McMaster Medical Student Research Day (MMSRD) was first founded in 2010 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. This year’s event showcased over 80 abstract presentations in all avenues of research including the basic sciences, clinical research, medical education, population health, and health policy. This year, the MMSRD committee recognized McMaster students’ penchant for quality improvement research and introduced a separate award category for these projects given the distinct nature of this work and accessibility to medical students.

Moving forward, MMSRD will hopefully continue to grow and provide important cross-talk opportunities for medical students and the broader community.

ORAL PRESENTATIONS – Non QI

FIRST PLACE

Title: Ara h 1 peptide treatment protects against severe peanut-induced anaphylaxis

Authors: Elizabeth Simms*, Jennifer Wattie², Susan Waserman³, Manel Jordana⁴, Mark Larché⁵

1 Michael G. DeGroote School of Medicine, McMaster University, Hamilton, ON, Canada
2 Firestone Institute for Respiratory Health, Hamilton, ON, Canada
3 Department of Medicine, McMaster University, Hamilton, ON, Canada
4 McMaster Immunology Research Centre (MIRC), McMaster University, Hamilton, ON, Canada
5 Division of Clinical Immunology & Allergy, Department of Medicine, McMaster University, Hamilton, ON, Canada

ABSTRACT:

Background:

Peanut allergy has doubled in prevalence in the past 10 years and accounts for the majority of fatal reactions to foods, yet there is a marked absence of disease-modifying therapies available for peanut-allergic patients. Peptide immunotherapy, a disease-modifying treatment that uses short peptides representing major allergen T cell epitopes, has been shown to reduce symptoms of allergic rhinoconjunctivitis. This study evaluated the ability of peptide immunotherapy to protect against anaphylaxis in a murine model of peanut allergy.

Methods:

We identified a novel peptide from the major peanut allergen Ara h 1 that is recognized by C57Bl/6 mice. Mice were sensitized to peanut epicutaneously and treated 1 week later with 2 intraperitoneal injections of peptide, 1 week apart. We included 6 doses, ranging from 0.01 ug to 300 ug of peptide. Mice were subsequently challenged with whole peanut extract and evaluated for signs of anaphylaxis. They were monitored over a period of 40 minutes for clinical signs of allergic reaction, changes in rectal temperature, and vascular leakage.

Results:

Peptide immunotherapy provided significant protection against anaphylaxis in a dose dependent manner. Mice that received 100 ug of Ara h 1 peptide exhibited the highest level of protection. Control mice treated with saline experienced a mean maximum temperature drop of 7.4°C, while mice receiving 100 ug of peptide experienced a drop of 2.0°C (p=0.01 vs control). Maximum mean clinical score was 4.0 in control mice, and 1.8 in treated mice (p=0.002). Mean hematocrit for control mice was 56.4%, and 48.9% for treated mice (p=0.16).

Conclusion:

One T cell epitope-containing peptide from a single major peanut allergen can protect against anaphylaxis elicited by whole peanut extract challenge.
McMASTER UNIVERSITY MEDICAL JOURNAL

VOLUME 13, ISSUE 1  |  2016

SECOND PLACE
Title: Making patient values visible in healthcare: a systematic review of tools to assess patient treatment priorities and preferences in the context of multimorbidity
Authors: Gaibrie Stephen

THIRD PLACE
Title: A Prospective Study to Investigate Predictors of Relapse among Patients with Opioid Use Disorder Treated with Methadone
Authors: Leen Naji, Brittany B. Dennis, Monica Bawor, Carolyn Plater, Guillaume Pare, Andrew Worster, Michael Varenbut, Jeff Daiter, David C. Marsh, Dipika Desai, Lehana Thabane and Zainab Samaan

ORAL PRESENTATIONS – QI

FIRST PLACE **TIE**
Title: Evaluation of access of antenatal care in Matangwe, Kenya and surrounding communities
Authors - Joanne E. Kearon*1,2, Olivia Kwan1,2, Alison Mikelsons1,2, Andrew Costa1
1 Michael G. DeGroote School of Medicine, McMaster University, Kitchener-Waterloo, ON, Canada
2 Caring Partners Global, Kitchener, ON, Canada

ABSTRACT:
Background:
Access to antenatal care (ANC) is a key component of achieving the World Health Organization’s Millennium Development Goal of improving maternal health. Yet, research has shown that access to quality ANC is still lacking in many areas of the world. Moreover, the barriers to access are highly heterogenous, varying even within countries. Therefore, a qualitative study was undertaken to identify barriers to access of ANC in Western Kenya in order to provide recommendations to improve access.

Methods:
25 women from Matangwe, Kenya and surrounding villages who had an infant within the last 2 years were interviewed via a translator. Their responses to a standard set of questions were coded and qualitatively analyzed for themes.

Results:
All of the women interviewed attended ANC for each of her pregnancies. However, in 42% of pregnancies, ANC was begun late, after the recommended 12 weeks. Reasons for late initiation and choice of facility were mainly practical, including distance and cost. Experiences of ANC were highly variable, depending on facility and social standing.

Conclusion:
Our findings indicate that ANC is readily available in this region, but women purposely delay initiating ANC due to cost. These barriers could be lessened by switching to the WHO’s model of ANC that recommends only 4 visits, rather than the current monthly visits. As well, efforts should be made to standardize the quality of care being administered throughout the region.

Title: Horizontal Elective for Interprofessional Growth & Healthcare Team Enhancement (HEIGHTEN): A quality improvement project
Authors: Laura E. Walmsley, RN BNSc1, and Melanie K. Fortune, MPH BSCh1
1 Michael G. DeGroote School of Medicine, McMaster University, Niagara Regional Campus, St. Catharines, Ontario, Canada

ABSTRACT:
Background:
Despite emphasis on interprofessional collaboration (IPC) within McMaster’s Faculty of Health Sciences, experiential interprofessional education (IPE) for pre-clerkship medical students is lacking. Students are unknowledgeable about other health professionals’ scopes of practice and lack confidence with IPC. This QI initiative seeks to assess and address this gap by piloting a horizontal elective for interprofessional growth and healthcare team enhancement (HEIGHTEN), whereby Niagara Regional Campus (NRC) pre-clerkship medical students learn from non-physician healthcare professionals at the Niagara Health System (NHS).

Methods:
A literature review of IPE methodology and a needs assessment survey of medical students were conducted. A small-scale pilot was administered in June 2015 with two pre-clerkship students learning from general medicine nurses. An expanded pilot of 20 students from the class of 2018 randomly allocated into three Plan-Do-Study-Act (PDSA) cycles is ongoing. Participants’ knowledge, confidence, and attitudes are assessed before and after participation using surveys adapted from evidence-based measurement instruments. Post-elective program evaluation surveys are also completed. Descriptive data analysis alongside key informant interviews with staff are used to make continuous improvements to spread and scale. Future PDSA cycles will include other disciplines and campuses.
MMSRD 2016 Recap and Winners

Results:
Eighty percent of students surveyed rate the existing IPE curriculum as ‘poor’ or ‘okay’ and ninety percent would prefer pre-clerkship IPE in clinical settings. Staff and students in the small-scale pilot provided positive feedback. Participation by over 70% of eligible students in the expanded pilot demonstrates strong engagement. Substantial improvement in student confidence with IPC, improved knowledge of the nursing role, and change in attitudes towards IPC have been observed during the first PDSA cycle of the expanded pilot.

Conclusion:
A novel initiative for Canadian medical schools, HEIGHTEN is anticipated to make an important contribution to IPE regionally and nationally. Contributing to positive interprofessional relationships in early training will improve future IPC, patient care, and safety.

SECOND PLACE
Title: Identifying Perceived and Unperceived Needs in Continuing Professional Development Through Needs Assessment Survey
Authors: Ada Gu, Khalid Azzam, Meghan McConnel, Arastoo Mokhtari, Aysha Arsha

THIRD PLACE
Title: Improving patient safety and streamlining care at a community hospital with a trauma care bundle
Authors: Tom de Kok, Elan Hahn, Ryan Andres, Allison Brown, Jeff Doyle

POSTER PRESENTATION – QI
FIRST PLACE
Title: Horizontal Elective for Interprofessional Growth & Healthcare Team Enhancement (HEIGHTEN): A quality improvement project
Authors: Laura E. Walmsley, RN BNSc, and Melanie K. Fortune, MPH BScH

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

ABSTRACT:
Background:
Despite emphasis on interprofessional collaboration (IPC) within McMaster’s Faculty of Health Sciences, early, meaningful interprofessional education (IPE) for pre-clerkship medical students is lacking. Students are unknowledgeable about other health professionals’ scopes of practice and lack confidence with IPC. This QI initiative seeks to assess and address this gap by piloting a horizontal elective for interprofessional growth and healthcare team enhancement (HEIGHTEN), whereby Niagara Regional Campus (NRC) pre-clerkship medical students learn from non-physician healthcare professionals at the Niagara Health System (NHS).

Methods:
A literature review of IPE methodology and a needs assessment survey of medical students were conducted. A Small-scale pilot was administered in June 2015 with two pre-clerkship students learning from general medicine nurses. An expanded pilot of 20 students from the class of 2018 randomly allocated into three Plan-Do-Study-Act (PDSA) cycles is ongoing. Participants’ knowledge, confidence, and attitudes are assessed before and after participation using surveys adapted from evidence-based measurement instruments. Post-elective program evaluation surveys are also completed. Descriptive data analysis alongside key informant interviews with staff are used to make continuous improvements to spread and scale. Future PDSA cycles will include other disciplines and medical school campuses.

Results:
The existing IPE curriculum was rated ‘poor’ or ‘okay’ by 80% of students participating in the needs assessment survey (N = 63). Preference for pre-clerkship IPE in clinical settings was indicated by 90%. Staff and students in the small-scale pilot provided positive qualitative feedback. Participation by over 70% of eligible students in the expanded pilot demonstrated strong engagement. Substantial improvement in student confidence with IPC, improved knowledge of healthcare team roles, and change in attitudes towards IPC have been observed during the first PDSA cycles of the expanded pilot.

Conclusion:
A novel initiative for Canadian medical schools, HEIGHTEN is anticipated to make an important contribution to IPE regionally and nationally. Contributing to positive interprofessional relationships in early training will improve future IPC, patient care, and safety.

SECOND PLACE
Title: Identifying Perceived and Unperceived Needs in Continuing Professional Development Through Needs Assessment Survey
Authors: Ada Gu, Khalid Azzam, Meghan McConnel, Arastoo Mokhtari, Aysha Arsha
POSTER PRESENTATION - Non-QI

FIRST PLACE

Title: Examining the role of perioperative nerve blocks in hip arthroscopy - a systematic review

Authors: Jeffrey Kay*, Darren de SA, Muzammil Memon, Nicole Simunovic, James Paul, Olufemi R Ayeni.

Background:
This systematic review examines the efficacy of perioperative nerve blocks for pain control following hip arthroscopy.

Methods:
The databases EMBASE, PubMed and Medline were searched on June 2, 2015, for English-language studies that reported on the use of perioperative nerve blocks for hip arthroscopy. The studies were systematically screened and data abstracted in duplicate.

Results:
Nine eligible studies were included in this review (two case reports, two case series, three non-randomized comparative studies, and two randomized controlled trials). In total, 534 patients (534 hips) with a mean age of 37.2 years who underwent hip arthroscopy procedures were administered nerve blocks for pain management. Specifically, femoral (two studies), fascia iliaca (two studies), lumbar plexus (three studies) and L1 and L2 paravertebral (two studies) nerve blocks were used. All studies reported acceptable pain scores following the use of nerve blocks and four studies showed significantly lower postoperative pain scores acutely with the use of nerve blocks over general anesthesia alone. The use of nerve blocks also resulted in a decrease in opioid consumption in four studies and provided a higher level of patient satisfaction in two studies. No serious acute complications were reported in any study and long-term complications from lumbar plexus blocks, such as local anesthetic system toxicity (0.9%) and long-term neuropathy (2.8%) were low in incidence.

Conclusion:
The use of perioperative nerve blocks provides effective pain management following hip arthroscopy and may be more effective in decreasing acute postoperative pain and supplemental opioid consumption than other analgesic techniques. Future research is needed to compare techniques and develop a standardized approach.

SECOND PLACE **TIE**

Title: "My baby is growing small—help!" An exploration on Mumsnet of pregnant women’s experiences of carrying a small for gestational age fetus

Authors: Cassidy, LF., Collins, CA., Kciuk, O., Ryan, S., Kennedy, S., Kelly, B., Dhillon, S.

Title: HEART - Health and equity through advocacy, research, and theatre

Authors: Rahat Hossain, Mo Moore, Natalie Ramsay, Mike Milo