SREMI

Schwartz/Reisman Emergency Medicine Institute

Annual Report

2015

SREMI Report 2015

Content

Mission

Vision

Values

Values

To respect the autonomy of our patients by incorporating both evidence-based medicine and shared decision making principles to optimize healthcare delivery in the emergency department.

Mission

To advance the discipline of emergency medicine and improve health through research, knowledge translation and education.

Vision

To be national and international leaders in the development, implementation and promotion of evidenced-based best practice in emergency medicine. We will improve patient care by conducting meaningful clinical research, disseminate new knowledge through innovative education strategies and advocate for system improvement through better public policy in Ontario and beyond.

Welcome from the Director

Emergency medicine is a critical component of modern healthcare. It is the interface between the community and the hospital. The number of Canadians visiting emergency departments (ED) increases by 5% every year. At the same time, our aging population continues to grow and requires more frequent, complex care and use of health resources. The efficient provision of high quality care in this environment is one of the biggest challenges in healthcare today.

Central to the task of providing high-quality care in this environment is research specifically addressing the unique challenges of caring for patients in the ED, and an effective educational framework for the dissemination of new knowledge generated. The goal of the Schwartz/Reisman Emergency Medicine Institute is to change practice and improve patient care by conducting meaningful clinical research, and translating these results into practice through education. Based in Toronto (one of the largest hubs of medical research and teaching in the world), a partnership of Mount Sinai Hospital and North York General Hospital, leading teaching hospitals, we are ideally situated to do this work.

Our network brings together some of Canada's leading emergency medicine educators and researchers with expertise in patient care, efficiency, care of the elderly, education, simulation and research. We will work hard to improve the effectiveness and efficiency of emergency departments, train the next generation of emergency department healthcare providers, and attract the world's best and brightest minds in the field, all with the goal of improving patient care.

I want to thank Gerald Schwartz and Heather Reisman, Mount Sinai Hospital and North York General Hospital leadership, our academic partners, and many others for their support and commitment to making our vision a reality. I invite you to read this report and learn more about our progress to date.

Dr. Bjug Borgundvaag PhD MD CCFP(EM)

Director, Schwartz/Reisman Emergency Medicine Institute


Advancing
emergency medicine care
COLLABORATION

International Advisory Board

The IAB acts in an advisory capacity to the Director of SREMI to:

- Generally engage interdisciplinary thinking, stimulate dialogue, provide advice on shaping the research agenda and catalyse research, education, consulting, advocacy and public policy initiatives
- Provide strategic advice on the activities and direction of SREMI with the goal of making SREMI the international leader in emergency medicine research and related teaching

DR. BRIAN ROWE

Dr. Brian Rowe is an emergency physician and senior scientist at the University of Alberta in Edmonton, Alberta, Canada. Dr. Rowe is a Professor within the Department of Emergency Medicine and former Associate Dean (Clinical Research) within the Faculty of Medicine & Dentistry, University of Alberta. He holds a Tier I Canada Research Chair in Evidence-based Emergency Medicine and is the Scientific Director of the Emergency Strategic Clinical Network for Alberta Health Services Dr. Rowe is the Editor of a textbook entitled "Evidence-based Emergency Medicine" and is the Co-Editor for the Cochrane Airways Group and a Fellow of the Canadian Academy of Health Sciences.

DR. LYNN WILSON

Dr. Lynn Wilson is Professor and Chair of the Department of Family and Community Medicine (DFCM) at the University of Toronto. She has been the co-director of BRIDGES, a Ministry of Health funded project to support the design and implementation of innovative models of care that promote integration in the healthcare system. Dr. Wilson is also the Co-Primary Care Lead for Choosing Wisely Canada. Her current global health work in the department includes working with medical faculty at Addis Ababa University to implement a first-ever family medicine residency program in Ethiopia. In 2016, Dr. Wilson will be taking on a new leadership role as the Vice-Dean, Partnerships in the Faculty of Medicine, University of Toronto.

DR. FRANK SULLIVAN

Dr. Frank Sullivan is the Gordon F. Cheesbrough Chair at North York General Hospital and Director of UTOPIAN, the University of Toronto Practice Based Research Network. He is a physician in the Family Medicine Teaching Unit at North York General Hospital and a professor in the Department of Family & Community Medicine and Dalla Lana School of Public Health, University of Toronto. Dr. Sullivan is also an Adjunct Scientist for the Institute for Clinical Evaluative Sciences (ICES) and an honorary professor in the medical school at the University of Dundee.

DR. MATTHEW COOKE

Dr. Matthew Cooke is the Director of Strategy and the Deputy Medical Director for the Heart of England National Health Service (NHS) Trust. Dr. Cooke is the professor of Clinical Systems Design at Warwick Medical School at the University of Warwick in Coventry, England. He is also an honorary professor in the Department of Engineering at Brunel University in Uxbridge, England. Dr. Cooke has been named in the Health Service Journal as one of the Top 100 most influential clinical leaders in the UK in both 2013 and 2014. In 2015, Dr. Cooke was chosen as a World Health Organization advisor on emergency care.

Service as an IAB member is voluntary. The committee reflects a diversity of interdisciplinary thinking and expertise in emergency medicine and related fields across the international health research community and society at large.

DR. JOHN MCLAUGHLIN

Dr. John McLaughlin is a professor of epidemiology at the Dalla Lana School of Public Health, University of Toronto in Toronto, Ontario, Canada. Dr. McLaughlin serves as the Chief Science Officer and senior scientist at Public Health Ontario. He has published extensively and leads interdisciplinary teams in large, population-based studies to identify cancer causes and prevention strategies. In particular, Dr. McLaughlin is interested in how the interaction of environmental and genetic factors leads to illness in the population. Dr. McLaughlin has more than 160 peer-reviewed publications.

DR. MICHAEL SCHULL

Dr. Michael Schull is a specialist in Emergency Medicine at Sunnybrook Health Sciences Centre. He is also the President and CEO, and a senior scientist, at the Institute for Clinical Evaluative Services (ICES) in Toronto, Ontario, Canada.

Dr. Schull is a professor in the Department of Medicine, and the Director of the Division of Emergency Medicine at the University of Toronto. He was previously the Co-Chair of an Expert Panel advising the Ontario Ministry of Health on health policies relating to its ED Wait Time Strategy. Dr. Schull was honoured as a Canadian Institutes for Health Research (CIHR) Applied Chair in Health Services and Policy Research.

DR. JIM CHRISTENSON

Dr. Jim Christenson is an emergency physician and professor at the University of British Columbia in Vancouver, British Columbia, Canada. Dr. Christenson serves as the Head of the Academic Department of Emergency Medicine in the Faculty of Medicine at the University of British Columbia. He serves as the Principal Investigator for British Columbia in both the Resuscitation Outcomes Collaboration and the Canadian Resuscitation Outcomes Consortium. Dr Christenson has published many studies, including an early discharge rule for patients with chest pain.

DR. CHRISTOPHER CARPENTER

Dr. Chris Carpenter is an emergency physician and Director of evidence-based medicine for the Washington University School of Medicine in St. Louis, Missouri, United States. Dr. Carpenter is an Associate Professor within the Department of Emergency Medicine, Washington University School of Medicine. He serves as the associate editor of Academic Emergency Medicine and the Annals of Internal Medicine ACP Journal Club. Dr. Carpenter has first-authored geriatric emergency department guidelines, developed a consumer-driven Evidence-Based Diagnostic series, and has worked with Washington University in St. Louis' Alzheimer's Disease Research Center to develop effective models of care for dementia patients.

A Message from the Executive Liaison Committee

The Schwartz/Reisman Emergency Medicine Institute was established in November 2013 by a founding gift from our patrons, Gerald Schwartz and Heather Reisman. It is a partnership of Mount Sinai Hospital (now part of the Sinai Health System) and North York General Hospital and our Departments of Emergency Medicine in Toronto. Our vision is to advance the discipline of emergency medicine through the development of new knowledge (research) and translating that knowledge into practice (knowledge translation) as well as advocating for system improvement through better public policy.

The partnership brought together two hospitals that already knew each other well and collaborated extensively; Mount Sinai brought strength in research and education including simulation, North York added its national reputation in continuing medical education, and presence in the rapidly growing world of online education. The patient populations are complementary as well; Mount Sinai is located in the inner city while North York is a busy suburban ED with an Urgent Care Centre, together we have over 200,000 patient visits/year.

The first two years included appointing our inaugural director; Dr. Bjug Borgundvaag, and our research director, Shelley McLeod. Both are well known in the ED research community and have international reputations. We also appointed a Chair for our International Advisory Board, Dr. Brian Rowe, a noted emergency medicine researcher from Edmonton. He has helped us complete the board with an international list of distinguished emergency medicine scholars and we are excited to hold our first International Advisory Board meeting in November 2015 in Toronto. We will also Co-Chair a very exciting 2 day ED Administration conference in conjunction with the International Advisory Board meeting; many of our Board members will be speaking at the conference which is drawing an international audience of prominent emergency medicine leaders.

As you will see in our report, we have had exciting success already; from grants, abstracts and papers, to courses, blogs and podcasts we are off and running! Enjoy our first annual report, and thanks to our donors, staff, and our hospitals for the support and trust that has made this possible.

Howard Ovens MD FCFP (EM)

Kuldeep Sidhu MD CCFP (EM)

Advancing emergency medicine care

RESEARCH

The RAFF-2 Study

A Randomized, Controlled Comparison of Electrical versus Pharmacological Cardioversion for Emergency Department Patients with Recent Onset Atrial Fibrillation or Atrial Flutter (RAFF)

Hospital admissions for AF have increased by 66% over the past 20 years due to an aging population and a rising prevalence of chronic heart disease.

RAFF is the most common arrhythmia managed by emergency physicians and accounts for approximately one-third of hospitalizations for cardiac rhythm disturbances.

The overall mortality rate for patients with AF is approximately double that for patients in normal sinus rhythm.

Recent-onset episodes of atrial fibrillation and atrial flutter (RAFF) are cardiac rhythm problems where there is an irregular, rapid heart rate. Previous research has shown that doctors use a wide variety of treatment approaches in emergency departments (EDs) for RAFF and the Canadian Cardiovascular Society Guidelines indicate there have not been enough studies to know if the best treatment is to use an electrical shock (Shock Only) or drugs followed by shock (Drug-Shock).

SREMI researchers have partnered with Dr. Jeff Perry and Dr. Ian Stiell from the Ottawa Hospital Research Institute and investigators from 8 large Canadian EDs on a $1.2 million CIHR project that will study ED patients with rapid heart rate requiring urgent treatment to restore normal heart rhythm. We intend to conduct 2 randomized protocols within 1 study (partial factorial design) in order to answer 2 questions:

1. Will initial drug treatment followed by electrical shock if necessary (Drug-Shock) lead to more patients being converted to normal heart rhythm than a strategy of only electrical shock (Shock Only)?
2. Will the antero-posterior (back) pad position be more effective than the antero-lateral (front) position?

We hope to improve upon and standardize care, so that more ED RAFF patients are quickly and safely converted to sinus rhythm. We believe the results from this study will inform future efforts to create effective, safe, and efficient pathways for RAFF patient management in Canada.

Opiate Prescribing

Opiate Prescribing in Ontario Emergency Departments

Demand and production have skyrocketed

Demand for opiate medications has skyrocketed, with production increasing 5-fold worldwide over the last 20 years.

850% Oxycodone Rx increase

In Ontario, oxycodone prescriptions rose by a staggering 850% from 1991 to 2007.

1 in 8 deaths of those aged 25-34

One in 8 deaths in 25-34 year olds in Ontario is the result of prescription opiate overdose.

Demand for opiate medications, especially high potency formulations, has skyrocketed in the last two decades. Largely prescribed for chronic non-cancer pain, this well-intentioned increase in high potency opiate use has been associated with significant harm. One in 8 deaths in 25-34 year olds in Ontario is the result of prescription opiate overdose, and death from prescription opioid overdose, the vast majority of which are accidental, exceeds death from all traditional drugs of abuse combined. Much of the harm from opioid prescribing occurs in individuals with no record of a prescription, confirming that many prescribed opiates are being sold on the black market.

Little is known regarding opiate prescribing in the emergency department (ED). SREMI researchers have partnered with Dr. Tara Gomes and the Ontario Drug Policy Research Network to complete a large, population-based observational study using administrative data to clarify the role and contribution of emergency physicians (compared to other prescribers) in the initiation of opioids among patients in Ontario. We will also investigate the downstream impact of this initiation, including well-established indicators of potentially unsafe opioid use such as high dose use and hospitalization for drug toxicity.

We believe that documentation of prescribing practice by emergency physicians and exploring the potential consequences of this practice will inform a rational approach to the prescribing of opiate medications in the acute care setting.

UTI in the ED

Uncomplicated Urinary Tract Infections in the Emergency Department

Current guidelines do not recommend the routine use of urinary cultures to diagnose acute urinary tract infections in premenopausal, non-pregnant women unless there are complicating factors such as atypical presentation, structural abnormalities or recurrent infection/antibiotic use.

SREMI researchers recently conducted a retrospective chart review of women aged 18-39 years presenting to North York General and Mount Sinai Hospitals to determine the number of urine cultures ordered for women who presented to the emergency department (ED) with symptoms of uncomplicated UTI, and determine whether a culture result impacted subsequent management.

Of the 512 charts included in the analysis, 96.5% patients had a urinalysis, of which 93.7% had positive leukocyte esterase and 18.2% had positive nitrites. 370 patients (72.3%) had urine cultures performed, of which 63.8% were positive. 505 (98.6%) patients received antibiotics (53.9% Macrobid; 22.6% Ciprofloxacin; 15.0% Septra; 6.7% other; 1.8% not documented). Seven (1.9%) cultures grew organisms resistant to the prescribed antibiotic; two (0.5%) patients received new prescriptions.

For the majority of young female patients with uncomplicated UTI, urine cultures did not change management. However, the authors suggested when the diagnosis is uncertain based on symptomology and urinalyses alone, a urine culture may be warranted as approximately 40% patients prescribed an antibiotic did not actually have a UTI. Unnecessary treatment with antibiotics may cause exposure to multidrug resistant organisms, possible allergic reactions, and unnecessary risk to the patient.

UTI is the second most common condition leading to the prescription of antibiotics.

There are over 8 million outpatient visits for UTI in the US each year.

Rapid Sepsis Assay

Evaluation of Qvella Rapid Molecular Assay for the Detection of Bacterial and Fungal Pathogens in Blood

Over 30,000 Canadians are hospitalized each year and more than 30% patients will die because of sepsis. One key element of effective treatment is rapid identification of bloodstream pathogens and susceptibility testing via blood cultures. Currently, blood culture results take approximately three to five days to be completed. This is due to reliance on pathogen growth in a blood culture medium prior to species identification.

Development of a new technology by Qvella, an Ontario based molecular diagnostics company, allows for pathogen identification from whole blood sampling without the need for culturing. As a result, blood culture results can be available within hours as compared to days with traditional microbiology testing.

SREMI investigators have partnered with the scientists at Qvella and colleagues in microbiology to study this new technology for emergency department patients with suspected sepsis. The objective of this prospective observational study is to compare blood culture results obtained with novel Qvella technology to conventional practice results for patient samples collected in the emergency department. It is our hope that rapid identification of microorganisms will allow physicians to expedite and tailor antimicrobial therapy for patients with suspected sepsis, resulting in improved clinical outcomes and a reduction in the use of unnecessary antibiotics.

The mortality rate for the more than 30,000 patients who are admitted to hospital in Ontario each year with the diagnosis of sepsis exceeds 30%.

18 million cases of severe sepsis occur worldwide each year.

The mortality rate increases by 8% with each hour of delay in starting antibiotics.

Alcohol Withdrawal in the ED

Clinical Institute Withdrawal Assessment-Alcohol revised (CIWA-Ar)

More than just an uncomfortable condition, alcohol withdrawal is potentially dangerous; improperly treated patients commonly develop seizures, and some progress to delirium tremens which can be life threatening. In order to effectively deal with alcohol withdrawal in the emergency department (ED), clinicians must be able to 1) confidently identify patients in alcohol withdrawal, 2) determine which patients require treatment (not all will), and 3) understand the pharmacology of the medications primarily used to treat alcohol withdrawal (benzodiazepines), and the correct way to administer them.

While simplistic in principle, in practice treating alcohol withdrawal is a difficult task. Patients in alcohol withdrawal often have complex psycho-social, behavioural and polysubstance abuse issues which make them challenging to deal with. Administered incorrectly, benzodiazepines result in excessive sedation, potentially causing respiratory depression, prolonged ED length of stay and hospital admission. Additionally, benzodiazepines are commonly sought for secondary gain (they are highly addictive and often diverted to the black market). Given the complexity of the condition, and its treatment, it is perhaps not surprising that patients in alcohol withdrawal spend up to three times longer in the ED than other patients with similar CTAS scores.

The best way to manage alcohol withdrawal is using a symptom guided approach, in which patients are administered large

Tremor
is the most objective and reliable indicator of withdrawal severity

Approximately 50% of the North American population over the age of 12 consume alcohol on a regular basis.

Up to 30% of ED visits are in some way related to the consumption of alcohol.

Each year, over 500,000 patients are treated pharmacologically for alcohol withdrawal in US emergency departments.

doses of benzodiazepine medications early on in their treatment when symptoms are most severe, with treatment discontinued once symptoms are manageable. This results in shorter times to symptom resolution and lower overall doses of benzodiazepines administered with no increase in adverse outcomes compared to *ad hoc* or fixed dose treatment. The Clinical Institute Withdrawal Assessment-Alcohol revised (CIWA-Ar) is the most commonly used clinically validated tool for assessing alcohol withdrawal severity. Though it is the gold-standard, the CIWA-Ar is complex to administer (half the domains are subjective and difficult to quantify), and requires significant experience to reliably use. Among the domains assessed by the CIWA-Ar, tremor is the most objective and reliable indicator of withdrawal severity, yet still, the ability of clinicians to reliably quantify tremor is highly dependent on experience.

The assessment and management of alcohol withdrawal is not routinely taught to either physicians or nurses. Researchers at SREMI are in the process of developing and evaluating educational resources which will teach clinicians how to properly administer the CIWA-Ar, and to use this information to apply a symptom guided approach to the management of alcohol withdrawal. Our program uses e-learning modules and high fidelity simulation, and is centered on the use of an iOS app which calculates the CIWA-Ar and uses the accelerometer in the iPhone to objectively quantify tremor. The tremor assessment tool has been validated prospectively, and performs much better than standard clinical assessment. We anticipate that these resources will be effective, easily disseminated, and widely impact and improve the care of patients with alcohol withdrawal.

Head Injury Study

15-50% of patients with a mild traumatic brain injury (MTBI) will develop post-concussive syndrome.

600 people per 100,000 experience head injury annually in Ontario.

Head injury is one of the leading causes of disability in individuals under the age of 45.

Mild Traumatic Brain Injury Study: The Influence of Cognitive Rest and Graduated Return to Usual Activities Emergency Department Discharge Instructions on Symptoms of Mild Traumatic Brain Injury.

It is estimated 15-50% of patients with a mild traumatic brain injury (MTBI) diagnosed in the emergency department (ED) will develop post-concussive syndrome (PCS). Although expert consensus recommends cognitive rest and graduated return to usual activities, these interventions are not based on prospective clinical evidence.

SREMI scientists have recently completed a pragmatic, randomized trial of adult (18-64 years) patients presenting to the ED with chief complaint 'head injury' occurring within 24 hours of ED visit. The objective was to determine if patients randomized to graduated return to usual activity discharge instructions had a decrease in their Post-Concussion Symptom Score (PCSS) 2 weeks after MTBI compared to patients who received usual care MTBI discharge instructions.

118 patients were enrolled in the study (58 in the control group and 60 in the intervention). There was no difference with respect to change in PCSS at 2 weeks (10.5 vs 12.8; Δ 2.3, 95% CI: 7.0, 11.7) and 4 weeks post-ED discharge (21.1 vs 18.3; Δ 2.8, 95% CI: 6.9, 12.7) for the intervention and control groups, respectively. The number of follow-up physician visits and time off work/school was similar when the groups were compared.

Based on preliminary data, graduated return to usual activity discharge instructions do not impact rate of resolution of MTBI symptoms 2 weeks after ED discharge. Given that patients continue to experience low to moderate symptoms 2 weeks after MTBI, more investigation is needed to determine how best to counsel and treat patients with post-concussive symptoms.

RN Pain Study

12.2% of Canadians report experiencing moderate or severe pain on a daily basis.

Pain is the most common reason why patients come to the ED.

Previous studies have estimated that at least 50% of patients come to the ED with a main complaint related to pain.

Does a brief, nurse-initiated therapeutic conversation improve patient satisfaction with acute pain management in the emergency department compared to standard care?

Pain is the most common reason why patients come to the emergency department (ED). Previous studies have estimated that at least 50% of patients come to the ED with a main complaint related to pain. Despite this, we know the management of patient pain within the ED setting is poor. The way patients experience pain is quite variable from person to person. Factors such as history of pain, anxiety, individual pain threshold and uncertainty about what is causing the pain all contribute to perception of pain severity.

SREMI is providing research support to a group of our ED nurses at Mount Sinai Hospital to complete an RN initiated and driven randomized controlled trial to determine if a brief, nurse-initiated, therapeutic conversation improves patient satisfaction with pain management compared to standard care for adult patients presenting to the ED with moderate to severe pain. Secondary objectives are to determine the type and total amount of analgesia given by emergency physicians and to document the initial and ED discharge pain scores. Our goal is to individualize the way we treat patients in pain and find the best way to ease their discomfort.

We believe this research has the potential to improve clinical care and satisfaction of patients, and will help develop evidence-based treatment strategies that emergency nurses and physicians may use to provide more structured care to patients with moderate to severe acute pain in the ED.

End-of-Life Care

End-of-Life Care in the ED

Patients with advanced and end-stage disease in need of symptom management and pain relief often present to the emergency department (ED). Previous research focusing on patients who were at the end-of-life found that these patients often did not receive the care they anticipated in the ED. Once in the acute care setting, the patient's objectives and goals may be in direct contrast to the ED strategies of life-prolonging treatment. 70% of hospitalized Canadian elderly patients reported wanting to focus on providing comfort rather than life-prolonging treatment, but 54% of these patients were admitted to intensive care units at the end of life. Providers of emergency care have a unique opportunity to support palliative care interventions, but some ED professionals may not identify palliative care within their scope of practice and/or may question the appropriateness of providing this care in the ED.

Lead by SREMI post-doctoral research fellow, Anastasia Tobin, SREMI investigators will collaborate with our palliative care colleagues on a mixed-methodology project to explore how end-of-life care is provided in the ED from various perspectives; including patient, family and provider views. Our goal is to conduct a high quality, rigorous study using qualitative methods to develop a rich understanding of the experiences and processes of care in the ED, and to promote awareness of key issues requiring attention. From this research, we hope to develop evidence-based strategies for education and practice to improve the quality of end-of-life care in the ED.

The Choosing Wisely campaign lists early involvement of palliative care in the ED as number 3 of the 5 top priorities for ED physicians.

70% of hospitalized elderly Canadians reported wanting to focus on providing comfort rather than life-prolonging treatment.

EDU-RAPID

The ED Ultrasonographic Regional Anesthesia to Prevent Incident Delirium (EDU-RAPID) Study

Hip fractures affect over 30,000 Canadians each year. Delirium, or acute confusion, occurs in up to 62% of patients following a hip fracture. Delirium doubles the risk of death and nursing home admissions, adds 8 days to the average hospital length of stay, and increases the burden on nursing staff. Ultrasound Guided Regional Anesthesia (USGRA) or nerve "freezing" is the optimal pain management strategy for hip fracture patients, and has been shown to independently reduce the rate, severity and duration of delirium. However, very few emergency physicians have the necessary training and experience to use USGRA for hip fracture in the emergency department (ED).

SREMI researchers have partnered with Dr. Jacques Lee from Sunnybrook Health Sciences Centre on a CIHR-funded, multi-center, cluster, randomized clinical trial to test whether a knowledge to practice (KTP) intervention to train, facilitate and encourage ED physicians to use USGRA can reduce new cases of delirium following hip fractures. We will measure the proportion of patients with incident delirium in the first 7 post-operative days among patients treated by ED physicians randomized to the KTP intervention group compared to patients treated by control group ED physicians.

This trial will be the largest randomized clinical trial to date, will be the first to use ultrasound guidance, and will be the first to initiate regional anesthesia at the earliest opportunity for all patients (i.e., in the ED). We believe this trial will help change practice and improve the care of older Canadians.

Hip fractures affect over 30,000 Canadians each year.

Each year, Canadians spend approximately $1 billion to treat hip fractures.

Delirium, or acute confusion, occurs in up to 62% of patients following a hip fracture.

FaMOUS

Implementation and Evaluation of a Family Medicine Obstetrical Point of Care Ultrasound (FaMOUS) Course

Family physicians (FPs) provide the majority of 1st trimester pregnancy care in Canada. For patients, it can be a time of great anticipation, but complications can occur, such as miscarriage, and less often, ectopic pregnancy. When patients in 1st trimester pregnancy present to their FPs with vaginal spotting and/or abdominal cramping, which occur in up to 40% of pregnancies, they are frequently referred to emergency departments to undergo US to exclude ectopic pregnancy.

Due to its ease of use, point of care ultrasound (POCUS) has a significant impact on 1st trimester pregnancy care in the ED. A brief, trans-abdominal assessment with a bedside ultrasound (US) can confirm a fetal heart beat by detecting a pregnancy inside the uterus, thus excluding ectopic pregnancy and deferring the need for urgent radiologist-interpreted US. However, POCUS has not been widely adopted by office-based FPs. Until now, no formal training existed for FPs who wished to use POCUS for 1st trimester indications.

In order to facilitate expedited care of pregnant patients and defer ED visits, particularly in resource-limited areas, we developed and implemented a 1st trimester POCUS certification course for FPs caring for pregnant patients in Ontario.

The Family Medicine Obstetrical UltraSound (FaMOUS) course is a two-day didactic and hands-on certification process whereby providers learn basic US techniques and indications for POCUS in uncomplicated, 1st

Family Medicine

Obstetrical Point of Care Ultrasound Course

trimester pregnancy. Under the guidance of Canadian Emergency Ultrasound Society (CEUS) Instructors, 13 FPs participated in the inaugural course in October 2015. All of the FPs successfully completed over 70 supervised US scans on pregnant and non-pregnant models.

The course evaluations were excellent, with enthusiastic comments such as, 'exceptional,' 'outstanding instructors,' and 'will change my clinical practice.' However, the most meaningful feedback we received was the FPs' first impressions using US on their own patients, as one FP describes the experience of showing her pregnant patient the fetal heart beat as 'amazing'.

As part of this inaugural course, US equipment has been provided to 3 Toronto clinics for use by FaMOUS certified providers. We will be documenting diagnostic accuracy, patient and provider satisfaction, and provider confidence over a one year period. Additionally, as the use of this imaging modality grows, we will evaluate outcomes such as cost effectiveness and impact on ED referrals.
It is our hope that FaMOUS will enhance family medicine maternity care in Canada and will establish a standard for FPs utilizing office-based POCUS for uncomplicated 1st trimester pregnancy issues.

SREMI BY THE NUMBERS*

Peer-Reviewed Grants Collaborator: Over $1.8 million

Peer-Reviewed Grants Primary Investigator: 9 studies funded for over $330,000

Non Peer-Reviewed Grants Primary Investigator: $50,000

15 peer-reviewed journal publications

2 authored book chapters

5 research excellence awards

16 Research abstracts presented at International meetings

22 Research abstracts presented at National meetings

17 Research abstracts presented at Local meeting

4 new research staff

Mentored 12 residents, 6 research nurses, 5 medical students, 2 PhD candidates, 1 research fellow

Academic Achievements & Awards

Promotion to Full Professor. Department of Family & Community Medicine; Faculty of Medicine; University of Toronto. **Dr. Howard Ovens**

Helen P. Batty Award for Excellence and Achievement in Faculty Development. Faculty of Medicine; University of Toronto. **Dr. Shirley Lee**

Excellence in Faculty Development Award. Department of Family & Community Medicine; Faculty of Medicine; University of Toronto. **Dr. Rick Penciner.**

Award of Excellence in Innovative Continuing Medical Education. College of Family Physicians of Canada. **Dr. Don Melady.**

The Physician Development Award. North York General Hospital. **Dr. Anton Helman.**

Excellence in Research in Professional Development. Professional Development Program; Department of Family & Community Medicine; Faculty of Medicine; University of Toronto. **Dr. Rick Penciner.**

Award of Excellence in Development and Use of Innovative Instructional Methods. Department of Family & Community Medicine; Faculty of Medicine; University of Toronto. **Dr. Don Melady.**

Undergraduate Teaching Award. Faculty of Medicine; University of Toronto. **Dr. Catherine Varner.**

Course Preceptor Award. Peters-Boyd Academy Portfolio; Faculty of Medicine; University of Toronto. **Dr. Sean Caine.**

Special Commendation in Integrated Medical Education for Sustained Excellence in Teaching. Faculty of Medicine; University of Toronto. **Dr. Rick Penciner.**

Canadian Geriatrics Society Peter McCracken Physician Innovator in Education Award. Dr. Don Melady.

Ivy Oandasan Leadership Award for Outstanding Leadership in Advancing Interprofessional Education. Centre for Interprofessional Education; University of Toronto. **Dr. Rick Penciner.**

3M Health Care Quality Team Award 2014 for Programs in an Acute Care Hospital Environment. 3M Canada. **Dr. Don Melady.**

* May 2014 to October 2015


Advancing
emergency medicine care
EDUCATION

ACES

The Advanced Critical Emergency Skills Procedures Course

Critically ill patients require acute resuscitation interventions in the emergency department setting that can mean the difference between life and death. The challenge in emergency medicine (EM) practice is that some procedures are done infrequently, which can result in stressful situations. Emergency practitioners face multiple challenges related to procedural skills, including the availability of local educational resources for regular practice of skills they have already been taught, and also accessing continuing medical education to keep up with advances in technique and equipment used in acute care medicine.

The Advanced Critical Emergency Skills (ACES) Procedures Course was created to help emergency healthcare practitioners learn and maintain basic and advanced acute care procedural skills. ACES is a practical, hands-on course that offers the unique opportunity for physicians to learn in a state of the art surgical skills centre using moderate and high-fidelity simulation models. Through interactive, small-group learning, participants have the opportunity to improve their acute care procedural skills in a safe and supportive environment with expert faculty, enabling them to effectively manage common and life-threatening conditions.

On completion of the course, participants should be able to describe basic principles and anatomical considerations for the basic and advanced EM procedures covered, practice safe and effective techniques for performing EM procedures, and be able

Dr. Shirley Lee, ACES Course Director

to recognize potential complications related to the EM procedures practiced.

The first ever SREMI ACES Procedures Course was held on November 1st 2015 and presented to a sold out audience.

The following procedures were taught:

1. Central venous access by internal jugular, subclavian, and femoral approach (anatomical and ultrasound-guided where indicated)
2. Tube thoracostomy
3. Percutaneous pigtail catheter thoracostomy
4. Thoracentesis (anatomical and ultrasound-guided)
5. Cricothyrotomy (open and closed technique)
6. Intraosseous catheter placement
7. Lumbar puncture with demonstration of ultrasound land-marking

Future courses will include a menu format for additional procedures to be taught, based on learning needs of the participants. Other procedures that will be available in future course iterations include: otolaryngology emergency procedures, ophthalmologic emergency procedures, advanced difficult airway and intubation techniques, arterial line insertion, and advanced ultrasound-guided procedures.

The ACES Procedure Course is accredited for Mainpro-C credits and Royal College of Surgeons and Physicians of Canada Section 1 Group Learning Activities credits, approved by the Canadian Association of Emergency Physicians.

"Great course…we learn these skills through other courses separately… but putting them all together in depth is brilliant."

"Excellent course! Useful for non-academic family docs."

"I am now more confident to perform (these) procedures myself."

EDAC

Emergency Department Administration Conference

The 2015 Emergency Department Administration Conference (EDAC) marks the first program that has been developed in collaboration with North York General Hospital and the Schwartz/ Reisman Emergency Medicine Institute. The conference is unique in that it is the only emergency medicine administration conference in Canada that offers the opportunity for emergency department leaders to meet and share their wisdom on a national platform.

This year's conference features prominent leaders in emergency medicine from across Canada and the US who will share their expertise in several areas related to emergency department patient care and service delivery. Topics highlighted in this year's conference include improving physician practice with a review of "Choosing Wisely" Canada and CAEP recommendations, how to implement science into emergency departments, e-Triage, collaborative emergency centres to help support low volume EDs, and a focus on important issues such as proper ED documentation, patient and family-centered care, strategies to improve patient off-load and a review of the current funding milieu for emergency medicine.

The rapidly growing influence of technology in the ED for helping to keep emergency physicians up to date will also be covered. We will showcase our innovative iOS CIWA-Ar app which includes a tremor assessment tool which objectively quantifies tremor severity as part of the overall assessment of alcohol withdrawal, and review how Free Open Access Medical Education is changing the face of education for emergency healthcare workers through Canadian resources such as SREMI's own EM-Cases and TREKK (Translating Emergency Knowledge in Kids).

Senior Friendly ED

Senior Friendly Emergency Department Course

20% of all people coming to an ED are over the age of 65 and and these rates are expected to increase to 30% by the year 2030.

Older patients have longer lengths of stay, higher admission rate, investigations, and more complex presentations than any other age group.

Currently there is no focused geriatric training in Canadian healthcare programs (e.g., medicine, nursing, social work).

Our Senior Friendly Emergency Department (SFED) Course is the first of its kind to focus on the myriad of issues faced by emergency departments in trying to improve care for seniors. As the number of people over the age of 65 increases significantly in the next decade, there will be a need for a whole-system approach to manage their care, which can be significantly more complex. In recognition of these issues and growing concerns regarding how the healthcare system will adapt, Geriatric Emergency Department Guidelines were published in 2014 as a consensus statement by the American College of Emergency Physicians, Scientific Assembly of Emergency Medicine, the American Geriatric Society, and the Emergency Nurses Association. Our speakers, Dr. Chris Carpenter, Dr. Tess Hogan, Dr. Ula Hwang and Dr. Don Melady were among the expert medical faculty involved in creating the guidelines. In addition, they have developed the Geriatric ED Bootcamp course which has been presented at American healthcare institutions.

The SFED Course will focus on ways to improve patient flow, patient and staff satisfaction, and discuss how the creation of senior friendly EDs can impact clinical outcomes. One key to creating a senior friendly ED is an interdisciplinary collaborative team. Elements of change needed to establish a senior friendly ED include: identifying department strengths and weaknesses related to taking care of older people, staffing patterns, addressing staff education, developing new policies and procedures (screening for high risk conditions e.g., delirium, dementia, polypharmacy and falls), transitions of care, and supporting senior-friendly quality improvement projects.

Registrants for the first ever SFED conference will be attending from large urban academic and small rural hospitals from Stanford University to Timmins, Ontario.

EM Cases Course

Emergency Medicine Cases: The Audio Program Where Experts Keep You in the Know

The EM Cases course combines the current effective principles of adult learning, namely small group problem-based learning, the flipped classroom and asynchronous multimodal learning, in a unique and intimate learning experience for participants.

The EM Cases podcasts are the springboard for learning and set the stage for the EM Cases Course. In this one day program, participants will have the opportunity to learn first hand the tacit knowledge and clinical pearls and pitfalls on a variety of topics from leading experts in emergency medicine.

Key clinical topics that participants can choose from will include anticoagulants and bleeding, airway strategies, orthopedic pearls and pitfalls and more. The course will feature the first ever Live EM Cases Podcast recording in which participants are encouraged to contribute to an EM Cases podcast, as well as a simulation workshop with expert commentary and feedback. Participants will also get access to a FOAMed bar where they can learn tips and tricks on how to navigate Free Open Access Medical Education resources from the EM Cases Team.

www.emergencymedicinecases.com

126 Podcasts

1,770,854 Total downloads

90,000 downloads per month

Each podcast is downloaded approximately 12,000 times.

MAPS-D

Methods of Adult Procedural Sedation for Dentists

This exciting collaboration with the Faculty of Dentistry at the University of Toronto was developed to improve patient safety and care for practicing dentists, dental anesthesia specialists, and oral maxillo-facial surgeons. Currently, a significant skills gap exists for dental procedural sedation management, and for the maintenance of Basic Life Support and Advanced Cardiovascular Life Support skills.

Three areas of continuing faculty development have been identified: medical emergencies in the dental office, the standardization of procedural sedation in the dental office setting, and advanced high-fidelity simulation training for challenging head and neck regional anesthesia. Important accessory techniques for proper anesthesia and complications are also being incorporated into the course design.

SREMI has taken the lead as experts in emergency procedural sedation and high-fidelity simulation in developing these innovative programs to improve patient safety and care. A focused needs assessment survey is currently underway to identify learning needs and to ensure that the curriculum is customized to meet the specific needs of dentists.

The courses will be taught by an inter-disciplinary group of expert emergency physician and dental anesthesia specialists, with a focus on interprofessionally-based learning environments. MAPS-D will review current requirements and guidelines related to adult mild to moderate deep sedation, as well as checklist and implementation tools in the dental office setting. Course highlights will include a review of pharmacology and airway management issues related to dental practice. Proposed course launch date: Fall 2016.

47% of adults have some form of periodontal disease. This increases to 70% in adults aged 65+.

Over 45% of dental patients have at least one risk factor in their medical histories, with cardiovascular diseases and allergies most frequent.

The overall incidence of dental anesthesia complications is 5%, with a significantly increased risk in medically complex patients.

GERI-ED.COM

An online resource to support the creation of senior friendly emergency departments in Ontario.

Due to the burgeoning proportion of people over the age of 65, the Ontario health care system is facing an unprecedented and overwhelming challenge to meet the increased need for health care in this population. Older people represent a complex subgroup of all consumers of health care. Their care is marked by unique issues that set them apart from the general population: multiple chronic diseases, several medications with potential interactions, the possibility of cognitive deficiency, atypical presentation of disease, numerous care providers, variable need for social support and presence of multiple impairments.

To meet the increased needs of this aging demographic, health care planners and hospital administrators must begin to alter the way care is structured and modify the way ED services are provided for an older population. Ensuring that Ontario's EDs are "senior friendly" will optimize the quality of care provided to this important group of patients and may lead to system-wide improvements in efficiency and patient outcomes for the next several decades.

Led by Dr. Don Melady, SREMI researchers are working to develop a structured, evidence- and best-practice-based resource to support Ontario's hospitals, and specifically EDs, in creating senior friendly EDs which are optimally prepared to manage the increased healthcare needs of older patients. This proposed free, open-access online resource will be user-friendly for clinicians and administrators with the goal of broad dissemination. It will be equally useful in large

Geriatric-ED Builds a senior friendly ED

academic sites and small community EDs to promote and facilitate the structural and process changes necessary to transform Ontario's EDs to senior friendly centres.

This innovative application proposes a solution to a challenge faced by EDs in Ontario by outlining a systematic way of improving the healthcare environment for our aging population. Secondly, it uses new technology to maximize knowledge translation about ways of implementing those improvements.

This new learning resource will build on the success of another popular website — www.geri-EM — also created by Dr. Melady and the SREMI team. That website, launched in 2013, is an educational resource, accredited by both Canadian medical colleges. It provides education for practicing physicians about excellent care of older people. It has had over 15,000 hits and continues to provide educational outreach to practitioners across Canada and around the world.

This resource will be widely available and has the potential to change the healthcare system by improving ED flow and discharge planning, decreasing hospital admissions, reducing early return to hospital and optimizing the care experience of elderly patients and their families.

EM CASES

Development of a Canadian emergency medicine open-access podcast: the Emergency Medicine Cases experience.

Internet-based medical education resources such as podcasts have increased in popularity in recent years, and have considerably changed the landscape of continuing medical education (CME). One advance has been Free Open Access Medical Education (FOAMed), which was born out of a desire from health care professionals for a free and easily accessible means of staying current with the rapidly advancing and wide scope of EM literature. EM Cases was created in 2010 by Dr. Anton Helman, and has undergone significant and continual improvements in order to stay current and relevant in the world of online CME.

lInitially available only as a paid subscription educational program, the long term viability of EM Cases was threatened by competition from a sea of popular free online EM resources. A successful partnership with SREMI has allowed EM Cases to be offered as a FOAMed resource and has brought financial stability as well as administrative and academic support to EM Cases. In the 18 months since this partnership agreement was struck, EM Cases has flourished, experiencing exponential growth in its listenership.

In a monthly podcast aimed at emergency department health care workers, host, Dr. Anton Helman poses clinical questions to guest experts, discussing current controversies and describing evidence-based treatments. The 126 episodes to date cover broad-based and clinically relevant topics including main episodes (round table discussions), 'Best Case Ever', and Journal

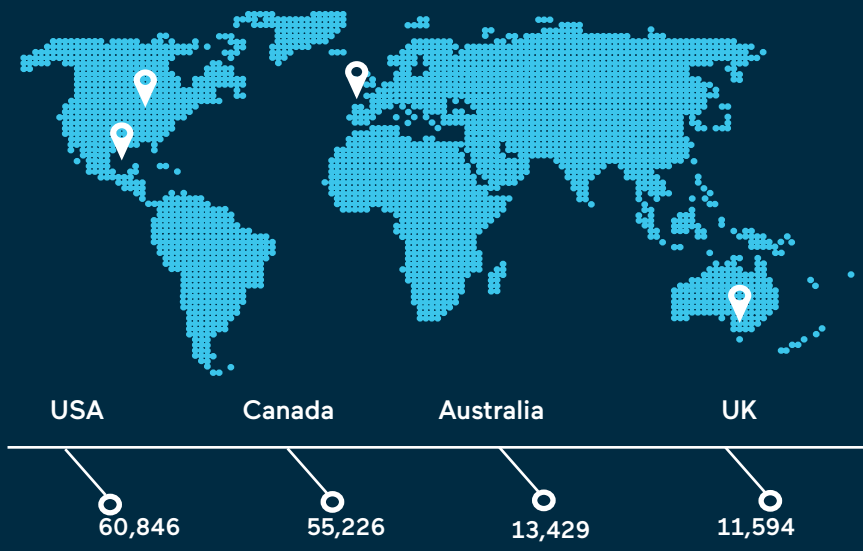
Jam (critical appraisal of literature). Since adopting a free model, website traffic has increased to greater than 190,000 users and podcast downloads have increased eight-fold to 90,000 monthly. One hundred and thirty-five listeners voluntarily filled out a survey on the EM Cases website, of which 90% felt that what they learned from an episode would change their practice, 90% felt they would be more confident the next time they saw a patient with the discussed condition, and 99% would recommend the episode to a colleague.

Dr. Howard Ovens, Director of the Schwartz/Reisman Emergency Centre, commented "The old format of peer-reviewed publications and expensive subscriptions is obsolete; the visionaries of the FOAMed world are innovators who can bring high-quality information to their peers in a much timelier and responsive medium." Dr. Ovens also now hosts a blog ("Waiting to be seen") on

EMERGENCY MEDICINE CASES
The Audio Program Where the Experts Keep You in the Know

issues in ED administration on the EM Cases website. To our knowledge, EM Cases is the only free-access EM podcast wholly funded and supported by a nonprofit academic institution. We believe the transition to free access contributed to the increase in EM Cases' accessibility, universality and immediacy, and the academic partnership, to its accountability and overall quality. In the future, we expect more academic programs will embrace the power of new media in disseminating high quality medical education.

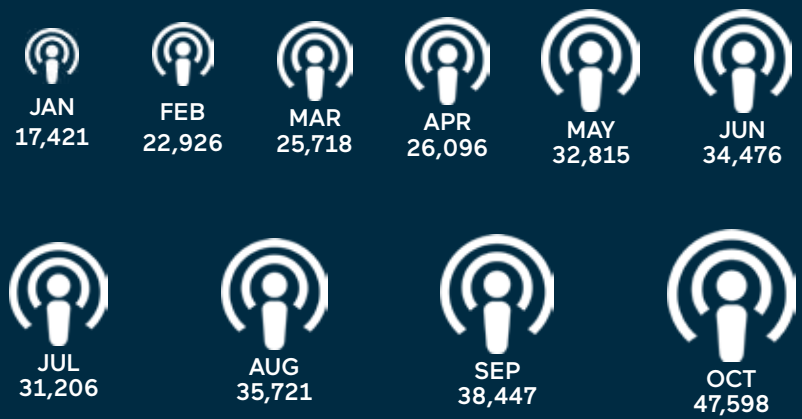
EM CASES AUDIENCE



AUDIENCE SESSIONS TO DATE

327,250 +

VISITORS PER MONTH 2015



ADDRESS

SREMI
Department of
Emergency Medicine,
Mount Sinai Hospital
600 University Avenue
Room 206
Toronto ON
M5G 1X5
CANADA

CONTACT

416-586-4800 ext 8330

sremi@mtsinai.on.ca

www.sremi.ca

SREMI

Layout by Wintrip Communication Design