niven (3), Zeau Ismail (3), Madelyn P. Law (2), Matthew Greenway (1), Linda Boich (3)

(1) Michael G. DeGroote School of Medicine, McMaster University–Niagara Regional Campus, St. Catharines, Ontario, Canada
(2) Brock University, St. Catharines, Ontario, Canada
(3) Niagara Health System, St. Catharines, Ontario, Canada

Background: Medication Reconciliation (MedRec) is a formal process in which healthcare providers partner with patients, families and caregivers to ensure that accurate and comprehensive medication information is communicated consistently across all transitions in care" (1). This evaluation of all medications a patient is taking promotes safe medication-related care through the prevention of medication errors at all care transitions (1,2). In fact, literature supports that an estimated 40% of medication errors occur as a result of gaps in the MedRec process when patients are admitted to hospital, transferred between services, or discharged to the next provider in care (3). One method that contributes to safe and efficient transitions in care is documentation of each medication's indication for use.

Methods: Baseline data is being collected using a chart audit tool developed by the IEQUIP MedRec team. Metrics being collected are the percent completion rate and quality of the MedRec discharge process for patients admitted from and returning to LTC facilities during the timeframe of September 1st to October 31st, 2014. Implementation of the indication for use column and subsequent evaluations will be achieved using a PDSA cycle structure over the following year.

Results: Our aim is to introduce an indication for use column to the MedRec discharge prescription and achieve a 25% completion rate of this column by April 2016 for Niagara Health System St. Catharines Site inpatients admitted from and returning to long-term care (LTC) facilities.

Conclusions: The indication for use column promotes the therapeutic evaluation of patient medication regimens and has the ability to reduce medication related gaps in the discharge transition process from the hospital to the community setting.

Reducing time to internal medicine (IM) consultation in the emergency department of the St. Catharines hospital within the Niagara health system

Matthew Baron* (1), Shoshana Grossman* (1), Melissa Di Santo (2), Elaina Orlando (3), Dr. Simon Kim (3), Dr. Matthew Greenway (3)

(1) Michael G. DeGroote School of Medicine, McMaster University, Niagara Regional Campus, St. Catharines, Ontario, Canada
(2) Brock University, St. Catharines, Ontario, Canada
(3) Niagara Health System, St. Catharines, Ontario, Canada

Background: Reducing the Emergency Department (ED) length-of-stay for admitted patients is a primary focus of many healthcare organizations, including the Niagara Health System. Additional time spent in the ED may delay patient treatment, creating a risk to patient safety and decreasing patient satisfaction with care. During the time from when a patient is triaged until the decision-to-admit is made, work-up of the patient is occurring and includes being seen by a consulting physician. Often times, the wait from when a consultant request is made to when the consult arrives can be several hours, resulting in a delayed decision to admit. This project is focused on reducing the time from an Internal Medicine (IM) consult request to the time the consulting physician arrives in the St. Catharine's Site ED by 20%, from 4.9 hours to 3.9 hours, by January 2016.

Methods: In analyzing consult response times at the level of the individual physicians in the St. Catharine's site, substantial variation was apparent. We are planning to conduct interviews with physicians to identify opportunities for improvement in IM consult times.
Interviews of both Emergency and IM physicians will be conducted and the process of consultation will be explored areas for improvement. As well, individual physicians with rapid response times will be targeted to identify opportunities for improvement in the larger group.

Results: Interventions include: 1) Interview physicians with most rapid response times - top 90th percentile - to identify opportunities for group improvement. 2) Change the call structure so IM physicians handle all initial ED consults, and subsequently choose which patients need sub-specialist consultation; increasing the call schedule for Internists and therefore the time that they will stay in ED for consults. 3) Change the use of any existing pagers to cell phones; preliminary discussions with ED staff identified that this is a factor in increased response times.

Conclusions: As discussed above, there are clear interventions that can be implemented and evaluated to reduce the time at the St. Catharine's Site ED by 20% by January 2016. The results of these interventions will be presented at a later date.
Unscheduled emergency department and inpatient resource utilization by patients with cancer in the university health network

Unscheduled emergency department and inpatient resource utilization by patients with cancer in the university health network

Shoshana Grossman(1), Elan Hahn*(1), Steffen de Kok(1), Shoshana Hahn-Goldberg(2), Dr. Howard Abrams(2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Niagara Regional Campus, St. Catharines, Ontario, Canada
(2)University Health Network, Toronto, Ontario, Canada

Background: As many as 2,275 in 100,000 people in Canada have cancer, as reported by Statistics Canada. Although, cancer treatment protocols are well known and hospitalizations for cancer are studied, there is little known about the unscheduled Emergency Department and Inpatient resource utilization by patients with cancer outside of their scheduled cancer-specific treatment. We do know that patients with cancer may be prone to develop infections, complications of their cancer and/or cancer treatment, and other medical conditions, which may cause them to visit emergency departments and be admitted to hospital more frequently than patients without cancer. At University Health Network, data analysis has confirmed that and ED visit by a patient with cancer is four to five times more likely to be admitted to hospital than patients without cancer (50-60% vs. 10-15%).

Our primary objective is to characterize and quantify the unscheduled utilization of ED and IP resources over time by patients with cancer that is not part of their planned cancer treatment. Our secondary objective is to determine if age, gender, comorbidities, treatment stage, cancer stage, and/or cancer site may be a predictor of resource use.

Methods: This is a retrospective cohort study of a group of patients diagnosed with cancer in 2006, 2007, and 2008. Patients will be identified using the cancer registry at PMCC and linked to IP admissions and ED visits at TGH and TWH. Patients will be characterized by stage of treatment (in treatment, completed treatment) via dates in the cancer registry, and they will be organized into cohorts (age, gender, site of cancer, stage of cancer, and comorbidities). Further analysis will be conducted to study the characteristics of IP admissions and ED visits.

Results: Based on brief analysis of preliminary data, it is clear that there are trends in the data that will lend themselves to interventions.

Conclusions: To the best of our knowledge, there are no studies providing a population based assessment of unscheduled ED visits and IP admissions of patients with cancer. A better understanding of the resource utilization for these patients may help allocate appropriate resources and design interventions to improve the care of this vulnerable population.

How does frailty influence delirium in patients undergoing hemiarthroplasty?

Ginette Moores (1), Natalie Lidster (1), Ming Lam* (1), Helen Su (1), Dr. Robert Josefchak (2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Division of Orthopedics, McMaster University, Hamilton, Ontario, Canada

Background: Hip fractures are a common injury for people over age 65. Recent incidence studies show that annual incidence of 221.7/100 000 for females age 65-74 increasing to 2636.6/100 000 for females over 85 years; annual incidence for males age 65-74 is 135.1/100 000 increasing to 1484.4/100 000 for males over age 85(1). Hip fracture is a significant public health concern owing to its poor prognosis. Alarmingly, one-year mortality rates can exceed 20% (2). Delirium is also a common health problem for older people and a significant concern for patients with hip fracture. Delirium causes confusion, agitation, and changes level of consciousness (3), which is upsetting to individuals and family members and can impede rehabilitation and recovery following hip fracture (4). Several of the risk factors for hip fracture, including advanced age and medical comorbidities and their treatment, are overlapping risk factors for delirium (5). It follows, then, that patients who are at risk for hip fracture are also at risk for delirium. Although distinct phenomena, frailty has been described as a risk factor for both delirium and hip fracture. It may be, then, that frailty is a reasonable predictor for the development of delirium.

Methods: We performed a retrospective chart review of 100 patients admitted to the St. Catharines General Hospital for hemiarthroplasty between January 1st, 2012 and December 31st, 2013. Our inclusion criteria was patients over age 65 with known and documented cognitive functioning who received hemiarthroplasty under neuraxial anesthesia. The initial steps of this project were to identify an appropriate method for identifying delirium and frailty. As delirium is a clinical diagnosis it was felt that documentation of a delirium diagnosis or evidence of treatment of delirium was sufficient evidence that the patient had experienced a post-operative delirium. Since there is no universally accepted definition of frailty, pre-operative frailty status was standardized using the Dalhousie Frailty Scale (DFS). In addition to collecting data on post-operative delirium, we collected data on patient co-morbidities and their control as well as the ability to bathe, dress, toilet, communicate, and ambulate independently to establish a frailty score (assigned by the investigators) using the DFS. The association between risks for delirium and frailty score was computed using chi-square tests or Fisher exact test for categorical variables.

Results: A total of 110 charts were reviewed and 100 charts were included in the study. Of the 100, 27 patients were found to have a post-operative delirium and 73 did not develop delirium. The average age of those who developed delirium was approximately 2.7 years greater than those who did not (84.7 years vs. 82.0 years). As well, there was a small female predominance in the group that developed delirium (74.1% vs. 67%). The average self-reported pain rating was higher in the group that developed delirium compared to the group that did not (4.3 vs. 3.8). Those with delirium had a relatively comparable frailty scores (5.3 vs. 5.0) and number of co-morbidities (4.1 vs. 3.9) compared to those who did not develop delirium.

Conclusions: This was a single-centre study with a small sample size and, therefore, is not representative of the population. As well, as a retrospective chart review, this project was limited by our reliance on the accuracy and completion of documentation; we could not randomize/blind subjects or control bias in our data. With this in mind, we believe we have shown that frailty, age, and number of co-morbidities are not reliable predictors for delirium. Those who did and did not develop delirium were generally of advanced age, heavily burdened with co-morbidities, and some signs of functional impairment; it may be that hip fracture is a function of frailty. While female gender seemed to be associated with post-operative delirium, the most significant patient factors appear to be self-reported pain scores and wait time until surgery.

Integration of Student- Led Didactic Sessions to Complement McMaster's Medical Anatomy Curriculum

Yasmin Kazemi* (1), Beth Jolley* (1), Beatrice Preti (1)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada

Background: Anatomy is a vital component of medical education and there is a perceived gap within McMaster's current anatomy curriculum. The 2014 Independent Student Analysis notes that students feel they would largely benefit from clearer objectives, more structure, and incorporation of clinically-relevant ways to test anatomical knowledge. Although students seemingly crave a more didactic learning style, difficulties for implementation exist with limited anatomy preceptors and an inability to accommodate one-on-one teaching. We seek to design and implement a student-led anatomy program to complement the existing anatomy curriculum using a quality improvement approach.

Methods: As part of the existing medical anatomy program, student groups will facilitate sessions and provide 3-4 multiple choice questions and an open-ended clinical reasoning question for participants. Small-scale interventions and Plan-Do-Study-Act (PDSA) cycles will be used to design and extensively pilot this intervention. Concurrent feedback will guide the development of the intervention up until widespread implementation and evaluation.

Results: An overview of the designed intervention will be presented with a comprehensive framework and approach to outline the pilot phase and widespread implementation. Anticipated results of this intervention may include an increase in anatomy knowledge, self-perceived confidence of both anatomy knowledge and ability to explain anatomy content, and attitudes towards teaching.

Conclusions: Anatomy is an important component of medical education. We propose a student-led anatomy program to complement the existing curriculum. Implementation of this program through a quality improvement framework will use ongoing feedback to guide the intervention for continuous improvement.

Communication with physicians and the multidisciplinary care team: improved documentation in a long-term care setting

Saumik Biswas (1), Natalie Lidster (2), Kimberly Fernandes* (2), Ming Lam* (2), Helen Su* (2), Matthew Kwan (3), Matthew Greenway (3), Henry Siu (3)

(1) Faculty of Applied Health Sciences, Brock University, St. Catharines, Ontario, Canada
(2) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(3) Department of Family Medicine, McMaster University, Hamilton, Ontario, Canada

Background: Currently, there is no universal documentation for physicians to use when admitting and assessing patients in long-term care settings. Additionally, members of the allied health professions provide their assessment and recommendations on their own separate documents. Yet, the effectiveness of communication between physicians and the multidisciplinary team facilitates quality patient-care; this is complicated by the use of individual charting. The purpose of this project is to improve the quality of documentation and ease of communication between all health care workers in long-term care settings.

Methods: Thus, we have developed two documentation tools. The first document is for physicians to record history and physician exam findings as well as laboratory and imaging results, interventions, and code status and goals of treatment.

Results & Conclusions: This new form satisfies all the charting requirements for physicians to admit and perform ongoing assessment on long-term care patients and can improve physician-physician communication. The second tool provides salient details of the physician assessment and incorporates these with highlights of the assessments performed by the multidisciplinary team in a single-sheet format. There is a high level of satisfaction among consulted physicians on ease of use and clarity of communication. Ongoing work on this project includes reaching out to other long-term care centres for appraisal of the document tools for further improvement and adapting the documents into an electronic format.

Engaging learners in a medical education context for early introduction of quality improvement (QI) methodology: the program for improvement in medical education (PRIME)

Nadiya Goswami* (1), Matthew Baron (1), Laurel Charlesworth (1), Michele Stackaruk (1), Allison Brown (1), Madelyn Law (2), Alannah Smrke (3), Matthew Greenway (1)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Faculty of Health Sciences, Brock University, St. Catharines, Ontario, Canada
(3) Department of Medicine, McMaster University, Hamilton, Ontario, Canada

Background: There is a need to engage learners in QI practices before they enter the workforce. The Program for Improvement in Medical Education (PRIME) introduces medical students to QI methods and provides learners with foundational QI knowledge and skills as they apply to medical education. PRIME serves as a low risk opportunity for learners to engage in QI activities and propose improvements to their medical education.

Methods: Pre-clerkship medical students (n=25) at a McMaster University Niagara Regional Campus participated in a three-hour introductory workshop focused on the principals of QI, leadership and change management while relating these concepts to medical education. Using a QI framework student teams (2-4) designed interventions to address perceived areas of weakness in their curriculum. Proposals were judged and presented with the best proposals forming the basis for change at the McMaster Niagara Regional Campus. Pre- and post-data collection using the Quality Assessment and Improvement Curriculum (QAIC) toolkit was conducted to assess student perceptions of QI competencies.

Results: Results indicated a statistically significant ($p < 0.05$) increase in understanding, knowledge and competence in various QI domains. 100% of participants decided to continue with further work in QI in their medical education, electing to participate in an applied QI offering at the Niagara Regional Campus.

Conclusions: PRIME may serve as an effective model to facilitate student innovation and student-driven change to improve the quality of education. Additionally, this model may also be an effective way to introduce students to QI prior to a formalized 18-month QI program with clinical applications in clerkship.

Clinical predictors for bleeding in patients receiving low-molecular-weight heparin for cancer-associated thrombosis

Matthew Cheah* (1), Chatree Chai-Adisakopha (1), Lori-Ann Linkins (1)

(1) Hematology and Thromboembolism, McMaster University, Hamilton, Ontario, Canada

Background: Among cancer patients, venous thromboembolism (VTE) is a leading complication and is the second most common cause of death. Compared to the general population, cancer patients have a 4-7 times increased risk of developing VTE. The standard of care for treatment of cancer-associated VTE is low-molecular-weight heparin (LMWH) as long as the patient has active malignancy. For some patients, this means months or even years of treatment. The benefit of extended duration anticoagulant therapy must be weighed against the increased risk of bleeding. Currently, there is limited data on the potential predictors for bleeding in this patient population.

We conducted a retrospective cohort study to determine predictors of bleeding in patients with cancer-associated thrombosis who are treated with LMWH. Secondary objectives included determination of the frequency of both clinically-relevant non-major (CRNM) bleeding and major bleeds.

Methods: 1300 inpatients and outpatients diagnosed with cancer-associated VTE at a single Canadian hospital between January 2010 and January 2014 had their clinic and electronic charts reviewed. We included patients over 18 years of age with objectively proven VTE on compression ultrasound, contrast venography, CT or V/Q scan. Those treated with LMWH for less than 10 days were excluded. After review, we abstracted detailed data from a subset of 234 for preliminary analysis. Baseline clinical characteristics (age, sex, diabetes, HTN, CKD, recent surgery, stroke history, bleeding history, antiplatelet therapy, type and stage of cancer, antineoplastic treatment), baseline laboratory data (CBC, INR/PTT, serum Cr) and VTE details (history of VTE, site, symptoms, VTE treatment, VTE recurrence) were recorded. Bleeding details (CRNM vs. major, site, investigative procedures, units of blood transfused, lowest Hb and Plt, use of reversal products for anticoagulant therapy) were collected for those who bled while receiving LMWH. Clinical characteristics were analyzed using descriptive statistics expressed as a mean with SD and 95%CI for continuous variables and frequency count (percent) for categorical variables. Univariate analysis of categorical predictors was performed using the Chi-square test. Continuous variables were analyzed using a two-tailed t-test.

Results: The incidence of total bleeding was 7.3% (17/234); major bleeds occurred in 5.6% (13/234) of the study population and CRNM bleeds in 1.7% (4/234). Mean age of patients in the bleeding group was 65.4 years (95%CI: 60.3-70.5) and 63.9 years (95%CI: 61.8-66.0) in the non-bleeding group. There was no statistically significant difference in univariate analyses of gender (p=0.47), diabetes (p=0.20), hypertension (p=0.51), CKD (p=0.49), antiplatelet use (p=0.83), stroke history (p=0.49), surgical history (p=0.61), bleeding history (p=0.93), or stage of cancer (p=0.38) between the bleeding and non-bleeding groups. There was a statistically significant difference between site of cancer and bleeding ($\chi2$=29.7, p=0.01). For continuous variables, there was no statistically significant difference between age (p=0.71), mean serum creatinine at baseline (p=0.97) or platelet count at baseline (p=0.30). We found a statistically significant

difference between baseline INR (p=0.02), with mean value of 1.4 (95%CI: 1.1- 1.68) in the bleeding group and 1.1 (95%CI: 1.08-1.16) in the non-bleeding group.

Conclusions: The total incidence of bleeding in this subgroup of patients with cancer-associated thrombosis was 7.3%. Most of the conventional risk factors for bleeding in the general population did appear to be predictive of bleeding in this special population. Site of cancer may be an important predictor for bleeding, but further adjusted analysis using the entire study population is required before further conclusions can be drawn.

Peer Mentorship

David Page* (1), Laurel Charlesworth (1), Clara Sellers (1), Linda Lee (2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Niagara Regional Campus, St. Catharines, Ontario, Canada
(2) Walker Family Cancer Centre, St. Catharines General Hospital, St. Catharines, Ontario, Canada

Background: Advances made in the treatment of cancer have led to increased numbers of cancer survivors in the population. Early data shows that a number of cancer survivors may suffer from depression and anxiety following treatment. Peer mentorship has been proposed as one therapy that might reduce depression and anxiety in survivors, however much about peer mentorship is still unknown.

Methods: Our group will investigate whether mentorship with highly or lowly trained mentors makes a difference in depression or anxiety outcomes of patients. The basis for examining this difference is grounded in peer-mentoring theory, with lowly trained mentors expected to counter-intuitively, provide a better outcome for their mentees.

We will also look at the effect of peer mentorship on the mental health of the mentor. If benefit can be demonstrated to both mentors and mentees, this should strengthen the rationale for use of peer mentorship in clinical practice, as well as help to guide policy makers in terms of implementation of such programs.

Results:

Conclusions:

Design and implementation of a decision box tool to improve patient engagement for prostate cancer biopsies

Matthew Baron* (1), Elan Hahn (1), Allison Brown (1), Ian Brown (2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Niagara Regional Campus, St. Catharines, Ontario, Canada
(2) Department of Urology, Niagara Health System, St. Catharines, Ontario, Canada

Background: Screening for prostate cancer is a controversial topic. Nevertheless, many men still undergo screening using the Prostate-specific Antigen (PSA) marker or by digital rectal examination (DRE). Once an elevated PSA level or abnormal DRE finding is detected, the patient is often referred to a specialist regarding a prostate biopsy. However, the decision whether or not undergo a biopsy is complex, and there is often no clear choice. Thus, shared-decision making between patient and clinician becomes an extremely important element of the clinical encounter. Our project attempts to create a decision-box tool for patient use to improve patient ability to make confident, competent, and empowering decisions. The decision-box tool will also function to better inform patients regarding the impact and potential outcomes of their decision.

Methods: We will create and evaluate the decision-box tool using methods designed by previous research around such tools and current best evidence regarding screening in prostate cancer. This involves handing the tool to clinicians and patients to assess its viability, usefulness, and clarity and incorporating the feedback received into improving the decision-box tool. We will then integrate the tool into clinical practice at the new Prostate Diagnostic Assessment Clinic at NHS, and examine its effects on patients perceived satisfaction, confidence, and comfort level with their decision regarding prostate biopsy.

Results: We expect the implementation of our decision-box tool before the clinical encounter to enable patients to make an informed decision regarding prostate biopsy. This will lead to a more involved and satisfying clinical encounter that will result in a more confident, competent and empowering choice.

Conclusions: Shared decision making is an extremely important aspect of clinical medicine. It is especially important in realms of medicine that have good evidence supporting different choices, such as the choice whether or not to undergo prostate biopsy. Our hope is that the introduction of a decision-box tool will aid patients in making a confident, competent, and empowering choice regarding the diagnosis of prostate cancer.

Evolution of campus preference in medical students at the Michael G. DeGroote School of Medicine

Ammar Khairullah* (1), Lili Tong* (1), Andrew Costa (1)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada

Background: With the advent of medical school regional campuses, students are asked to submit preferences for the site at which they wish to pursue training prior to program entry. There is a supply-demand imbalance between seats at the main and regional campuses: most students opt for the main campus. We aimed to quantify this preference and evaluate changes after entering the program.

Methods: A web-based survey was disseminated in October 2014 to current students across the classes and sites of the Michael G. DeGroote School of Medicine. Students submitted their original rankings of the three campuses, and were then asked to re-rank according to current preference. A cross-sectional demographic profile of the student was obtained, including assigned campus, campus perceptions, and exposure to other campuses.

Results: With approximately 56% from the student body participating (n=339), we obtained a representative sample across sites and graduation year. We found a strong preference for the main campus as first choice on original student rankings (Main Campus - 85.55%, Regional Campuses - 12.06%, No Preference - 2.36%), which shifted towards first choice preference of a regional campus upon re-ranking (Main Campus - 67.85%, Regional Campuses - 31.52%, No Preference - 0.59%). One factor influencing student preference is perceived reputation of the campuses which also shifted between time of interview (Main Campus is better - 74.26%, No Difference - 19.82%, Regional Campuses are better - 5.92%), to current perception (Main Campus is better - 42.90%, No Difference - 36.39%, Regional Campuses are better - 20.71%).

Conclusions: Perceptions and preference of campus sites changes dramatically from the time of interview to entry into the program. The marked preference for placement at the main campus site transitions into an increased preference for regional campuses, in fact slightly outnumbering the number of seats offered at the regional campuses.

Utilization of QI methodology to develop and implement a community-based Women's Health elective

Kyle Lafreniere*(1), Amanda Bell(1)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada

Background: Many women's health medical electives are based in tertiary academic settings or specialty clinics. There is interest amongst undergraduate medical students in exploring various topics relating to women's health that may be met through a community-based women's health elective. The Niagara peninsula is home to a number of clinics and organizations that focus on women's health topics such as eating disorders, sexual health, addiction and recovery, etc.

Additionally, rural and remote communities face a shortage of practitioners with special expertise and interest in women's health. We hope that timely engagement for early medical clerks in various facets of women's health will be beneficial, and that this engagement will promote consideration of a focus on women's health as part of their future practices.

Methods: A women's health elective offering for undergraduate medical learners will be developed and evaluated. This elective framework will be supported by evidence and aligned with the 2015 CanMEDS competency framework. Extensive evaluation of this elective will determine the effectiveness of the elective and identify areas for future improvements. Qualitative surveys will assess student experiences and influence on future career practice.

Results: We anticipate that the development of a community-based women's health elective offering will be suitable for undergraduate medical learners as it includes a variety of components pertaining to Women's Health. This may pique the interest of learners that are wishing to pursue an elective with a broader scope than what is found in specialties such as obstetrics and gynecology and community medicine.

Conclusions: By identifying gaps in Women's Health curriculum, we will develop an elective offering appropriate for medical learners that is strategically aligned with the CanMEDS framework. Upon extensive evaluation, this framework may be adopted by other medical programs that have the capacity for a community-based Women's Health elective.

Coming down the pipeline: early engagement of community learners and medical students as teachers

Yuet Ming Lam (1), Helen Su (1), Amanda Bell (1)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada

Background: Formal and bedside teaching are competencies expected by residency programs. Undergraduate medical education is an opportunity to teach educational skills and stimulate teaching interests amongst medical students. The Pipeline program was designed to promote community engagement and to expose early learners to health care career options. An unexpected outcome was the bi-directional value of this program to medical students as well as to early learners from local communities. The program supported the development of medical students as teachers by giving them an opportunity to share their knowledge with younger learners.

Methods: Medical students at the Niagara Regional Campus participated in interactive presentations in local schools, on-campus workshops for elementary and secondary students, and individual mentoring with undergraduate students at Brock University. Feedback survey was sought from all participants. Data collection is ongoing.

Results: There was a high level of interest in this program. Learners connected well with medical student leaders and saw them as approachable role models and educators. Students expressed interest in careers in medicine following participation and were engaged with the material they were learning. Medical student facilitators enjoyed their experiences and increased their confidence in teaching by participating in the program.

Conclusions: The Pipeline program increased awareness in careers in medicine within the local community. Early exposure to healthcare careers and medical education shown to promote local students from various sociodemographic backgrounds to consider healthcare careers. Early introduction to teaching stimulates the interest of learners who may decide to engage in further teaching opportunities as well as better preparing medical students to become more effective educators in the future.

Parapharyngeal abscess following use of a laryngeal mask airway during open revision septorhinoplasty

Benjamin van der Woerd (1), Jeff Robichaud (1, 2), Michael Parrish (1, 3), Michael Gupta (1, 2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Department of Otolaryngology - Head and Neck Surgery, McMaster University, Hamilton, Ontario, Canada
(3) Department of Anesthesiology, McMaster University, Hamilton, Ontario, Canada

Background: Laryngeal mask airways are an excellent established safe tool to support the airway during surgery under general anesthetic. It is commonly used both in North America and abroad for many different types of surgical cases. While complications with this device are quite rare, we report a rare case of parapharyngeal abscess following the use of an LMA Classic to manage the airway for open septorhinoplasty surgery.

Methods: Informed consent was obtained by the study investigators. A retrospective review of the patient's medical records was conducted.

Results: Laryngeal mask airway injuries are a rare complication during surgery. We report a rare case of parapharyngeal abscess following use of a laryngeal mask airway in a patient undergoing open revision septorhinoplasty. Despite the rare incidence of LMA injuries, early recognition of parapharyngeal neck abscesses can initiate early treatment and prevention of spread to retropharyngeal space where airway obstruction and emergent complications may occur. This case report highlights the importance of vigilance during all aspects of patient care in the operating room, where the use of a very commonly used method of airway management likely resulted in this unexpected complication. It also highlights the difficulties in truly providing full informed consent to our patients, as this is a complication that would certainly not be routinely discussed as a risk for rhinoplasty, or by the anesthetist for airway management. It is reasonable to conclude that this risk could have been significantly reduced with routine measurement of cuff pressures when a LMA is used for airway management. It also highlights the importance of choosing the correct LMA, or alternate method of securing the airway, for a given case, which can be limited at times due to availability arising from financial constraints at your institution. While another option would be to consider the use of an endotracheal tube for this procedure, it would still create other small potential risks, present in any medical intervention.

Conclusions: While laryngeal mask airways can be an appropriate method of airway management during surgery, following appropriate cuff inflation guidelines, or alternative methods of airway management including endotracheal tube, must occur to avoid airway injury.

Evaluating adherence to the "Ontario emergency room management guidelines for children with type 1 diabetes" in critically ill children with diabetic ketoacidosis

Jennifer Klowak (1), Emilio Aguirre (2), Julia Shen (3), Melissa Parker (2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Department of Pediatrics, McMaster Children's Hospital, Hamilton, Ontario, Canada
(3) Department of Health Sciences, McMaster University, Hamilton, Ontario, Canada

Background: Emergency department management of pediatric diabetic ketoacidosis (DKA) focuses on fluid replacement, insulin administration, electrolyte replacement, and close monitoring and management of dangerous complications such as cerebral edema. There is currently a paucity of literature evaluating the adherence to evidence-based pediatric DKA emergency treatment guidelines.

Methods: The co-primary objectives of this study are to 1. determine the proportion of critically ill children with DKA who received guideline-adherent care according to the 2009 Ontario emergency room management guidelines for children with Type 1 diabetes and DKA, and 2. evaluate potential predictors of guideline non-adherent care. Secondary objectives include 1. determining adherence to key components of the Ontario emergency room management guidelines for children with Type 1 diabetes and DKA and 2. assessing the impact of guideline adherence on clinical outcomes. We are utilizing a retrospective cohort study design. Study participants include children aged 0-17 years ultimately admitted to McMaster Children's Hospital Pediatric Intensive Care Unit (PICU) with a diagnosis of DKA from 2010-2014. Trained data abstractors are reviewing the medical records of included participants and recording baseline characteristics, details of emergency department treatment, laboratory variables and clinical outcomes.

Results: Statistical analyses will include calculation of simple proportions and 95% confidence intervals for categorical data and use of logistic regression to estimate odds ratio point estimates and 95% confidence intervals for potential predictors of guideline non-adherence.

Conclusions: This study will describe adherence to the 2009 Ontario emergency room management guidelines for children with Type 1 diabetes and DKA over a 5 year period and identify predictors of guideline non-adherence. Our findings will serve as a foundation for quality improvement of emergency department treatment of pediatric DKA.

Male sexual assault victims: an under-serviced and under-researched population

Melanie E. Tannenbaum* (1), Dr. Christine Wekerle (2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Department of Pediatrics, McMaster University, Hamilton, Ontario, Canada

Background: Historically, sexual assault victimization has been seen as a uniquely female-specific issue. Current research indicates that this is not the case, and in fact, male victims make up a much larger proportion of sexual assault victims than was originally thought. Prompted by the lack of research on male sexual assault, we conducted a literature review on the prevalence, outcomes and treatment of male sexual abuse.

Methods: In obtaining the studies for review, we incorporated data from large-scale population studies in addition to smaller population-specific studies. We used review articles, randomized control trials, and case reports.

Results: Different studies show a wide range of variation in prevalence of male sexual assault, which can likely be explained by the population sampled and the wording of the definition used for sexual assault. One large-scale population study reported that 7.5% of males below the age of 17 have been victim to sexual assault. The issues these male victims suffer from are significant. For example, sexually assaulted males have a greater rate of suicide attempts as compared to sexually assaulted females. In addition, research suggests that there are certain issues that are specific to male victims only. The studies conducted on treatment outcomes for male victims are few and lacking, as the majority of the publications focus on female victims.

Conclusions: There is a need to directly compare male and female outcomes of different treatment modalities, since the existing body of research indicates males and females have different therapeutic needs. Male sexual assault victims are an under-recognized and under-studied population, and more research on the ideal methods of treatment is necessary.

Development of an integrated, three-tier educational intervention model for longitudinal surgical competency acquisition

Kyle Lafreniere* (1), Benjamin van der Woerd*(1)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada

Background: The acquisition of surgical skills and knowledge is a multi-faceted and evolving process. Insufficient early exposure to surgery within the existing curriculum, and mixed surgical experiences significantly impact medical students' perceptions of surgery. Inadequate preparation prior to surgical electives (horizontal, post-MF4) or core clerkship rotations contributes to both low surgical confidence and competence. This is disadvantageous for all medical students, particularly, those who wish to pursue competitive surgical specialties.

Methods: Longitudinal exposure to surgical resources does not currently exist and thus we proposed a three-tier surgical skills framework to be integrated longitudinally throughout the medical curriculum with potential for extension into residency. Three levels (exposure, immersion, mastery) across a number of surgical domains will be created. This matrix will allow students with varying skill-sets and experience to have effective and timely access to surgical resources. A needs assessment survey will highlight student perceptions of the existing curriculum, identify gaps for mitigation and provide insight into which surgical domains would benefit most from this integrated framework.

Results: Development and integration of a "by students, for students" three-tiered framework, emulated from the IPE Curriculum at McMaster, should meet the varying needs of learners across a number of surgical skill areas. Anticipated outcomes of this initiative would include a robust educational model that can be accessed and utilized by a plethora of learners.

Conclusions: Timely and effective exposure to surgical skills can greatly impact the student educational experience. Through the development and integration of a robust, three-tiered framework, McMaster medical students will have improved access to pertinent surgical skills training and surgical academic resources. Ultimately, this framework will instill surgical confidence and competency, and may facilitate the pursuit of additional surgical training. Comparison of neonatal abstinence syndrome outcomes before and after implementation of revised management guidelines

Comparison of neonatal abstinence syndrome outcomes before and after implementation of revised management guidelines

Shamini Selvakumar* (1), Bojana Babic (2), Samara Chitayat (2), Kelly Fitzpatrick (2), Andrew Latchman (2), Sandra Seigel (2), Lucia Giglia (2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Department of Pediatrics, McMaster University, Hamilton, Ontario, Canada

Background: The incidence of Neonatal Abstinence Syndrome (NAS) has been steadily increasing. Canadian Institute for Health Information (CIHI) reported that the number of NAS cases increased from 171 diagnoses in 2003-2004 to 654 in 2010-2011, and the number of hospital beds used, rose from 5.6 per day to 23.4. Symptoms of NAS range from irritability and poor feeding to development of seizures. In March 2012, the Provincial Council for Maternal and Child Health (PCMCH) provided revised clinical practice guidelines for the management of NAS in order to standardize its management across all units, with the most notable change resulting in a decrease in time intervals for both Finnegan scoring and morphine therapy. The current study aimed to evaluate the PCMCH guidelines on newborn outcomes, when compared to the previous management guidelines.

Methods: A retrospective cohort study was conducted, comparing medical records of mother-infant pairs exposed to methadone or other opioids antenatally two years prior to the implementation of the PCMCH guidelines (Mar 2010–Mar 2012) and two years after implementation (Apr 2012–Mar 2014).

Results: Of the 167 charts screened, 90 mother-infant pairs met the inclusion criteria. Compared to newborns managed under the previous guidelines, newborns under the PCMCH guidelines required treatment for shorter duration, reduced length of hospital stay, and demonstrated a trend towards decreased total amount of morphine.

Conclusions: To our knowledge, this is the first study to evaluate the impact of the PCMCH guidelines on newborn outcomes since its implementation in March 2012. The current study demonstrates that under the PCMCH guidelines, there is reduced treatment duration, reduced length of hospital stay, and a trend towards decreased total amount of morphine prescribed.

Secondary stroke prevention: achieving best practice targets in an inpatient stroke rehabilitation centre

Laurel Laakso* (1), Robert D'Addazio (2), Laurel Charlesworth (1), Matt Kwan (1), Janice Wright (3), Jack Luce (3), Madelyn P. Law (2), Matt Greenway (1), Linda Boich (4)

(1) Michael G. DeGroote School of Medicine, McMaster University, Niagara Regional Campus, St. Catharines, Ontario, Canada
(2) Brock University, St. Catharines, Ontario, Canada
(3) Hotel Dieu Shaver Health & Rehabilitation Centre, St. Catharines, Ontario, Canada
(4) Niagara Health System, St. Catharines, Ontario, Canada

Background: The risk of recurrent stroke is 8% within the first year (1). Research suggests that stroke patients who receive multidisciplinary stroke specific care are more likely to survive and regain independence (2). The aim of this study was to reformulate a secondary stroke preventative care checklist after examining multidisciplinary stroke care in inpatient units at Hotel Dieu Shaver Health and Rehabilitation Centre (HDSHRC) to ensure that 100% of patients by January 2015 were receiving optimal secondary stroke preventative care.

Methods: We first audited 11 charts from patients admitted before January 2014. These chart audits, in consultation with physician and nurse leadership, led to the development of a nursing assessment form which better addressed secondary stroke preventative care at time of admission. This form was introduced in January 2014. Chart audits of nine patients admitted for stroke after the introduction of the admission assessment form was then performed. These same nine charts then were audited an additional time by three different individuals on the team in order to examine inter-rater variability.

Results: The nursing assessment form resulted in more consistent documentation of information in the chart as well as better adherence with best practice guidelines. These audits, however, revealed potential gaps in secondary stroke prevention, particularly in meeting target blood sugar and cholesterol. There was also inter-rater variability between the different individuals conducting the chart reviews, highlighting the lack of consistent and accessible documentation in the patient charts.

Conclusions: The introduction of the nursing assessment form resulted in improved secondary stroke preventative care. There remains potential areas of improvement, as the three sets of chart audits consistently highlighted deficiencies in secondary stroke preventative care at HDSHRC.

Synoptic radiology reports improve the quality and clarity of radiology reporting

Mohamed Hussein* (1), Darin Gopaul (2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Grand River Regional Cancer Centre, Kitchener, Ontario

Background: Radiology reports provide clinicians with key information with regards to the management of many pathological processes. However, the majority of radiology reports do not follow a standardized approach for reporting clinical findings. As such, important findings that may be of importance to the ordering clinician may be omitted from the radiology report.

Methods: We conducted a chart review of 39 patients undergoing radiation therapy at Grand River Regional Cancer Centre for rectal cancer. The tumor staging MRI reports were then analyzed in order to determine whether the circumferential radial margin (CRM), a key prognostic indicator in rectal cancer, was reported in the MRI reports.

Results: It was found that 44.7% (n=17) of the MRI reports were reported in a synoptic fashion, whereas 55.3% (n=21) were not. The CRM was reported in 94% (n=16) of the synoptic reports, whereas it was reported in only 62% (n=13) of the conventional radiology reports.

Conclusions: These findings indicate that synoptic radiology reports convey important radiological findings more effectively than conventional radiology reports.

<mark>Patient Education-David Page said this second project is about IEQUIP?? He will send the most recent abstract today</mark>

Spencer Haze* (1), David Page (1), Manika Gupta (1), Bianca Fucile (2), Charlene Duliban (3), Erica Bridge (1,2), Madelyn P. Law (2)

(1) Michael G. DeGroote School of Medicine, McMaster University–Niagara Regional Campus, St. Catharines, Ontario, Canada
(2) Brock University, St. Catharines, Ontario, Canada
(3) Niagara Health System, St. Catharines, Ontario, Canada

Patient education depends upon the delivery of adequate information to patients and their families from health care professionals. At the Niagara Health System (NHS) there exists a gap in patient satisfaction, compared to the Ontario-wide average (63 vs 70%), especially with oncology patients' understanding of their medical condition. Some of the current tools used to provide patient education at the NHS are paper-filled binders and information sessions. Our group aims to create a new tool to replace the existing materials, and increase oncology patient knowledge of their disease, treatment options, and self-efficacy in navigating their physician visits in a meaningful manner.

The project emphasizes the use of patient-centered communication and education provided by the NHS to achieve an increased satisfaction rate upwards of 7% by April 2016, in order to meet the Ontario-wide average. Our project will focus on using an experience-based co-design to determine which information is significant to both patients and family members, via interviews conducted in focus groups. We will then meet to discuss the results, and identify the areas of concern.

This will form the basis for our PDSA cycles over the course of the next year, slowly integrating recognized concerns into the new patient information tool. Given that cancer patients do not express adequate understanding of the information relayed by medical professionals, our study aims to eliminate unnecessary misconceptions, while providing information in a reliable and efficient manner. This will benefit the patients by allowing them to be more effective partners in their own care and treatment plans.

<mark>Louisa Hong-not sure which abstract should be here</mark>

The health gap: exposing inconsistencies between global disease burdens and prevalence of related news and research publications

Nicole Jedrzejko* (1), Steven J. Hoffman (2), Lathika Sritharan (3), Muhammad Ali Hashmi (4), Julia Belluz (5)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Faculty of Law (Common Law Section), University of Ottawa, Ottawa, Ontario, Canada
(3) Global Strategy Lab, University of Ottawa, Ottawa, Ontario, Canada
(4) Massachusetts Institute of Technology, Cambridge, Massachusetts, USA
(5) Vox Media Inc., Washington, DC, USA

Background: The global gaps between disease burdens, their respective media coverage and research contributions have not been fully elucidated, meaning the likelihood of significant disproportionate public attention and prioritization for diseases is not understood. This study aims to quantify and analyze news media, research publication priorities and its relationship to the global burden of diseases affecting countries of varying development and health status. This relationship will be quantified to demonstrate the extent of each country's "health gap" between disease burden and the prevalence of respective news media and research publications. This health gap index is the first of its kind to cross-examine disease burden, news media coverage, and health research interest on a multinational scale.

Methods: Disease burden statistics from USA, India, UK, Philippines, Bangladesh, and Canada were compared with prevalence of relative news media and research publications. The most recent data available (2004, 2010)describing the prevalent disease causes of DALYs and mortality was collected from W HO and IHME. News media publication data was collected from LexisNexis newspaper index, and research publication data was collected from MEDLINE. To determine if significant correlations existed between the three variables, a Pearson correlation coefficient was calculated.

Results: The correlations for DALYs vs. news media coverage are significant for USA ($p=0.035$) and India ($p=0.024$), DALYs vs. research publications are significant for India ($p=0.0043$) and the Philippines ($p=0.028$), and news media coverage vs. research publications are significant for for India ($p=0.0051$). The Pearson's correlation coefficient was more significant in LMICs (all variables for India, one variable for Philippines) compared to high-income countries (only one variable for USA). A number of ratio and correlation figures have been prepared to show cross-country trends in health gap.

Conclusions: Results have shown that health gaps are definitely prevalent in these countries. The efforts to provide the public with news and research that prioritizes health issues is not apparent in any of these countries and exhibits the need for an open-access Health Gap Repository tool for health journalists and decision-makers to make efficient and equitable health publication prioritizations in the post-2015 development era.

New perspectives on parents' understanding of advanced cancer in their child

Rebecca Rodin* (1,2), Jessica Pountney (2), Richard Langner (2), Myra Bluebond-Langner (2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) University College London, London, United Kingdoms

Background: To assess the understanding of parents of children with advanced cancer for whom standard therapy has failed regarding their view of their child's prognosis and the treatment options that they consider.

Methods: The present study analyzes verbatim transcripts of clinician-family consultations recorded as part of a larger, in-depth, prospective, ethnographic study of parents, patients, and staff at a US and a UK pediatric oncology center. Fifty-seven transcripts from 27 cases of a child with less than 30% chance of cure, as determined by their physicians, were analyzed for this study.

Results: In 18 cases, at least one parent (11 US, 7 UK) clearly indicated that they knew their child would inevitably die. At the same time, in 16 (10 US, 6 UK) of these 18 cases, a parent also showed an interest in cancer-directed treatment options and/or expressed a belief that their child could possibly survive or be cured. There were no families in the US or UK who indicated unequivocally that their child would survive or be cured.

Conclusions: Parents of children with advanced cancer often hold multiple views, expressing both awareness of their child's impending death, and also a belief in survival or cure. These findings have important clinical implications, showing that parents' understanding of their child's condition is complex and cannot be simply dichotomized into acceptance or non-acceptance of the prognosis. The findings suggest that what is needed to help parents make wise decisions is not better communication of information, which we submit is already largely understood, but support for decision-making that acknowledges the complexity of parental goals and understanding.

Systematic review of ultrasound screening for abdominal aortic aneurysm by emergency department clinicians

Thomas E. Curry* (1), Derek H. W. Little* (1), Anmol R. S. Lamda* (1), Mehran Midia (1,2)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Department of Radiology, McMaster University, Hamilton, Ontario, Canada

Background: Abdominal aortic aneurysm (AAA) is an often clinically silent but lethal disease. Routine physical examination does not accurately detect AAA, necessitating the use of ultrasound (U/S) in high-risk populations. Despite recommendations for sonographic screening in men over 65 with risk factors for AAA, population uptake has been poor. Emergency department (ED) clinicians with minimal U/S training are competent at visualizing and measuring the abdominal aorta. However, evidence for the effectiveness of opportunistic screening in the ED has not been available until recently.
This review examines the effectiveness of ED bedside U/S screening for AAA in high-risk patients.

Methods: Studies testing the sensitivity, specificity, or feasibility of U/S screening of patients with AAA risk factors by ED clinicians with reference standard comparators (e.g., abdominal CT) were included. Studies assessing abdominal aorta visualization by ED U/S in patients without AAA symptoms were also eligible. Secondary research, studies of symptomatic AAA, non-English language studies, and studies performed in a non-ED setting were excluded. A literature search of EMBASE, MEDLINE, and the Cochrane Central Register of Controlled Trials (January 1966 to June 2014) was performed using a search strategy derived from PICOS criteria. Risk of bias was evaluated using the Quality Assessment of Diagnostic Accuracy Studies (QUADAS-2) tool with consideration of blinding, outcome data completeness, selective reporting, and other possible sources of bias.

Results: Six studies involving 690 ED patients with AAA risk factors were included. Three studies reported operating characteristics for bedside U/S screening, six studies reported on the prevalence of AAA, and six studies discussed the practicality of AAA screening in the ED. Bedside U/S screening by ED clinicians for AAA in high-risk patients showed pooled sensitivity of 100% (196 patients) and pooled specificity of 69% (196 patients; 95% CI = 64 to 74). The weighted prevalence of AAA was 8% (534 patients). ED clinician U/S experience was associated with successful abdominal aorta measurement. Among 19 ED sonographers surveyed, 58% believed that U/S screening for AAA improved quality of care, but 74% felt that the ED was not an appropriate setting for AAA screening.

Conclusions: Bedside U/S detection of AAA in high-risk patients is a sensitive screening tool but may not be appropriate for EDs with a high resource burden. ED bedside U/S screening for AAA may have lower specificity than U/S AAA screening interpreted by radiology due to a lack of U/S experience among ED clinicians and the absence of patient bowel preparation. The number of indeterminate scans (e.g., incomplete visualization of the aorta) was high in this analysis, and several studies did not verify negative U/S scans with a reference standard. The prevalence of AAA in high-risk patients presenting to the ED with an unrelated complaint was similar to estimates in the general high-risk population, despite evidence of reduced access to

primary care among ED patients. Further studies addressing the practicality of ED U/S for detecting AAA in different ED settings using consecutive patients rather than a convenience sample will help determine the utility of this screening tool in the ED.

Accessibility and use of primary healthcare amongst immigrants in the Niagara Region

Irene D. Lum (1), Rebecca H. Swartz* (1), Matthew Kwan (2)

(1) Michael G. DeGroote School of Medicine, Niagara Regional Campus, McMaster University, Hamilton, Ontario, Canada
(2) Department of Family Medicine, McMaster University, Hamilton, Ontario, Canada

Background: Canadian immigrant health has been researched extensively, but this has been focused in cities with large immigrant populations. The experiences of immigrants in smaller, less diverse areas such as Niagara are thus unknown. The purpose of this study was to explore the lived experience of immigrants in Niagara in relation to primary healthcare.

Methods: This qualitative research study employed one-on-one interviews with 14 participants. The interviews were recorded, transcribed, coded and then analyzed using NVivo.

Results: Two factors impacted accessibility to primary healthcare. Thirteen participants connected to their family physician through family, friends or community organizations. Having social contacts in the region was thus essential for accessing primary healthcare. OHIP coverage also affected access. While most patients did not need care in the first 3 months after arrival, lack of coverage during this time caused 4 participants to defer their medical concerns, seek care elsewhere or limit services used.

Overcoming a language barrier affected use of primary healthcare. Six participants chose a family physician that spoke the same language, even if not conveniently located. Five participants relied on family or friends for translation, which meant rescheduling appointments if the translator was unavailable. Physician attitude towards alternative treatment also affected use. Four participants discussed preferences for natural remedies, which they believed their physicians were not open to discussing. In certain situations, these participants did not seek care due to this perceived disagreement.

Conclusions: Compared to a similar study done in Toronto (Asanin & Wilson 2008), our findings suggest that immigrants face similar barriers to primary care regardless of location. However, this study is unique for identifying the role of social contacts in facilitating access to care in Niagara. We also anticipate that the identified barriers are aggravated in Niagara due to a smaller immigrant population creating more isolation and fewer family physicians speaking non-English languages.

Understanding the admission process at a local rehabilitation centre for improved management of secondary stroke prevention: a quality improvement project

Michael Catapano (1), Laurel Laakso (1), Laurel Charlesworth (1), Robert D'Addazio (2), Alina Masood (1), Matt Kwan (2), John Luce (3), Janice Wright (3), Madelyn P. Law (1), Matthew Greenway (2), Linda Boich (4)

(1) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
(2) Faculty of Health Sciences, Brock University, St. Catharines, Ontario, Canada
(3) Hotel Dieu Shaver Health and Rehabilitation Centre, St. Catharines, Ontario, Canada
(4) Niagara Health System, St. Catharines, Ontario, Canada

Background: Secondary prevention of stroke is a clinically-based approach that aims to reduce the risk of recurrent stroke in patients previously diagnosed with a stroke or transient ischemic attack through addressing modifiable risk factors including smoking, hypertension and dyslipidemia. Early optimization of risk factors and rehabilitation of stroke patients is imperative in limiting reoccurrence, as the majority of health benefits are observed immediately after the initial illness [1]. Patients entering Hotel Dieu Shaver Health and Rehabilitation Center (HDSHRC) potentially wait 3 to 4 days before full admission. The physical condition of these patients, therefore, may change resulting in an inaccurate baseline of their function.

Methods: Our team aims to examine the admission process in order to locate the most critical point of influence at HDSHRC to ensure that every patient admitted for stroke rehabilitation will have received maximal secondary stroke preventative care. Our knowledge of the admission process will be enhanced by conducting interviews with relevant staff and by our own observation of the admissions process for stroke patients. We will also administer needs assessment surveys to staff to identify areas for improvement and to provide an additional baseline for any changes we implement.

Results: Audits of nine patient charts revealed potential gaps in secondary prevention particularly in meeting target blood sugar and cholesterol. These chart audits will provide a baseline for comparing any changes implemented.

Conclusions: Through these efforts, our team will be able to identify where an intervention should be made and develop a relevant intake form to best address secondary stroke prevention.

Clinical and serologic patterns in a large Canadian pediatric cohort with celiac disease

Michelle Gould* (1), Jenna Dowhaniuk (1), Jorge Arredondo (2), Ji Cheng (3), A. Carpenter (1), Heather Mileski (1), Herbert Brill (1)

(1) Department of Pediatrics, McMaster Children's Hospital, McMaster University
(2) Department of Pathology, McMaster Children's Hospital, McMaster University
(3) Department of Clinical Epidemiology and Biostatistics, McMaster University

Background: The aims of this study were to fill several knowledge gaps which exist around pediatric celiac disease (CD) care. The primary aim of this study was to compare anti-TTG antibody levels 6 months after initiation of a gluten-free diet (GFD) and over the course of follow-up with levels at time of diagnosis to determine the progression of anti-TTG after initiation of a GFD in the North American pediatric CD population, something which has not previously been reported in the North American pediatric CD literature. We also sought to characterize a large cohort of North American children with celiac disease in terms of clinical characteristics at presentation and in follow-up upon initiation of a GFD.

Methods: A retrospective review of the medical records of all patients diagnosed with celiac disease at the McMaster Children's Hospital between 1996 and 2014 was completed. Participants required biopsy-proven celiac disease according to the Marsh criteria. Data abstracted included date of diagnosis, demographics, presenting complaint leading to referral, comorbidities, family history of celiac disease, height, weight, BMI, hemoglobin, MVC, ferritin, IgA and celiac serologic tests.

Results: Of the patients diagnosed with CD at the McMaster Children's Hospital between 1996 and 2014, 227 patients were identified who had biopsy proven CD. At 6 months post diagnosis, 64.7% of patients had a normal serum TTG. At 36 months post diagnosis, 95% of patients had a normal serum TTG. At presentation 18% of patients had a hemoglobin <115 g/L. Of these patients, 51.9% had a microcytic anemia and 48.1% had a normocytic anemia. At 36 months post GFD initiation 5% of patients had a hemoglobin <115.

Conclusions: We observed that the proportion of patients with a normalized serum TTG increased with time from diagnosis and initiation of GFD and that the percent of patients with anemia decreased over time upon initiation of the GFD. We also observed that at diagnosis, the majority of patients had a z-score for BMI in the normal weight category (as defined by the WHO).

Acute flaccid paralysis in Canadian children: literature review and retrospective cohort study

Kevin Jones (1), Maryam Fesharaki (2), Savitoj Khehra* (3), Alexandra Garbe (4)

1. Department of Pediatric Neurology, McMaster Children's Hospital, Hamilton, Ontario, Canada
2. Department of Pediatric Neurology, McMaster Children's Hospital, Hamilton, Ontario, Canada
3. Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada
4. McMaster University, Hamilton, Ontario, Canada

Background: Acute flaccid paralysis (AFP) is the rapid onset of muscle weakness with low tone and reduced reflexes. During the fall of 2014, clusters of children in North America presented with non-polio AFP. It coincided with an outbreak of respiratory illnesses caused by enterovirus-D68 (EV-D68) but no clear association has been established. Our hypothesis is that the infectious agents causing AFP cases are heterogeneous. The objectives of this research are to: (1) analyze clinical, radiological and microbiological findings of cases from McMaster Children's Hospital, and (2) compare cases with literature on the differential diagnosis, investigation and management.

Methods: After ethics approval, we identified patient charts from HHS records and completed pre-determined patient summary form. We also conducted a literature review to identify similar reports based on inclusion criteria and compared patient data to literature.

Results: Initial Presentation: Analogous to the literature, cases included prodromal illness followed by limb muscle weakness, without cranial nerve abnormalities.
MRI: There were similar findings including grey matter lesions affecting anterior horn cells.
Etiology: Many cases in the literature tested positive for enteroviruses, specifically EV-D68. Only one of our cases tested positive for enteroviruses, but all tested negative for EV-D68.
Recovery: In the literature many patients had long-term effects, while few made significant recoveries. Similarly, only one of our patients has shown significant improvement.

Conclusions: Our findings showed many similarities between the literature and our cases. There was insufficient evidence to suggest that EV-D68 or another virus is the cause of AFP. These findings support the hypothesis that the infectious agents may be heterogeneous. Therefore, it is important to continue further research to identify the variety of agents that may be responsible for non-polio AFP.

MicroRNA signature helps distinguish early from late biochemical failure in prostate cancer

Zsuzsanna Lichner (1,2), Annika Fendler (3), Carol Saleh* (1,4), Aurfan N. Nasser (2), Dina Boles (1,2) , Sahar Al-Haddad (2), Peter Kupchak (5), Moyez Dharsee (5), Paulo S. Nuin (5), Kenneth R. Evans (5), Klaus Jung (6), Carsten Stephan (6), Neil E. Fleshner (7) and George M. Yousef (1,2).

(1) Department of Laboratory Medicine, Keenan Research Centre in the Li Ka Shing Knowledge Institute St. Michael's Hospital, Toronto, Canada
(2) Department of Laboratory Medicine and Pathobiology, University of Toronto, Toronto, Canada
(3) Max Delbrück Centrum (MDC) for Molecular Medicine, Berlin, Germany
(4) Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario
(5) Ontario Cancer Biomarker Network, MaRS Centre, Toronto, Canada
(6) Department of Urology, University Hospital Charité, Berlin, Germany
(7) Department of Surgery, University Health Network, Toronto, Canada

Background: Prostate-specific antigen testing has led to overtreatment of prostate cancer (PCa). Only a small subset of PCa patients will have an aggressive disease that requires intensive therapy, and there is currently no biomarker to predict disease aggressiveness at the time of surgery. MicroRNAs (miRNAs) are reported to be involved in PCa pathogenesis.

Methods: This study involved 105 participants. For the discovery phase, prostatectomy samples were dichotomized to high-risk (n = 27, biochemical failure <36 months after prostatectomy) and low-risk groups (n = 14, ≥36 months without biochemical failure). Expression of 754 mature miRNAs was compared between the 2 groups. Linear regression models were built to accurately predict biochemical failure risk. miRNA mimics were transfected into PCa model cell lines to test effects on proliferation and to deduce responding signaling pathways.

Results: We identified 25 differentially expressed miRNAs between the biochemical failure risk groups. Based on the expression of 2–3 miRNAs, 3 logistic regression models were developed, each with a high positive predictive value. Candidate miRNAs and the best-performing model were also verified on an independent PCa set. miRNA-152, featured in the models, was further investigated by using cell line models and was shown to affect cell proliferation. Predicted interaction between miR-152 and (mRNA)ERBB3 (erythroblastic leukemia viral oncogene homolog 3) was experimentally validated in vitro.

Conclusions: miRNAs can help to predict biochemical failure risk at the time of prostatectomy.

Developing experiential interprofessional education opportunities in McMaster's preclerkship medical curriculum: a quality improvement project

Laura E. Walmsley* (1), Melanie K. Fortune* (1)

(1) Michael G. DeGroote School of Medicine, McMaster University, Niagara Regional Campus, St. Catharines, Ontario, Canada

Background: Despite an emphasis on healthcare collaboration within McMaster's Faculty of Health Sciences, there is a lack of experiential interprofessional education (IPE) for preclerkship medical students. As a result, students lack practical knowledge of allied health professionals' scopes of practice and means of effective interdisciplinary collaboration, potentially limiting the effectiveness and safety of patient care. The aim of this project is to improve this by creating interprofessional training opportunities whereby pre-clerkship medical students are taught by and work alongside nonphysician healthcare professionals.

Methods: A Quality Improvement approach will be used for this project. Literature on current IPE practices for pre-clerkship medical students will be reviewed. A needs assessment will be conducted by survey administration to McMaster medical students to assess self-rated knowledge of interdisciplinary roles and means of collaboration, IPE learning needs, and the utility of the proposed intervention. Utilizing the existing relationship between McMaster's Niagara Campus and the Niagara Health System, a sample of first-year medical students will participate in a pilot elective in general medicine nursing, where they will experience IPE in a hospital setting. Participants' knowledge and attitudes will be assessed before and after participation. If effective, the program will expand to incorporate medical student learning from other healthcare professionals in alignment with curriculum content (i.e. midwifery during obstetrics unit) through further Plan-Do-Study-Act cycles.

Results: Findings of the literature review and needs assessment, the first two phases of this quality improvement project, will be shared. Quality improvement tools will be used to summarize reasons for current limitations in IPE. Preliminary reflections from the pilot project design phase will also be highlighted.

Conclusions: Promoting early integration of experiential, relevant IPE in the medical pre-clerkship curriculum has the potential to not only improve the quality of McMaster's medical program, but also the quality of future health care teams.

Improving the efficacy, timeliness, and safety of personal physical exam coverage in McMaster medicine's pre-clerkship clinical skills education

Sarah Hanik* (1), Nicole Jedrzejko* (1), Kristen Sestili* (1), Leigh Skelley* (1)

(1) Michael G. DeGroote School of Medicine, Niagara Regional Campus, McMaster University, St. Catharines, Ontario, Canada

Background: Based on our review of research, as well as anecdotal conversations with upper year students, performing personal exams and techniques (i.e., Pap smear, female pelvis, breast exams, prenatal exams, male genitalia, and digital rectal exams) can be intimidating and awkward. These two feelings are not conducive to learning, as they make the learning environment feel unsafe, prevent students from learning effectively, and leave students and patients feeling unsatisfied with their competence in exam performance. We would like to mitigate these difficulties by identifying the problems with the current training of personal exams and introduce an intervention so students can leave their pre-clerkship feeling confident and skilled in more intimate examinations.

Methods: The goals of this project can be divided into those with short-term and long-term implementation. The short-term goals can be implemented within months. These goals involve the initial collection of information from students. This will be done using two needs assessment surveys; one will go to the classes of 2015 and 2016 to determine how effective the teaching of personal exams has been in the past and one will go to the class of 2017 to determine whether students have already had to perform personal exams without training, what their comfort level was with performing them, and what methods of teaching will suit their learning needs best. This data will be used to shape a second potential Personal Exam Night in MF4 (which would serve as a complementary learning opportunity to the April 9th Personal Exam Night #1). Long-term goals will include making changes to the methods of teaching personal exams (e.g., more practice sessions, a second personal example night, earlier introduction to the personal exam, including portions of learning personal examination in professional competencies) and standardization of the curriculum between each of the McMaster's campuses.

Here are the links to our surveys:
• Classes of 2015-2016: http://goo.gl/forms/aqUUhg0n1Y
• Class of 2017: http://goo.gl/forms/RDmUxpcf6g

Results: Since this project is projected for completion by 30 April 2015, we will be collecting and analyzing data within March 2015. Results TBD.

Conclusions: Conclusions TBD.