NORTHERN HEALTH
RESEARCH CONFERENCE
2017

OCTOBER 13-14, 2017
THUNDER BAY, ONTARIO

LAKEHEAD · LAURENTIAN · MEDICINE

Northern Ontario School of Medicine
École de médecine du Nord de l'Ontario
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Lakehead UNIVERSITY

Please be sure to complete the
Northern Health Research Conference evaluation online at:
bit.do/NHRC_2017

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** A Lakehead University campus map is available on the inside back cover.*

Welcome Message from NOSM


Dr. Roger Strasser


Dr. Penny Moody-Corbett

Welcome to the Northern Ontario School of Medicine's (NOSM) 12th annual Northern Health Research Conference (NHRC). We are pleased to host this conference at Lakehead University in Thunder Bay, Ontario.

It's generally a common belief—amongst the public, at least—that research is something done by investigators with special training, in a research laboratory, wearing a white coat, and holding a test tube.

As researchers ourselves, we understand where that line of thinking might come from, but we know it is flawed. Researchers, health professionals, students, and community members are asking questions of relevance to the health of the peoples and communities of Northern Ontario. We may not immediately know the answers to these questions, however we can discuss them with colleagues, look at existing literature, and seek advice from other experts.

If you're joining us for the Northern Health Research Conference, you are part of that very network of individuals who are asking important questions and searching for answers. You are contributing to NOSM's vision of *Innovative education and research for a healthier North*.

To everyone who dedicated many hours to ensure that each of us enjoys an exceptional Northern Health Research Conference over the next two days, please accept our sincere thanks.

Whether you are joining us for the first or twelfth time, welcome and please enjoy the Northern Health Research Conference!

Dr. Roger Strasser AM
Professor of Rural Health
NOSM Dean and CEO

Dr. Penny Moody-Corbett
NOSM Senior Associate Dean
Associate Dean, Research

Northern Ontario School of Medicine
École de médecine du Nord de l'Ontario

Welcome Message from Lakehead University

On behalf of Lakehead University, I am pleased to welcome delegates to the 2017 Northern Health Research Conference.

Addressing the health challenges and health inequities within Northern Ontario communities is vitally important, and this endeavour must begin with research at all levels and partnerships. I wish to extend my sincere congratulations to NOSM and the organizers of the 2017 Northern Health Research Conference.

Conferences such as these provide a much-needed forum in which students, faculty, and practitioners can share ideas and best practices and work together to create and implement new practical initiatives. Research in health care and, in particular, research conducted in collaboration with Indigenous communities are priority areas for Lakehead University. I am proud of the collaboration that exists between Lakehead University, NOSM, and the Thunder Bay Regional Health Sciences Centre. Working towards a common agenda allows us to combine our strengths and resources to address pressing health care issues in Northern Ontario.

Dr. Andrew P. Dean
Vice-President, Research and Innovation
Lakehead University

A Message from MP Thunder Bay—Superior North

Hello and welcome to Thunder Bay-Superior North!

As a former public health worker, I know first-hand how much our region has come to rely on the health care and education provided by the students and faculty of the Northern Ontario School of Medicine. Thank you for everything that you have done and are about to do at the Northern Health Research Conference to improve health outcomes in our region.

We know that great research makes for great policy. As the Member of Parliament for Thunder Bay-Superior North, I am so grateful to see so many community-based research initiatives that will make our communities healthier in Northwestern Ontario.

Hon. Patty Hajdu
Member of Parliament
Thunder Bay—Superior North
Minister of Employment, Workforce Development and Labour

A Message from
MP Thunder Bay—Rainy River

It is my pleasure to have the opportunity to have the opportunity to attend the Northern Ontario School of Medicine's 12th annual Northern Health Research Conference today, and to have this chance to greet you all and thank you for your hard work on behalf of the people of Northern Ontario.

This important conference is an opportunity for students, researchers and residents to network, collaborate and to build upon the extremely important work of the Northern Ontario School of Medicine. It is a true demonstration of NOSM's commitment to the fields of health care and education, and to serve people in Northern Ontario and beyond.

I hope that while you are here you get the chance to enjoy our region's natural beauty and hospitality. Again, thank you all very much for your hard work, and welcome to Thunder Bay!

Don Rusnak
Member of Parliament
Thunder Bay—Rainy River
Parliamentary Secretary

A Message from MPP Thunder Bay—Superior North

It is with real pride and pleasure that I have been able to watch the birth and development of the Northern Ontario School of Medicine throughout my career as MPP for Thunder Bay-Superior North, and as Minister of Northern Development and Mines.

Since 2005, NOSM's campus has truly been all of Northern Ontario, extending from the academic and administrative centres and clinical and research partners in our cities, and reaching far outward to our province's most remote communities. If our focus this weekend is health research, we might begin by acknowledging the size and depth of our laboratory, and by recognizing the countless partners so enthusiastically engaged in developing educational and health-care delivery models to train medical professionals, meet the needs of our region with both traditional and innovative ideas and technology, and to embrace an ever-expanding vision and mission.

Have a wonderful and productive 2017 Northern Health Research Conference.

Hon. Michael Gravelle
Member of Provincial Parliament
Thunder Bay—Superior North
Minister of Northern Development and Mines

A Message from MPP Thunder Bay—Atikokan

I am very pleased to welcome everyone attending the Northern Ontario School of Medicine's 12th Annual Northern Health Research Conference being held in Thunder Bay.

As the MPP for Thunder Bay-Atikokan, I see firsthand the impact NOSM has had in Thunder Bay and the region. I know it has also had a similar impact right across Northern Ontario. The School has not only made a difference in patient outcomes for people living in Northern Ontario, but it has also greatly contributed to the quality of life that everyone living in our communities enjoy.

I know you will have a conference filled with information sharing and new ideas. I also trust you will enjoy the hospitality that the Thunder Bay conferences and events have become widely known for. Thank you for your dedication, and contributions, to healthcare in Northern Ontario

Hon. Bill Mauro
Member of Provincial Parliament
Thunder Bay—Atikokan
Minister of Municipal Affairs

A Message from the Mayor

On behalf of City Council and the citizens of Thunder Bay, it is an honour to welcome researchers, doctors and students to the 12th annual Northern Health Research Conference.

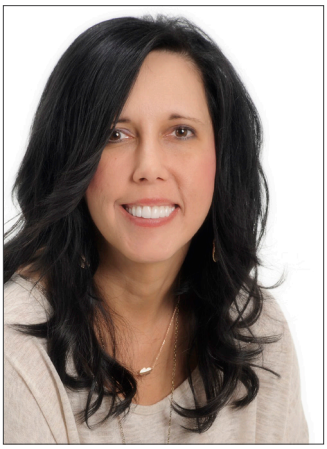
A special welcome to our out-of-town guests. We extend our warmest hospitality and hope you'll enjoy our city that is Superior By Nature. Over the next few days participants will discuss many interesting projects and developments they're working on. This conference will highlight research resulting from community-based activities — research we should all be proud of.

The conference demonstrates the commitment to health care and education to the people of Northern Ontario and beyond. Thunder Bay is a superior stage for many events thanks largely to the vision, dedication and abilities of volunteers and organizers in our community. Thank you and congratulations to the organizers and the participants for advancing research in the region.

All the best for a successful conference.

Keith P. Hobbs
Mayor
City of Thunder Bay

Keynote Speakers



Dr. Carrie Bourassa

Dr. Carrie Bourassa is research Chair in Indigenous and Northern Health and Senior Scientist at Health Sciences North Research Institute in Sudbury, Ontario and the Scientific Director of the Institute of Aboriginal Peoples' Health at the Canadian Institutes of Health Research. Prior to taking the Chair position in October 2016 and the Scientific Director Position in February 2017, she served her communities as a Professor of Indigenous Health Studies at First Nations University of Canada for fifteen years. Dr. Bourassa is an Indigenous community-based researcher and is proud to be the successful Nominated Principal Investigator on two Canada Foundation for Innovation Grants that funded the Indigenous Community-based Health Research Lab in 2010 (re-named Morningstar Lodge) and most recently in April 2016 the Cultural Safety Evaluation, Training and Research Lab at FNUniv. She is a member of the College of New Scholars, Artists and Scientists of the Royal Society of Canada and is a public member of the College Council, Royal College of Physicians and Surgeons of Canada. Carrie's research interests include the impacts of colonization on the health of Indigenous people; creating culturally safe care in health service delivery; Indigenous community-based health research methodology; HIV/AIDS, HCV among Indigenous people; end-of- life care among Indigenous people; dementia among Indigenous people; Indigenous Water Governance; and, Indigenous women's health. Carrie is Métis, belonging to the Regina Riel Métis Council #34.

Hunter-Gatherer From the Wisdom Water

Presentation Abstract

Indigenous health research is beginning to gain recognition as a specialized area that demands cultural responsiveness and distinct methodological skills to achieve impact. Relevant and impactful Indigenous health research requires engagement with Indigenous communities and accommodation of Indigenous knowledge, languages, methodologies and protocols. Dr. Bourassa will discuss why it is critical that Indigenous communities direct the research priorities, are full participants in a research undertaking, that they are in fact leading the research, and that researchers understand their roles in the research process. She will explain the teaching of her Kookum (Grandmother) who is also a respected Elder around "Hunter-Gatherer from the Wisdom Water" and also tackle the concept of Cultural Safety (and talk about the "elephant in the room") and in her role as the Scientific Director of the Institute of Aboriginal Peoples' Health (IAPH) she will briefly discuss the strategic priorities of IAPH proudly housed at the Health Sciences Research North Research Institute.

Keynote Speakers

Dr. Mohit Bhandari

Dr. Mohit Bhandari currently serves as Professor and Academic Head of the Division of Orthopaedic Surgery at McMaster University. He is a designated, University Scholar, at McMaster, to recognize his excellence as an academic surgeon and scientist. He is the Associate Chair of Research in the Department of Surgery and is the Tier 1 Canada Research Chair in Musculoskeletal Trauma and Surgical Outcomes. He received his Masters Degree in Clinical Epidemiology and Biostatistics from McMaster University and his PhD Degree from Goteborg University (Sweden).

He is recognized as a global leader in evidence-based surgery and orthopaedic research receiving the fields highest awards including the Royal College of Physicians and Surgeons Medal, the Edouard Samson Award, and the Kappa Delta Award. He has been acknowledged among the top 10 most cited orthopaedic fracture surgeons in the world. Dr. Bhandari's commitment to evidence-based practice, high quality globally relevant research and translation of evidence to patient care has garnered him induction -into the Province of Ontario's highest civilian honor: the Order of Ontario. He also has been awarded the Canadian Orthopaedic Association's Award of Merit, and McMaster University's Distinguished Alumni Award and most recently the College of Physicians and Surgeons of Ontario's Council Award for Outstanding Achievement.

NORTHERN HEALTH
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Save the Date

Join us for the 13th annual Northern Health Research Conference

September 21-22, 2018*

Kenora, Ontario

**Dates subject to change*

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Conference Agenda

Oral Presentation Interactivity:
Keynote Speakers: Talk 45 minutes / Interactivity 15 minutes
Oral Speakers: Talk 10 minutes / Interactivity 5 minutes

Thursday, October 12, 2017

6:00 p.m.	"Meet and Greet" BBQ – Lakehead University	Faculty Lounge

Friday, October 13, 2017

8:00 a.m.	Registration / Poster Setup / Open Poster Viewing – Lakehead University	Agora
9:00 a.m.	Elder Blessing / Welcome and Opening Remarks from Dignitaries and Special Guests	Faculty Lounge
9:30 a.m.	**Bruce Weaver** *Silly or Pointless Things People Do When Analyzing Data: 3. Transforming Variables to Make Them More "Normal" Prior to Linear Regression Analysis*	
9:45 a.m.	**Marina Ulanova** *Epidemiology of Haemophilus influenzae Type A disease in Rural Northwestern Ontario*	
10:00 a.m.	**Roxanne Turuba** *The Treatment of Symptomatic Uterine Fibroids: A Cost-Effectiveness Analysis from the Perspective of Women Receiving Treatment in Rural and Remote Places*	
10:15 a.m.	Nutrition Break / Poster Viewing (Group #1)	Agora
11:00 a.m.	**Michael Caputo** *Ontario Glaucoma Management Study – Results from a Nationwide Survey*	Faculty Lounge
11:15 a.m.	**Lynn Smith** *Measuring the Impact of Telemedicine on Medical Service Use in Ontario: Qualitative Data From Key Informant Interviews*	
11:30 a.m.	**Emmanuel Abara** *Rising Serum Prostate Specific Antigen (PSA) Post Radical Prostatectomy: 20 Years Later and Patient Autonomy – A Case Study*	
11:45 a.m.	Lunch / Open Poster Viewing (Groups #1 and #2)	Agora Faculty Lounge
12:45 p.m.	**HSNRI Plenary Speaker** **Sharon Lee Smith**, Associate Deputy Minister, Policy and Transformation, Ministry of Health and Long Term Care *Summary of the MOHLTC's Commitments to Supporting Culturally Appropriate Care for Indigenous Care*	Faculty Lounge
1:30 p.m.	**Northern Health Research Conference Keynote Speaker** **Carrie Bourassa** - CIHR Scientific Director for the Institute of Aboriginal Peoples' Health *Hunter-Gatherer From the Wisdom Water*	
2:30 p.m.	Nutrition Break / Poster Viewing (Group #2)	Agora
3:15 p.m.	**Abraham Rudnick** *Social Science Methods in Health Research: An Overview*	Faculty Lounge
3:30 p.m.	**Braedan Prete** *Using Hyperpolarized ^{129}Xe Magnetic Resonance Imaging to Identify Potential Supramolecular Scaffolds for Xenon Biosensor Molecular Imaging Agents*	
3:45 p.m.	**Kristina Krmpotic** *The Canadian Diabetes Incentives and Technology (CanDIT) Study: Using Incentives and Technology to Improve Diabetes Management in Canadian Youth*	
6:00 p.m.	Dinner / Social Evening	Bight Restaurant 2210 Sleeping Giant Parkway

David MacLean

Bruce Weaver

Lynn Smith

Saturday, October 14, 2017

8:30 a.m.	Registration / Open Poster Viewing – Lakehead University	Agora
9:00 a.m.	**Francis Hane** *Results of the First In Vivo HyperCEST MRI Detection of a Hyperpolarized Xenon Biosensor, Cucurbit[6]uril*	Faculty Lounge
9:15 a.m.	**Daniella Febbraro** *Chemoradiation Therapy for a Patient with a Left Ventricular Assist Device: A Case Report*	
9:30 a.m.	**Gabrielle Gaultier** *B-cell Responses to 13-valent Pneumococcal Conjugate Vaccine in Patients with Severe Chronic Kidney Disease*	
9:45 a.m.	**Michelle Stevens and Kelsey Stojkovic** *Exploring Dietitians' Use of Expressive Touch in Patient Encounters*	
10:00 a.m.	**Michael Conlon** *Trends in End-Of-Life Care for Northern and Rural Ontario Cancer Patients*	
10:15 a.m.	**Ruxanda Rusu** *Childhood Recurrent Immune-Mediated Pericarditis: Two Case Reports and New Candidate Genes*	
10:30 a.m.	Nutrition Break / Poster Viewing (Group #2)	Agora
11:15 a.m.	**Erik Slade** *The Role of Hydrogen Sulfide (H_2S) in Ghrelin Secretion*	Faculty Lounge
11:30 a.m.	**Frances Kilbertus** *Learning Palliative Care: A Process of 'Becoming'*	
11:45 a.m.	**Yurii Shepelytskyi** *^{19}F Chemical Shift Imaging (CSI) as a Novel Method for Detection of 5-Fluorouracil (5-FU) in Colorectal Tumor*	
12:00 p.m.	**Jessica Lowey** *Superior Mental Wellness @ Work: Standard to Action Project Phase 1: Needs Assessment and Baseline Data Preliminary*	
12:15 p.m.	Lunch / Open Poster Viewing (Groups #1 and #2)	Agora Faculty Lounge
1:45 p.m.	**Northern Health Research Conference Keynote Speaker** **Mohit Bhandari**, Tier 1 Canada Research Chair in Musculoskeletal Trauma and Surgical Outcomes Research Unit, Health Sciences, Hamilton ON and McMaster University *Think Bigger! A New Culture of Research*	Faculty Lounge
2:45 p.m.	Nutrition Break / Poster Viewing (Group #1)	Agora
3:30 p.m.	**Bayley Ostenfeldt** *Charting Knowledge into Practice: Assessing Opioid and Chronic Pain Management Performance in ECHO Ontario: A Retrospective Chart Review*	Faculty Lounge
3:45 p.m.	**Tao Li** *Can Hyperpolarized ^{129}Xe MRI Detect Changes in Human Cerebral Perfusion Caused by Alzheimer's Disease?*	
4:00 p.m.	**Krista Dowhos** *Barriers and Facilitators to Physician Preparedness Working in a Rural Emergency Department (ED): A Qualitative Study*	
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Krista Dowhos

Daniella Febbraro

Penny Moody-Corbett

Poster Agenda

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Group 2

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4 **Joshua Armstrong**
Frailty, neuropathology and variation in clinical disease expression in dementia

6 **Joshua Armstrong**
A Supervisor Training Program for Work Disability Prevention: Preliminary Results from a Cluster Randomized Controlled Trial

8 **Carlos Zerpa**
The effect of yoga on balance and proprioception

10 **Sarah Byce and Ben Piper**
Point of Care Ultrasound at NOSM: A qualitative evaluation of POCUS in undergraduate medical education

12 **Joanna Carastathis**
Perceptions of walkability and pedestrian safety in Thunder Bay

14 **Erin Creasor**
Evaluating Physician use of a standardized written handover form (IPASS) at Muskoka Algonquin Healthcare Emergency Department (ED)

16 **Lily Dimiglio and Jeanne Murdoch**
An assessment of baseline staging tests in primary breast cancer in a community setting in Northern Ontario

18 **Fady Ebrahim**
The Effect of Influenza Vaccination on the Systemic Inflammatory Response and Myocardial Protection in Patients Undergoing Cardiac Surgery: a Randomized Controlled Trial

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24 **Vicki Kristman**
Developing a culturally relevant workplace mental health app for the Indigenous population

26 **Vicki Kristman**
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PBSG-ED

PRACTICE BASED SMALL GROUP - EDUCATION

Teaching tips for busy preceptors Practice Based Small Group Education (PBSGED) is a faculty development activity for preceptors to enhance their educational skills and accommodate busy schedules.

Each module uses a case-based format to promote discussion of issues that are likely to arise when working with learners. Case commentaries incorporate current educational evidence providing preceptors with opportunities to improve their knowledge and acquire skills which can be applied in the supervision of their next learner. The series consists of ten educational modules. Printed materials include a facilitator's guide which can be used to organize an educational session of 1-2 hours in your community for a group of five to 10 interested preceptors.

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- International Medical Graduates: Orienting, Teaching and Connecting

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Modules are available for purchase at $10.00 per person. Modules include an evaluation template, a facilitator guide, and attendance sheet. All evaluations and sign-in sheets must be returned to the CEPD office at which time certificates of attendance will be issued to participants.

If you are interested in purchasing multiple modules or designing a customized PBSG learning Faculty Development event please contact us.

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The Muster 2018 conference brings together an international audience to explore and discuss community engaged medical education, social accountability in health training, longitudinal learning, and rural medical education.

CONFERENCE ON THE MOVE

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Accreditation

This Group Learning program meets the certification criteria of The College of Family Physicians of Canada and has been certified by the Northern Ontario School of Medicine, Continuing Education and Professional Development Office for up to 7.5 Mainpro+ credits. This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification program of The Royal College of Physicians and Surgeons of Canada, approved by the Continuing Education and Professional Development Office at the Northern Ontario School of Medicine for up to 7.5 hours.

CEPD
continuing education and professional development

The Northern Ontario School of Medicine wishes to acknowledge that the entirety of the School's wider campus of Northern Ontario is on the traditional lands of the First Nations and Métis Peoples. The School also respectfully acknowledges that the medical school building at Laurentian University is located in the Robinson-Huron Treaty territory and the land on which we gather in Sudbury is the traditional territory of the Atikameksheng Anishnaabeg and the Métis. The medical school building at Lakehead University in the Robinson-Superior Treaty territory and the land on which we gather in Thunder Bay is the traditional territory of the Anishnaabeg and the Métis.

Acknowledged with Thanks

Northern Ontario School of Medicine

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Lyne Morvan
Véronique Poirier
Dr. Roger Strasser
Dr. Sheldon Tobe

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Dr. James Goertzen
Dr. David MacLean
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Lakehead University

John Bonagfiglio
Christine Cost-Wilsonas
Caitlin Reeves
Heleena Stephens
Christine Taylor

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Special Thanks

Métis Elder, Cameron Burgess

Oral Abstracts

The research work in the following abstracts are all original and innovative.

The oral abstracts are in presentation order.

Abstracts have been published as submitted.

Silly or Pointless Things People Do When Analyzing Data: 3. Transforming Variables to Make Them More "Normal" Prior to Linear Regression Analysis

PRESENTING AUTHOR:
Bruce Weaver (1, 2)

AUTHOR(S):
Weaver, B (1, 2)

AFFILIATIONS:
(1) Human Sciences Division, Northern Ontario School of Medicine, Thunder Bay, ON
(2) Centre for Research on Safe Driving, Lakehead University, Thunder Bay, ON

ABSTRACT:
Many users of statistics believe that ordinary least squares (OLS) regression models are valid only when both the outcome variable (Y) and the explanatory variables (the X-variables) are normally distributed. Because of that belief, some folks transform the variables in order to make their distributions closer to normal prior to estimating a linear regression model. However, this practice is misguided. OLS regression models make **no** distributional assumptions about either the explanatory variables or the outcome variable. The key assumptions for OLS regression are that the **errors** are independently and identically distributed as normal with a mean of 0 and a variance equal to some unknown value (σ^2). Furthermore, normality of the errors is the least important of those assumptions. Before transforming any variables, therefore, data analysts ought to estimate their linear regression models using the original variables, and then examine the residuals (i.e., the fitting errors) to determine how well the key assumptions have been met. The need for transformations should be considered only after analysis of the residuals from a model using the original untransformed variables. One clear advantage of using the original variables is that the results are usually much easier to interpret.

Epidemiology of *Haemophilus influenzae* Type A disease in Rural Northwestern Ontario

PRESENTING AUTHOR:
Marina Ulanova (1)

AUTHOR(S):
Ulanova, M (1), Eton, V (1), Nix, EB (1), Tsang, RSW (2) and McCready, WG (1)

AFFILIATIONS:
(1) Northern Ontario School of Medicine, Thunder Bay, ON, (2) National Microbiology Laboratory, Public Health Agency of Canada, Winnipeg, MB

ABSTRACT:
In the post-*Haemophilus influenzae* (Hi) type b vaccine era, serotype a (Hia) has emerged as an important cause of invasive disease among American Indigenous populations. Since 2002, we have identified Hia as a prevalent serotype causing invasive Hi disease in Northwestern Ontario. We present data collected over the last 6 years in a regional hospital serving a population of 29,000 (82% First Nations) via: 1) retrospective chart review of cases of invasive Hi disease; 2) characterization of both invasive and non-invasive Hi isolates; 3) detection and characterization of Hi in the nasopharynx from healthy children. Identification of Hi was done using standard methods and confirmed by 16S ribosomal RNA sequencing; serotyping was performed by both bacterial agglutination test and PCR to detect the serotype-specific genes. Clonal analysis and detection of the *IS1016-bex*A partial deletion in the capsular loci were carried out by multilocus sequence typing and PCR, respectively. Results: 10 cases of invasive Hi disease were identified; Hia was the most prevalent isolate (50%). Average annual incidence of invasive Hia disease was 3.1/100,000/population. One Hia case occurred in an infant; the remaining 4 were in adults with significant co-morbidities. Invasive Hia disease presented as pneumonia and/or sepsis, or pericarditis; there was one fatality. Hia represented 6 out of 132 non-invasive Hi isolates (4.5%); in all cases Hia was isolated from the middle ear of young children; 7.2% (5/69) healthy 3-5 year old children carried Hia. We conclude that in a rural First Nations population of Northwestern Ontario, Hia is consistently present as a cause of both invasive and non-invasive disease, and commonly carried by healthy children. Invasive Hia disease manifests as severe clinical presentations. Pediatric immunization with a new Hia vaccine under development may decrease the burden of invasive disease and overall circulation of the pathogen in vulnerable populations.

The Treatment of Symptomatic Uterine Fibroids: A Cost-Effectiveness Analysis from the Perspective of Women Receiving Treatment in Rural and Remote Places

PRESENTING AUTHOR:
Roxanne Turuba

AUTHOR(S):
Turuba, R (1), Bishop, L (1) and Jumah, NA (1, 2)

AFFILIATIONS:
(1) Thunder Bay Regional Health Research Institute, Thunder Bay, ON, (2) The Northern Ontario School of Medicine, Thunder Bay, ON

ABSTRACT:
Women living in Northwestern Ontario with symptomatic uterine fibroids often travel several hours to Thunder Bay to be seen by a gynaecologist, incurring many costs. If women opt for surgical management, there is a recovery period of several weeks and women have further loss of productivity. Magnetic resonance-guided high-intensity focused ultrasound (MR-HIFU) is a non-invasive treatment for fibroids associated with shorter recovery times and lower complication rates compared to surgery. We developed a Markov model to estimate the quality-adjusted life years (QALYs) and cost of MR-HIFU, myomectomy, hysterectomy, and endometrial ablation to treat fibroids over five years, from the perspective of women receiving treatment in Northwestern Ontario. Parameters for the model were derived from published literature and from secondary sources. Sensitivity analyses were performed to evaluate uncertainty of mode parameters. For a treatment to be dominant it would have higher QALYs and a lower cost compared to another treatment. Endometrial ablation was found to be highly dominant over all other treatments, regardless of location (urban, rural or remote) and time-horizon. When we excluded endometrial ablation from the analysis, MR-HIFU was found to be the most cost-effective strategy. Hysterectomy was dominant for those living in remote communities who must fly to Thunder Bay. Notably, MR-HIFU was highly dominant for those living closest to the city, as a result of the high cost of travel from fly-in communities and the possibility of requiring a re-intervention following MR-HIFU. Results became more sensitive to model parameters the further a patient lived from specialized services. Our results suggest that MR-HIFU is a cost-effective treatment for fibroids for women living in rural and remote communities in Northwestern Ontario, along with myomectomy, while hysterectomy remains cost-effective for those living in remote communities. If implemented, MR-HIFU could help reduce the financial burden for women associated with treatment.

Ontario Glaucoma Management Study—Results from a Nationwide Survey

PRESENTING AUTHOR:
Michael Caputo

AUTHOR(S):
Caputo MV, HBSc, MD Candidate[1], Arshinoff SA, MD, FRCSC[2,3], Scott GM, MSc, PhD (student) [4], Mitchell B, MD, FRCSC[1]

AFFILIATIONS:
[1]Northern Ontario School of Medicine; [2]University of Toronto; [3]McMaster University; [4]Laurentian University

ABSTRACT:
Background: Glaucoma is the number one cause of irreversible blindness in Canada. Furthermore, this sinister disease is associated with diagnostic delay. Since glaucoma progression can often be slowed when appropriately treated, screening for early disease is a critically important step required before initiation of disease-slowing therapy. There is a long-standing issue faced by Canadians regarding variable access to quality health care in the rural, remote and indigenous communities. The purpose of this study is to identify the state of glaucoma care in Canada.

Methods: This research ethics board-approved study employed a cross-sectional, self-report research design study. A previously validated survey was distributed electronically to all public and private eye departments and practices in Canada listed on the official list of members of the Canadian Ophthalmological Society. Geographic region was compared by Local Health Integration Network (LHIN) and Forward Sortation Area. Rurality was assessed using Statistics Canada's definition of urban as a population of 1000 or more and no fewer than 400 persons per square kilometer.

Results: Significant regional variability was identified spanning across many health quality indices. There was decreased access to glaucoma specialists, general ophthalmologists and ophthalmology services in the rural and remote regions of the country. There was less consistency in the timing and frequency of follow-up in addition to heavy reliance on locum physician support. Rural practices generally had poorer access to newer diagnostic equipment. The ophthalmology teams assessed ranged in number and scope of interprofessional practice.

Conclusions: The results of this study highlight the uneven distribution of ophthalmologists, ophthalmology-related health services and eye care technology and equipment in Ontario and the rest of Canada. To pursue equity in eye care and vision-related disability across the nation, health service delivery models specific to rural ophthalmology care must first be identified.

Measuring the impact of telemedicine on medical service use in Ontario: Qualitative data from key informant interviews

PRESENTING AUTHOR:
Lynn Smith

AUTHOR(S):
Smith, L (1), Carter, L. (2) Hogenbirk, J. (3) and Barnett, S. (3)

AFFILIATIONS:
1) Northern College of Applied Arts and Technology (2) McMaster University (3) Centre for Rural and Northern Health Research

ABSTRACT:
This presentation will review qualitative data from key informant interviews as part of larger project which examined the impact of medical service use in northern Ontario.

Methodology: We conducted semi-structured interviews with 8 telemedicine coordinators and 11 physician specialists. The interviews were focused on eliciting responses to a structured list of ambulatory care sensitive conditions with potential for impact on downstream use. Participants were invited to "think out loud" during the interview process. Many key informants voiced strong opinions about telemedicine that went beyond the research question. We conducted a thematic analysis of these responses to provide insight into salient aspects of telemedicine as viewed by experienced coordinators and clinicians.

Results: The participants provided compelling information about special populations served by telemedicine, specifically, seniors, prison inmates, First Nations clients, cancer patients, and potential transplant recipients. Participant described chronic conditions that are well suited to telemedicine visits. The most frequently mentioned were hypertension, diabetes and mental illnesses. Depression, addiction, and pain management were the mental illnesses seen most frequently.

Implications: As a result of the "think out loud" strategy, participants provided examples that highlighted telemedicine strengths, challenges, and opportunities that would not have presented via quantitative methods. Although identification of such populations had not been a purpose of the study, we include these findings as they provide rich detail about the breadth and possibility of telemedicine work.

Rising Serum Prostate Specific Antigen (PSA) Post Radical Prostatectomy: 20 Years Later and Patient Autonomy- A Case Study

PRESENTING AUTHOR:
Emmanuel O. Abara

AUTHOR(S):
Abara E (1,2); Abara N (3); Habib B (4)

AFFILIATIONS:
(1) Richmond Hill Urology Practice and Prostate Institute (2) Division of Clinical Sciences, Northern Ontario School of Medicine, Sudbury/Thunder Bay, Ontario (3) Department of Family Medicine, University of Texas Medical Branch, Galveston, Texas ,USA (4) BHM Professional Corporation, 7117 Bathurst Street, Thornhill, Ontario

ABSTRACT:
Introduction and Background: A rise in serum PSA .2.5 ugm/l after initial lower or non-detectable levels following radical prostatectomy for prostate cancer is considered a sign of disease recurrence. The caring physician is expected to inform and counsel the patient to make a guided decision. Individuals with autonomy, act intentionally with understanding, and without controlling influences.

Aim: We describe a case to understand the decision making process, the value of second opinion, the challenges, and the outcome of watchful waiting in an 77 year old man.

Method: CASE STUDY: A case of an 77 year man who had radical prostatectomy at 57 in 1997 for localized prostate cancer is presented. His serum PSA was 0.2 ugm/l in 1999 and 2.1 ugm/l in 2000. By 2005, the serum PSA had risen to 2.9 ugm/l prompting referral to another urologist. Re-staging diagnostic procedures including transrectal ultrasound, CT scan abdomen and pelvis, bone scan and digital rectal exam failed to show any evidence of disease .The patient chose watchful waiting in preference to hormonal therapy and radiation. Between 2007 and 2017, the serum PSA has ranged from 3.25 to 10.54 ugm/l and no evidence of clear cut metastatic disease outside the prostate bed. His co-morbid conditions of type II diabetes mellitus, hypertension, rheumatoid arthritis, degenerative disc disease have remained stable on appropriate therapy.

Result: During the past 20 years, with multispecialty consultations and suggested treatment options, i.e., radiation, urologic and medical oncologists with repeated diagnostic imaging studies, the patient remains alive and well on watchful waiting.

Conclusion (Take Home Message): Watchful waiting is a viable option that results from promoting autonomous behaviour. This case informs the practitioner of the nuances of ‘autonomy’ and ‘beneficence’ in the area of ‘informed consent‘ for treatment.

Social science methods in health research: an overview

PRESENTING AUTHOR:
Dr. Abraham (Rami) Rudnick

AUTHOR(S):
Rudnick A

AFFILIATIONS:
Section of Psychiatry, Division of Clinical Sciences, Northern Ontario School of Medicine
Thunder Bay Regional Health Sciences Centre and Research Institute

ABSTRACT:
Health research includes psychosocial as well as biological and other research. Yet social science methods are still not taught and not used extensively in schools and faculties of medicine, nor in continuing medical education/professional development. Based on a recently published set of books edited by the presenter and a nursing professor (https://www.ncbi.nlm.nih.gov/pubmed/17279052), and using examples from the presenter's mental health research, this presentation provides a brief overview of key aspects of social science methods in health research, aiming at enhancing awareness (of relevance) and knowledge (of use) of social science methods in health research. The topics covered range from fundamentals and basic science through clinical research and organizational inquiry to systems analysis and population health research. To conclude, more teaching and use of social science methods in health research is required.

Using Hyperpolarized ^{129}Xe Magnetic Resonance Imaging to Identify Potential Supramolecular Scaffolds for Xenon Biosensor Molecular Imaging Agents

PRESENTING AUTHOR:
Braedan RJ Prete (1)

AUTHOR(S):
Prete, BRJ (1), Chahal, S (2), Fernando, A (3), Li, T (1), Hane, FT (1, 4), DeBoef, B (3) and Albert, MS (1, 4, 5)

AFFILIATIONS:
(1) Department of Chemistry, Lakehead University, Thunder Bay, ON, CA,
(2) Department of Biomedical Science, University of Guelph, Guelph, ON, CA,
(3) Department of Chemistry, University of Rhode Island, South Kingstown, RI, USA,
(4) Thunder Bay Regional Health Research Institute, Thunder Bay, ON, CA,
(5) Northern Ontario School of Medicine, Thunder Bay, ON, CA

ABSTRACT:

Hyperpolarized (HP) ^{129}Xe magnetic resonance imaging (MRI) has the potential to detect picomolar concentrations of xenon biosensors, which are highly sensitive molecular imaging agents, via hyperpolarized chemical exchange saturation transfer (hyperCEST)[1-3]. We have recently demonstrated this methodology *in vivo* using a mammalian model along with cucurbit[6]uril (CB6), a traditional, non-specific xenon biosensor[4]. Due to the complications associated with synthesizing non-toxic xenon biosensor-scaffolds at sufficient yields and detecting them at concentrations which are safe for molecular imaging in humans, translation of this technology into clinical use has been challenging. Furthermore, the natural bio-distribution of traditional xenon biosensors, such as CB6, is non-specific[4], which makes it markedly difficult to image molecular markers of pathology with diagnosable precision.

In attempt to enhance xenon biosensor technology, we hypothesized that a successful scaffold must be both easily synthesized and conjugatable, as well as non-toxic and water-soluble, to be suitable for molecular imaging in humans. HP ^{129}Xe MR analysis was performed for a variety of potential xenon biosensor-scaffolds to determine their eligibility as hyperCEST imaging agents. The most promising xenon biosensors were based on a cyclodextrin (CD) pseudorotaxane scaffold. All spectroscopic data was obtained using a Philips Achieva 3.0 T whole-body clinical MRI scanner, which bodes well for the eventual translation of our technology into a clinical diagnostic imaging tool.

We have discovered a novel class of potential xenon biosensors based on a non-toxic[5] CD pseudorotaxane scaffold, which can be routinely synthesized and easily conjugated with an antibody or other affinity tag to target biochemical disease receptors at high specificity and with sub-millimeter spatial resolution. The hyperCEST detection of these cyclodextrin-based pseudorotaxanes marks their potential to perform as HP ^{129}Xe MRI biosensors at up to 10^8-fold detection sensitivity, comparable to positron emission tomography (PET), but without the exposure to potentially harmful ionizing radiation.

The Canadian Diabetes Incentives and Technology (CanDIT) Study: Using Incentives and Technology to Improve Diabetes Management in Canadian Youth

PRESENTING AUTHOR:
Kristina Krmpotic

AUTHOR(S):
Kristina Krmpotic MD MSc FRCPC[1], Caroline Zuijdwijk MD FRCPC[2], Kirk Zufelt MD FRCPC[1]

AFFILIATIONS:
1. Department of Pediatrics, Sault Area Hospital and Assistant Professor, Faculty of Medicine, Northern Ontario School of Medicine
2. Department of Pediatrics, Children's Hospital of Eastern Ontario, and Assistant Professor, Faculty of Medicine, University of Ottawa
This study is supported by a Northern Ontario Academic Medicine Association (NOAMA) Clinical Innovation Opportunities Fund Award (2016)

ABSTRACT:
During adolescence, many youth with type 1 diabetes experience a significant decline in self-management behaviours resulting in poor glycemic control. Although a variety of innovative technologies exist (e.g., continuous glucose monitoring and insulin infusions), these interventions are not as successful in improving metabolic control in youth as they are in adults. Success with mobile device applications has been limited to those that provide actionable feedback, accompanied by human interaction or monitoring of the system. Adult patients may be extrinsically motivated to participate in self-management behaviours when financial rewards are offered, but no studies have examined the impact of personalized, tangible incentives on youth. To determine barriers to self-management of diabetes in older children and adolescents, and the features of a mobile device application that would be appealing to youth with diabetes, we conducted a needs assessment with Northern Ontario youth (aged 9 to 17 years) with type 1 diabetes of at least 1 year duration, and their primary caregivers and health-care providers. Themes that emerged from analysis of focus group transcripts were 1) the challenges associated with blood glucose monitoring including remembering to check, record-keeping, and trend analysis; 2) the need for basic nutritional guidance; 3) the desire to be rewarded for positive self-management behaviours. We developed a mobile device application with the ability to set personalized reminders, log blood glucose values and view trends simply, estimate carbohydrate intake easily, and earn points that could be exchanged for rewards at regular intervals. Youth with type 1 diabetes were provided with a mobile device and asked to trial the application for a period of three months and provide feedback for redevelopment. This intervention was viewed positively by participants and future studies to evaluate its impact on metabolic control and quality of life are required.

Results of the First *In Vivo* HyperCEST MRI Detection of a Hyperpolarized Xenon Biosensor, Cucurbit[6]uril

PRESENTING AUTHOR:
Dr. Francis Hane

AUTHOR(S):
Francis Hane[1,2], Tao Li[2], Peter Smylie[1], Railli Pellizzari[1], Jennifer Plata[1], Mitchell Albert[1,2,3]

AFFILIATIONS:
1. Lakehead University, Department of Chemistry, Thunder Bay, Canada
2. Thunder Bay Regional Health Research Institute, Thunder Bay, Canada
3. Northern Ontario School of Medicine, Thunder Bay, Canada

ABSTRACT:
A major limitation to early disease detection is the inability to detect pathological molecules in the body at low concentrations. The ability to detect these pathological molecules at lower concentrations will allow for earlier diagnosis and treatment planning, ultimately reducing disease morbidity and mortality. A novel technique, hyperpolarized xenon-129 MRI (HP ^{129}Xe MRI), makes use of hyperpolarized chemical exchange saturation transfer (HyperCEST) in which xenon passes in and out of a cage-like molecule, cucurbit[6]uril (CB6), that has the ability to detect small concentrations of pathological molecules in the body. HP ^{129}Xe MRI has the capability to provide images with similar sensitivity to positron emission tomography and computed tomography, without damaging ionizing radiation. HyperCEST has been demonstrated to yield an imaging sensitivity enhancement of up to a billion times greater than conventional HP ^{129}Xe MRI. The Albert group has successfully obtained the first *in vivo* images of HyperCEST agent CB6 using inhaled HP ^{129}Xe.

Sprague-Dawley rats were injected intravenously with 3mL of a 1X PBS CB6 solution. The solution was allowed 30 minutes to bio-distribute. Rats inhaled a mixture of 80% HP ^{129}Xe to 20% oxygen, immediately prior to MRI. MR images then revealed the location of the CB6 in the body.

Researchers found that CB6 was localized to the heart, lungs, aorta, kidneys and bladder of the rat. CB6 can be conjugated to antibodies, functionalizing the cage molecule to specific pathogens; this has the potential to revolutionize early disease detection with targeted imaging. This preliminary research will lead to the development of functionalized HP ^{129}Xe biosensors for use in further preclinical testing. If the technique is proven to be successful through human clinical trials, this could ultimately reduce morbidity and mortality of disease through early detection.

Chemoradiation therapy for a patient with a Left Ventricular Assist Device: A Case Report

PRESENTING AUTHORS:
Daniella Febbraro[1], Megan Gray[1]

AUTHOR(S):
Febbraro, D.[1]; Gray, M.[1]; Quevillon, T.[1]; Pearce, A., M.Sc, MD, FRCPC[2]; Stadnick, E., M. Sc., MD, FRCPC[3]; Spadafora, S., MD, FRCPC[1,4]

AFFILIATIONS:
[1]Algoma District Cancer Program, Sault Ste. Marie, ON
[2]Health Sciences North, Sudbury, ON
[3]University of Ottawa Heart Institute, Ottawa, ON
[4]Northern Ontario School of Medicine, Sudbury, ON

ABSTRACT:
A left ventricular assist device (LVAD) is a treatment option for patients with severe heart failure, often termed bridge therapy for a patient awaiting heart transplantation, or destination therapy, for those ineligible to receive a transplant. A diagnosis of cancer deems a candidate ineligible for heart transplantation and poses significant treatment challenges. To date, there is limited information available on the optimal management of patients with malignancy and severe heart failure in the literature.

We present a case of a patient diagnosed with a low grade adenocarcinoma of the rectum in January of 2013 treated with surgical resection. This patient later presented in July of 2013 with complete heart block resulting in the insertion of a permanent pacemaker. In August of 2013 the patient was diagnosed with a non-ST elevation myocardial infarction and was found to require a workup for myocarditis. The patient was transferred to the Ottawa Heart Institute where he was diagnosed with fulminant myocarditis of unknown etiology and underwent the insertion of a LVAD in early September. In October of 2015, it was determined the patient had recurrent adenocarcinoma in the pelvis. This rare case presented a challenge in the proposed treatment plan for this patient. The local oncology team coordinated with the team at the Ottawa Heart Institute to determine the patient's suitability for chemotherapy and radiation. Not previously described in the literature, this case review will describe the investigations and close monitoring successfully used to treat this patient to inform the greater medical community.

B-cell responses to 13-valent pneumococcal conjugate vaccine in patients with severe chronic kidney disease

PRESENTING AUTHOR:
Gabrielle N. Gaultier (1)

AUTHOR(S):
Gaultier, G.N. (1), Desbiens-Forget, A. (2), Nix, E.B. (2), McCready, W. (3), Ulanova, M. (2,3)

AFFILIATIONS:
(1) Department of Biology, Lakehead University, Thunder Bay, ON, (2) Medical Sciences Division, Northern Ontario School of Medicine, Thunder Bay, (3) Clinical Sciences Division, Northern Ontario School of Medicine, Thunder Bay, ON.

ABSTRACT:
In Canada, 23-valent pneumococcal polysaccharide vaccine (PPV23) is recommended for chronic kidney disease (CKD) patients. Previous immunization with PPV23 may result in depletion of the peripheral memory B cell pool and consequently affect responses to subsequent immunization with 13- valent pneumococcal conjugate vaccine (PCV13). Our objective is to compare the number of circulating memory B cells and antibody secreting cells in severe CKD patients either previously immunized with PPV23 (group 1) or pneumococcal vaccine naïve (group 2). Fifty-five adults, (23 group 1, 32 group 2) aged 33-89 with severe CKD received one dose of PCV13. Flow cytometry analysis determined proportions of total B cells (CD19+) and B cell subsets: naïve (IgM+, CD27-), IgM memory (IgM+, CD27+), class switched (IgM-, CD27-), and class switched memory (IgM-, CD27+) as well as CD5+ and CD5- B cells pre and 7 days post immunization. Elispot analysis determined the number of antibody secreting cells specific for pneumococcal polysaccharide antigens of serotypes 6B and 14, and total IgG secreting cells. The mean proportion ± standard error of the mean of B cell subpopulations post immunization was: 48.90% ± 2.75 naïve B cells, 9.36% ± 0.84 IgM memory B cells, 14.54% ± 1.14 class switched B cells, 27.19% ± 2.41 class switched memory B cells, 1.14% ± 0.22 CD5+ B cells and 3.81% ± 0.44 CD5- B cells. There was no statistically significant difference in B cell subpopulations between groups 1 and 2. Based on our preliminary analysis, it does not appear that previous immunization with PPV23 has a negative effect on the number of B cells or the proportion of any specific B cell subpopulation in patients immunized with PCV13. Further analysis will be completed when sample size reaches 60. Study results will aid in optimization of pneumococcal immunization schedules for patients with severe CKD.

Exploring Dietitians' Use of Expressive Touch in Patient Encounters

PRESENTING AUTHORS:
Michelle Stevens & Kelsey Stojkovic

AUTHOR(S):
Stevens, M, Stojkovic, K, Green, C

AFFILIATIONS:
Northern Ontario Dietetic Internship Program, Northern Ontario School of Medicine, Thunder Bay, ON

ABSTRACT:
Objectives: Effective communication skills are necessary for establishing successful Registered Dietitian (RD)-patient relationships. Expressive touch (ET) is a form of spontaneous, affective, non-verbal communication that has not been explored in the Dietetics literature. This study aims to explore clinical RDs' perceptions and use of ET in patient encounters.

Methods: Phase one of a two-phase mixed methods study was an online survey (Qualtrics©) with one open-ended and 12 Likert-scale questions emailed to a convenience sample of 249 clinical RDs practicing in Northern Ontario (January 2017). Quantitative data analysis included descriptive and association statistics while free-text responses were analyzed using thematic analysis. Research ethics approval was received from Lakehead University.

Results: The response rate was 54% (n=135); distribution by age, practice location, and work setting were consistent with the College of Dietitians of Ontario membership statistics. Years of practice ranged from 1 to 30 years; majority working with adults (94%) and in ambulatory settings (64%). Many perceived that ET may effectively communicate feelings (77%), increase patients' comfort (66%), and enhance therapeutic relationships (68%). Half of respondents (52%) reported being comfortable using ET, which was significant for RD age ($p= 0.02$) and years of practice ($p=0.037$). In practice, the majority (81%) did not commonly use ET, with the exception of those working with pediatric populations (85%, $p=0.049$). RD respondents reported the perceived benefits and risks, as well as the influence of several personal, professional, patient, and situational characteristics on their use of different forms of ET.

Conclusion: RDs perceive ET to be a beneficial form of non-verbal communication in patient encounters, yet this is not necessarily translated into practice. A deeper exploration of RDs' perceptions and use of ET in Phase Two (2017-2018) may inform dietetics training towards effective patient-centred practices.

Trends in end-of-life care for northern and rural Ontario cancer patients

PRESENTING AUTHOR:
Michael Conlon, (1)(3)(4)(5)

AUTHOR(S):
Caswell, J, (1); Knight, A, (1)(2)(3)(4); Ballantyne, B, (2)(3); Meigs, M, (1)(3); Santi, S, (1)(3); Earle, C, (5); Hartman, M,(1)(3)

AFFILIATIONS:
1 Health Sciences North/ Research Institute, Sudbury, ON
2 Palliative Symptom Management Clinic, Sudbury, ON
3 Northeast Cancer Centre, Sudbury, ON
4 Northern Ontario School of Medicine
5 Institute for Clinical Evaluative Sciences, Toronto, ON

ABSTRACT:
Palliative care (PC) offers important benefits to cancer patients and their families, and potential benefits to the health system through cost savings associated with reduced use of aggressive end-of-life care. We used health services data made available through the Institute for Clinical Evaluative Sciences (ICES), which contains data on all publicly funded healthcare services for Ontario residents in large linked administrative datasets, to define a population-based decedent cancer cohort (2007-2012) of Ontario residents. For each index case, we defined a timeline from cancer diagnosis through to death, and used previously published methodology to calculate system level quality measures associated with the use of potentially overly aggressive end-of-life care (defined as multiple emergency department (ED) visits, hospital admissions, ICU admissions, or use of chemotherapy near death) or that identified provision of palliative care from physician, home care, or hospitalization billing codes. Of the 129,107 population-based Ontario residents who died from cancer and met our study eligibility criterion, most 74% (n=95685) were designated palliative and approximately 25% (n=32320) received at least one measure of potentially aggressive end-of-life care. While receipt of PC was associated with reduced likelihood of receiving aggressive end-of-life care, rural residents, notably of northern LHINS, had significantly higher odds of receiving any potentially aggressive end-of-life care, with an adjusted OR of 1.70 (95% Confidence Interval (CI) of 1.58-1.83), and were less likely to have received PC, with an adjusted OR of 0.82 (95% CI of 0.76-0.88). To better understand end-of-life care in northern and rural populations, planned analyses will look at demographic and other factors associated with receipt of PC, and the use of potentially aggressive end-of-life care.

Childhood Recurrent Immune-Mediated Pericarditis: Two Case Reports and New Candidate Genes

PRESENTING AUTHOR:
Ruxanda Rusu

AUTHOR(S):
Rusu, R (1); Zaher, A (2); Baboolal R (3), Ardelean, DS (4, 5)

AFFILIATIONS:
(1) Dept. of Biochemistry, University of Western Ontario, London, ON; (2) Dept. of Pediatrics, University of Windsor, Windsor, ON; (3) Dept. of Pediatrics, Northern Ontario School of Medicine, Lakehead University, Thunder Bay, ON; (4) Dept. of Pediatrics and (5) Medical Biophysics, University of Western Ontario, London, ON

ABSTRACT
Background: Childhood recurrent immune-mediated pericarditis is a very rare condition characterized by fluctuating or persistent pericardial inflammation, leading to repetitive episodes of chest pain, dyspnea and fever. It can occur in the context of systemic idiopathic juvenile arthritis and systemic lupus, Crohn's disease, scleroderma, familial Mediterranean fever (FMF) etc. Idiopathic recurrent pericarditis is a diagnosis of exclusion. We report 2 boys diagnosed with chronic recurrent pericarditis of autoinflammatory origin.

Methods: Two children were diagnosed with chronic autoinflammatory pericarditis based on clinical and laboratory features and exclusion of other conditions. Testing for 17 genes associated with auto-inflammatory diseases was performed in both. Written consent to present their cases was taken from families. Extensive literature search identified additional genes associated with chronic recurrent pericarditis.

Results. Two 15 year-old boys presented with fever, chest pain, dyspnea and high inflammatory markers. Extensive work-up ruled out infections and other systemic conditions. Genetic testing was negative in one and positive for a MEFV mutation in the second child. Pericarditis recurred twice during weaning period in the first child treated with 40 mg po od prednisone. His pericarditis was refractory to colchine 1.8 mg po od, but improved rapidly on the IL-1β inhibitor anakinra. He remains asymptomatic after 20 months of follow-up.
The second boy diagnosed with FMF-related pericarditis demonstrated a good response to colchicine. He remains asymptomatic after 12 months of follow-up.
We identified 10 additional candidate genes associated with chronic recurrent pericarditis.

Conclusions: Chronic autoinflammatory pericarditis is characterized by recurrent episode of pericarditis and unexplained fevers. Although corticosteroids can improve the symptoms, high doses should be avoided. Colchicine is the first line of treatment in chronic pericarditis. Anakinra can be used in refractory cases. Expansion of current genes panel can increase our understanding of the mechanisms involved in pathogenesis of this rare disease.

The Role of Hydrogen Sulfide (H_2S) in Ghrelin Secretion

PRESENTING AUTHOR:
Erik Slade

AUTHOR(S):
Slade, E (1), Williams, L (1), Gagnon, J (1)

AFFILIATIONS:
Department of Biology, Laurentian University, Sudbury, ON (1)

ABSTRACT:

Background

Ghrelin is a stomach derived hormone that stimulates appetite, regulates energy storage and stimulates gastric motility. Ghrelin levels are highest before meal times and are suppressed immediately after food consumption, with the longest suppression occurring after high protein meals. Prior studies show that consumption of the amino acid L-cysteine in rats and humans decreases ghrelin levels. Importantly L-cysteine is an amino acid which is metabolized into H_2S by cells containing the enzyme cystathionine gamma-lyase (CSE), and preliminary data suggests the stomach is enriched with CSE. Once produced, H_2S plays a variety of regulatory roles in the cardiovascular, immune, and metabolic endocrine systems.

Research Question

Does H_2S production within the stomach lead to the suppression of ghrelin secretion, and does this occur through the conversion of L-cysteine by CSE?

Methods and Results

To investigate the direct effect of H_2S on ghrelin secretion, primary rat stomach cells were examined. Treatment with H_2S donors (NaHS and GYY4137) led to a significant suppression in ghrelin secretion. Similar results were found when cells were treated with L-cysteine. The importance of L-cysteine to H_2S conversion was confirmed by co-incubating treatments with inhibitors of CSE. We confirmed co-expression of ghrelin and CSE in our primary culture using fluorescent immunocytochemistry. Ongoing work in mice will determined the impact of H_2S on ghrelin-induced appetite suppression.

Implications

This study will determine whether gasotransmitters like endogenous H_2S could affect the regulation of appetite and energy metabolism, and provide a possible mechanism for high protein meals (l-cysteine) in enhanced satiety.

Learning palliative care: a process of 'becoming'

PRESENTING AUTHOR:
Frances Kilbertus (1)

AUTHOR(S):
Kilbertus, F. (1)
Ajjawi, R. (2)

AFFILIATIONS:
1- Department of Clinical Sciences, Northern Ontario School of Medicine
2- Centre for Assessment and Research in Digital Learning, Deakin University, Australia

ABSTRACT:
Learning can be conceptualized as a process of 'becoming', considering individuals, their participation in the workplace and their professional identity formation. How postgraduate trainees learn palliative care which encompasses bio-medical competence as well as humanistic compassion and caring, is not well understood nor explained by the common conceptualizations of learning as 'acquisition' and 'participation'. Learning palliative care, a practice that has been described as a cultural shift in medicine wherein the traditional role of curing and healing is challenged, provided the context to explore learning as 'becoming'.

Methods:
We undertook a qualitative narrative study with family medicine residents eliciting narratives of memorable learning (NML) for palliative care. Forty-two NML were analyzed thematically. To illuminate the interplay among themes, an in-depth analysis of the NML was done that considered themes, linguistic and para-linguistic features of the narratives.

Findings:
The context of NML was predominantly a variety of workplaces during postgraduate training. Themes clustered around the concept of palliative care and how it contrasted with other clinical experiences, the emotional impact on narrators and how learning happened in the workplace. Participants had expectations about their identities as doctors that were challenged within their NML for palliative care.

Conclusions:
NML for palliative care were a complex entanglement of individual experience and social and workplace cultures highlighting the limitations of the 'acquisition' and 'participation' metaphors of learning. By conceptualizing learning as 'becoming', what occurs during memorable learning can be made accessible to those who support learners and their professional identity formation. This study was limited by volunteer participants from one urban training program. Undertaking a study using a similar theoretical framework in the rural context will be a future consideration that will contribute to the understanding of rural clinical learning environments as places where identity is constructed and re-constructed.

^{19}F Chemical Shift Imaging (CSI) as a novel method for detection of 5-Fluorouracil (5-FU) in colorectal tumor

PRESENTING AUTHOR:
Yurii Shepelytskyi

AUTHOR(S):
Yurii Shepelytskyi[1], Karen Davenport[2], Matthew S. Fox[3], Tao Li[2], Mitchell Albert[1,2] and Eric Davenport[4]

AFFILIATIONS:
(1) Lakehead University, Thunder Bay, Ontario. (2) Thunder Bay Regional Health Research Institute, Thunder Bay, Ontario. (3) University of Western Ontario, London, Ontario. (4) Thunder Bay Regional Health Science Centre, Thunder Bay, Ontario.

ABSTRACT:
Fluorouracil (5-FU) is a widely-used chemotherapy for treatment of solid cancers, however, the efficacy is dependent on tumour type and can only be determined at the end of treatment. This study will determine if there are observable differences between the signal to noise ratio (SNR) from colorectal tumours that are sensitive and non-sensitive to 5-FU as a function of time, and will evaluate the use of ^{19}F CSI to detect the resistance of colorectal cancer to 5-FU.

HT-29 (non 5-FU responsive) and H-508 (5-FU responsive) human colorectal cancer cells were grown in culture and injected into the left flank and right mouse flank, respectively. Three mice cohorts were used for this study: 10 HT-29 tumor mice, 9 H-508 tumor mice and 5 mice had both tumor types. Tumors cells were grown to an appropriate size for imaging. Animals were anesthetized and imaged according to the approved animal utilization protocol using a Clinical 3T Philips Achieva

MRI scanner with dual-tuned quadrature ^{1}H/^{19}F birdcage coil. Coronal ^{1}H Turbo Spin Echo multi-slice images were acquired using a FOV of 75x75 mm^2, 256x256 resolution, TR/TE = 2000/55.19 ms, slice thickness 2 mm, 16 slices, 3 averages. ^{19}F CSI images were acquired after bolus injection throughout time period up to 70 minutes with time step of 2.5 minutes. CSI parameters are: FOV = 20x50 mm^2,

TR/TE = 5000/4.27 ms, 3 averages, spectral bandwidth = 32 kHz. SNR time curves were fit by exponential functions. A two-sample two-tail t-test was conducted for fitting parameters: amplitude and time constant.

SNR from voxels corresponding to H-508 tumors show gradually growth across time, whereas the SNR of HT-29 tumor voxels steady decreased ($p = 0.06$). This indicates that ^{19}F CSI can potentially be used for successful detection of tumor resistance to 5-FU chemotherapy.

Superior Mental Wellness @ Work: Standard to Action Project Phase 1: Needs Assessment and Baseline Data Preliminary

PRESENTING AUTHOR:
Jessica Lowey

AUTHOR(S):
Lowey, J [1], Kristman, VL[1234], Fraser, L[5], Armstrong, S. [5], Koski, J [6], Moeller, H[1]

AFFILIATIONS:
1. Department of Health Sciences, Lakehead University, Thunder Bay, ON
2. Institute for Work & Health, Toronto, ON
3. Dalla Lana School of Public Health, University of Toronto, Toronto, ON
4. Northern Ontario School of Medicine, Lakehead University, Thunder Bay, ON
5. Thunder Bay District Health Unit, Thunder Bay, ON
6. Centre for Addiction and Mental Health, Thunder Bay, ON

ABSTRACT:
Background/Objectives: Compared to the Ontario average, Thunder Bay and District residents have higher rates of injuries, suicides, addictions and chronic disease. There is a strong need for support to address mental health (MH) in Northern Ontario workplaces, specifically in the implementation of the Canadian National Standard for Psychological Health and Safety in the Workplace (The Standard). The Superior Mental Wellness @ Work: Standard to Action project provides leaders from worksites with the practical supports they need to implement The Standard. The objectives of this preliminary phase of the project were to 1) assess the needs, perceived by worksite leaders, of workplace MH topics that need to be addressed in the community, and 2) gather baseline data to support project evaluation.

Methods: Worksite leaders within Thunder Bay and District were invited to participate in an electronic needs assessment and baseline survey. Descriptive statistical analysis was used to interpret the survey results.

Results: Of the 316 invited, baseline data was collected from 88 worksites. Over 50 percent of participants were employed within health care, educational, and scientific/technical services. When asked, 75 percent of participants rated MH within their workplace as positive. Approximately 44 percent of respondents indicated employee MH was a workplace issue in need of support. Over 62 percent of worksite employees indicated having little to no familiarity with The Standard and 65 percent indicated their workplace had no MH policy in place.

Conclusion: These results provide the foundation for the subsequent project phases. After the implementation of training and outreach interventions, a final intervention evaluation will be conducted to determine their effectiveness in improving MH awareness, and access to MH-related resources and support within Thunder Bay and District.

Charting Knowledge into Practice: Assessing Opioid and Chronic Pain Management Performance in ECHO Ontario: A Retrospective Chart Review

PRESENTING AUTHOR:
Bayley V. Ostenfeldt

AUTHOR(S):
Zhao, J. (1), Ostenfeldt, B. V. (2), MacLeod, B. (2,3), Shantharam, Y (1), Diaz,S. (1,4), Santos, M.L. (1), Carlin, L. (5) Furlan, A. (1,4,6)

AFFILIATIONS:
(1) ECHO Ontario, Toronto Rehabilitation Institute, University Health Network, Toronto, ON, (2) Pain Research North Western Ontario, Thunder Bay, ON, (3) Northern Ontario School of Medicine, Thunder Bay, ON, (4) Institute of Medical Science, University of Toronto, Toronto, ON, (5) Department of Anthropology, University of Toronto, Toronto, ON, (6) Department of Medicine, University of Toronto, Toronto, ON.

ABSTRACT:
Introduction and aim:
Opioid and chronic pain management is a challenging and complex problem. ECHO (Extension for Community Healthcare Outcomes) Ontario Chronic Pain and Opioid Stewardship (ECHO) is a telemedicine program designed to educate health care providers, improve pain management, and disseminate best practices. Though previous studies suggest that ECHO can be an effective strategy for knowledge translation, few studies explored provider performance in clinical practice. This study investigates the translation of knowledge from the ECHO program to its implementation in practice.
Methods:
Healthcare providers (HCPs) who attended at least 4 sessions of ECHO were recruited. Chart of patients were not presented at ECHO and under the care of these HCPs were reviewed. Analysis: pre- and post-ECHO comparison of data related to: number of visits to healthcare provider, pain, function, sleep, mood, prescription of opioids and non-opioids, recommendations for non-pharmacological management and urine drug testing. Sample size goal is 100 charts.
Results:
Compared to baseline, the one-year Post-ECHO assessment demonstrated some practice changes in HCPs participating in ECHO. Providers increased discussion around pain interference with the patient's functional status, changed opioid and non-opioid pain management, increased the use of urine drug screening, and encouraged their patient to engage in more active modalities for pain, such as staying active. Further, there was also a reduction in the number of visits to the HCP.
Discussion and conclusion:
Our preliminary results demonstrate the documented implementation of knowledge into clinical practice at one-year following ECHO attendance. This finding complements previous findings of increased self-reported knowledge and self-efficacy in chronic pain management. Further work aims to review our full sample of charts, refine the chart review tool's sensitivity to change and to investigate patient-level outcomes.

Can Hyperpolarized ^{129}Xe MRI Detect Changes in Human Cerebral Perfusion Caused by Alzheimer's Disease?

PRESENTING AUTHOR:
Tao Li

AUTHOR(S):
Tao Li (1), Francis T. Hane (1,2), Jane M. Lawrence-Dewar (2,4), Ayman Hassan (3), Karl Granberg (3), Raiili M. Pellizzari (1), Jennifer A. Plata (1), Mitchell S. Albert (1,2,4)

AFFILIATIONS:
(1) Lakehead University, Department of Chemistry, Thunder Bay, Canada
(2) Thunder Bay Regional Health Research Institute, Thunder Bay, Canada
(3) Thunder Bay Regional Health Sciences Centre, Thunder Bay, Canada
(4) Northern Ontario School of Medicine, Thunder Bay, Canada

ABSTRACT:
PURPOSE: Inhaled xenon dissolves in the blood and travels to the brain tissues. Although chemically inert, xenon is biologically active, and is widely used as a general anaesthetic. Combining with hyperpolarized xenon MRI, it becomes potent as a tool to probe cerebral physiological information. We conducted a study using this technique to investigate the cerebral perfusion via xenon wash-out time from the brain tissues, and compare it between healthy participants and those with Alzheimer's Disease (AD).

METHODS**:** Three participants with diagnosed mild to moderate AD, and five healthy age-matched participants were recruited. Each participant was asked to inhale 500ml HP ^{129}Xe gas, and sixty HP ^{129}Xe brain MR spectroscopy scans were performed at 2 seconds intervals immediately after. The xenon wash-out phase data was acquired and fitted into a previously employed model, and the wash-out time of ^{129}Xe dissolved in grey matter and white matter were derived. In addition, three 2D GRE images were acquired at 10s intervals from the start of a 20s-breathhold after an additional inhalation of 1L HP ^{129}Xe gas, and the decline in SNR across the three dynamic images was calculated.

RESULTS & DISCUSSION: We found xenon wash-out times in both grey and white matter are significantly longer ($p < 0.01$) in individuals with AD than in the healthy controls. In addition, the decline in SNR across the three dynamics images also shows a slower trend in the AD subjects, suggesting a slower xenon wash-out time. We hypothesize that these differences result from impaired cerebral perfusions.

CONCLUSIONS: This study demonstrated that HP ^{129}Xe potentially has the sensitivity to probe changes in cerebral perfusion caused by AD at early stages. As several neurodegenerative diseases have been linked to altered cerebral blood flow, this technique may also demonstrate utility in early detection for a broader range of applications.

Barriers and facilitators to physician preparedness working in a rural Emergency Department (ED): a qualitative study

PRESENTING AUTHOR:
Krista Dowhos

AUTHOR(S):
Dowhos, K (1), Maar, M (1) and Cook, B (1, 2)

AFFILIATIONS:
(1) Northern Ontario School of Medicine, Thunder Bay, ON, (2) Dryden Regional Health Centre, Dryden, ON

ABSTRACT:

Background:
According to the Canadian Association of Emergency Physicians (CAEP), Family Physicians (FP) may not be adequately trained in emergency medicine (EM) (1). Studies have suggested that many graduates of Family Medicine training programs do not feel completely prepared for work in the ED.
However, rural EDs are largely staffed by FPs and it is not feasible for every rural ED to be staffed by EM graduates (2, 3). This study seeks to answer the following questions from the perspective of FPs working in a rural Northern Ontario ED: 1) What are the barriers and facilitators to FP preparedness to work in a rural ED? 2) How can we better prepare physicians for work in rural EDs?

Methods:
A single setting, descriptive qualitative study using a semi-structured interview questionnaire was performed. FPs who have worked in the community ED in the past 12 months were interviewed. Interviews were audio-recorded and transcribed. Immersion/crystallization analysis was employed to extract key themes. Eight participants were male and two were female. Years in practice ranged from 8 months to 25 years.

Results:
Key facilitators to preparedness were culture amongst the physician group (mainly colleague support and openness to calls for help), and skills and attributes of the physician (specifically independence, broad scope of practice, and tolerance of uncertainty). Barriers were patients exceeding local resources, and lack of access to local CME. Recommendations included exposure to rural EM in medical education, promotion of independence and broad scope of practice, increasing access to CME in rural communities, and better promotion of the Ministry of Health EM Mentorship Program.

Conclusion:
This study identified facilitators and barriers to FP preparedness to work in a rural ED, and led to recommendations for enhancing said preparedness. These results have potential implications for medical education and rural physician recruitment and retention.

Poster Abstracts

The research work in the following abstracts are all original and innovative.

The poster abstracts are in alphabetical order by presenting author.

Abstracts have been published as submitted.

Electronic Health Record (EHR) Data Management and Clinical Outcomes - A Case Study in Urology

PRESENTING AUTHOR:
Emmanuel Abara

AUTHOR(S):
Abara, E (1,2)

AFFILIATIONS:
Richmond Hill Urology Practice and Prostate Institute (1), Division of Clinical Sciences, Northern Ontario School of Medicine (2), Thunder Bay/Sudbury, Ontario

ABSTRACT:
Introduction and Objective: Electronic Health Records (EHR), a software that captures data of patient encounter has gained traction, with varied applications, in the past decade. . We adopted the use of EHR in 2013. The use of stent before and after ureteroscopy – a procedure for managing stone and other diseases of the ureter, is contentious. The objective of this study is to understand basic ways of managing EHR data to describe clinical outcomes in patients who had ureteroscopy with and without a stent.

Methods**:** Data recorded in the physician's clinical notes, OR records, and follow-up assessments were reviewed and extracted. The procedures were verified using Diagnostic and Billing codes. For question formation and sequencing, a PUBMED literature search was done using such phrases as 'EHR','Ureteroscopy', 'Ureteroscopy Stent or No Stent'. Data collection and analysis was from 2001 to 2004 and included patient's age, sex, presentation, stone features, OR, and fluoroscopy times, stent or no stent, stone free rates, and complications. Data was transferred to and analysed by a random number spread sheet function.

Results**:** There were 192 procedures-149 'stent' and 43 'No Stent' (3:1). These two groups were comparable -patients, stone features, stone free rates, complications. Mean stone size was 8.5 +/- 2 mm. Stone free rate at 6 weeks was 100%.in both groups. After 2 days, lower urinary tract symptoms. (LUTS) were less in patients with 'no stent' in contrast to 'stented' patients. These results are similar to published literature.

Conclusion: Data extraction and management was successful. We identified comparable outcomes in Ureteroscopy 'Stent' or' No Stent' – a situation that remains controversial. EHR as a tool in practice audit, research, quality improvement and population studies holds promise.

Poster Station #1

Quality Improvement (QI) in Wait times for Out-patient Cystoscopy in a Rural Ontario Hospital

PRESENTING AUTHOR:
Emmanuel Abara (1,2,3)

AUTHOR(S):
Sabina Reckzine (1), Diane Mainville (1), Pierrette Dallaire (1),Julie Boucher (1)

AFFILIATIONS:
(1) Sensenbrenner Hospital, Kapuskasing; (2) Richmond Hill Urology Practice & Prostate Institute; (3) Clinical Sciences Division, Northern Ontario School of Medicine, Sudbury/Thunder Bay, Ontario.

ABSTRACT:
Introduction and Purpose: Cystoscopy is not often performed in small rural hospitals. It was noted that patients who required cystoscopy were waiting up to or longer than 6 months to have the procedure completed. As part of Quality improvement project, we aimed to book 80% of all outpatient cystoscopy at the Specialty clinic within 6 months starting from 15 April, 2016.

Method: Following needs assessment, we chose a team. Delay factors in wait times considered were current scheduling process, “No shows’, Cancellations, staffing, resources and other competing interests. We chose change ideas and created a strategy for implementation and evaluation. Expected outcomes, indicators and measures to monitor them were established. A simple random technique for analyzing our sample size was used. Patient satisfaction questionnaire survey re: pre-cystoscopy, post -cystoscopy experience was carried out. Staff perceptions re: change ideas and outcome measures were also assessed. Only patients requiring local anesthesia were included. Ethics approval was obtained.

Result: Between April and December 2016, 100 patients seen in the outpatient clinic were enrolled. Change ideas considered in the PDSA cycles were booking procedure within 6 months; appointments at point of contact; patients chose their dates of appointment ; collaborative scheduling of cystoscopy . 80% (80/100) have had their procedures and completed the questionnaire survey. More than 85% of the patients considered their experience at the out patient clinic, the procedure, cystoscopy and post cystoscopy visit through telemedicine satisfactory or very satisfactory. Staff found the changes brought more inter-professional collaboration

Conclusion: Small changes in scheduling and process of out-patient cystoscopy can result in benefits: improved wait-times, efficiency, patient autonomy and satisfaction. Improved staff morale and inter-professional collaboration can enhance organizational culture. Well- planned future hospital- wide QI projects are recommended.

Poster Station #3

Understanding Undergraduate and Graduate Student Experiences in Interprofessional Education: A Mixed-Methods Study

PRESENTING AUTHOR:
Gayle Adams-Carpino

AUTHOR(S):
Adams-Carpino, G. (1), Ellaway, R. (2)

AFFILIATIONS:
(1) Community Engagement , NOSM, Laurentian University, Sudbury, ON
(2) University of Calgary

ABSTRACT:
Interprofessional education (IPE) has been identified as a key learning strategy to enhance the ability of health, education and social care practitioners to work together to enhance collaborative patient care. Interprofessional collaboration has important implications for rural and Northern communities that have health human resource shortages and limited accessibility for underserved populations.

This is an in-depth exploration of learners' experiences of IPE in the context of an IPE program run at the Northern Ontario School of Medicine, drawing on theories of phenomenological and realist inquiry; phenomenology for the perceptions of student experiences of interprofessional learning and realist inquiry to allow me to provide an explanation of students' impact of their learning, how and to what extent does the learning impact students' sense of personal and professional identity. University students from a variety of health, education, and social care programs in Northern Ontario, who are participating in an IPE Program at the Northern Ontario School of Medicine (Laurentian University campus), will be invited to participate in this study (n~30).

This study will follow 3 phases. Phase 1 involves a review of IPE competencies identified in course outlines of the 13 academic programs from which students have come to participate in the IPE Program. Phase 2 will explore students' beliefs, attitudes and experiences with IPE learning before and after participating in different episodes in an IPE Program. Phase 3 will explore how students have developed or changed their perspectives on IPE and IP practice once they have completed the IPE Program. Data will be analyzed to construct themes that respond to the realist stance of providing an explanation of how, and in what contexts IPE learning impact students' sense of personal and professional identity.

Poster Station #5

Pseudomonas aeruginosa infection of human monocytic cells results in caspase-1 activation and IL-1β production

PRESENTING AUTHOR:
Alaa Alhazmi (1)

AUTHOR(S):
Alhazmi, A (1) and Ulanova, M (1, 2)

AFFILIATIONS:
(1) Department of Biology, (2) Northern Ontario School of Medicine, Lakehead University, Thunder Bay, ON

ABSTRACT:
Pseudomonas aeruginosa is an opportunistic Gram-negative pathogen, which is the major cause of severe chronic pulmonary disease in cystic fibrosis (CF) patients. During chronic infection, *P. aeruginosa* lose certain virulence factors and develop antibiotic resistance. NOD-like receptors (NLRs) are a class of innate immune receptors, which can recognize a variety of endogenous and exogenous ligands, thereby playing a crucial role in immunity. NLR activation initiates the formation of a multi-protein complex called inflammasome that induces maturation of pro-inflammatory cytokines interleukin (IL)-1β and IL-18 through activation of caspase-1. We hypothesized that certain genetic alterations of *P. aeruginosa* affect the innate immune response of human monocytes. The THP-1 human monocytic cells were infected with 27 well-characterized isolates of *P. aeruginosa* from CF patients obtained during longitudinal observation, or with *P. aeruginosa* mutant strains lacking flagella, pili, lipopolysaccharide, or pyocyanin. *P. aeruginosa* isolates from the early stages of the infection (intermittent colonization) were able to induce apoptosis of infected THP-1 cells, activation of caspase-1, and the release of proinflammatory cytokines. Late *P. aeruginosa* isolates collected from patients with chronic lung infection had reduced abilities to induce apoptosis, caspase-1 activation, and the release of proinflammatory cytokines compared to bacteria from patients with intermittent *P. aeruginosa* colonization. Our findings suggest that the loss of certain virulence factors in the process of host-pathogen interactions will affect the recognition of *P. aeruginosa* by NOD-like receptors and may help bacteria to escape the host defenses.

Poster Station #2

Motorcyclist Crash Responsibility: The Effect of Rider Age and Engine Displacement

PRESENTING AUTHOR:
Dylan Antoniazzi (1,3)

AUTHOR(S):
Dubois, S (2-4), Klein, R (1,3), and Bédard, M (1-4)

AFFILIATIONS:
(1) Department of Psychology, Lakehead University, Thunder Bay, ON, (2) Northern Ontario School of Medicine, Thunder Bay, ON (3) Center for Research on Safe Driving, Lakehead University, Thunder Bay, ON (4) Centre for Applied Health Research, St. Joseph's Care Group, Thunder Bay, ON

ABSTRACT:
Background: Our goal was to examine the effect of engine displacement in cubic centimeters (CCs) on crash responsibility while considering motorcyclists' age.

Methods: All male motorcyclists involved in a fatal crash in the U.S.A. (1987 - 2009) who tested negative for both drugs and alcohol were included (N=13,293). Given most crashes involved males (97%), females were excluded. Employing a case control design, cases had committed one or more Unsafe Motorcyclist Actions (UMAs), the proxy measure of responsibility; controls had no UMAs recorded. Odds ratios were computed via multinomial regression examining the effect of motorcyclists' age and motorcycle displacement (up to 1500 CCs, in 250 CC increments) on crash responsibility by any UMA and top three individual UMAs committed.

Results**:** Sixty-one percent of motorcyclists committed one or more UMAs (n=8,064). The top three individual UMAs were: Speeding (35%, n=4,669), Weaving (22%, n= 2,957), and Erratic Driving Behaviour (7%, n=910). Riders aged 20-40 had approximately 20-30% increased odds of committing any UMA for motorcycles with 500 – 1000 CCs compared to equivalent aged riders of 250 CC motorcycles (e.g., Age 30, 750 ccs versus 250 OR: 1.32, 95% CI: 1.14; 1.54). Riders aged 50 had similar but weaker increased odds at 500-750 CCs. For motorcyclists aged 60+ the odds of committing any UMA were no longer significantly elevated. Finally, riders age 30-40 had reduced odds of committing any UMA for 1500 CC motorcycles (versus 250 CC motorcycles). The results of the individual UMAs will also be reported.

Conclusion: Education and legislative measures should be considered. Educationally, the development of training interventions focusing on control, stability, and breaking differences with more powerful motorcycles (750 to 1250 CCs). Legislatively, licensing tiers could be employed based on displacement and educational requirements. Education and legislative measures could curb the trend seen between high-powered motorcycles and crash responsibility.

Poster Station #7

Frailty, neuropathology and variation in clinical disease expression in dementia

PRESENTING AUTHOR:
Joshua J. Armstrong (1)

AUTHOR(S):
Armstrong, J.J.(1), Godin, J.(2), Wallace, L.(2), Andrew, M.K.(2), Rockwood, K.(2)

AFFILIATIONS:
(1) Department of Health Sciences, Lakehead University, Thunder Bay, ON
(2) Division of Geriatric Medicine, Faculty of Medicine, Dalhousie University, Halifax, NS

ABSTRACT:
Objective: Although a number of studies have linked frailty with cognitive impairment, fewer studies have examined these constructs together in relation to brain health. Examining the relationships between neuropathological lesions, frailty and late-life cognitive function may provide insight into why some individuals can tolerate more neuropathological lesions than others. Here, we examine the National Alzheimer's Coordinating Center (NACC) database to evaluate the variance in clinical outcomes explained by frailty, after accounting for neuropathology.

Methods: Data from the last visit prior to death were linked to autopsy data in the National Alzheimer's Coordinating Centers (NACC) database. Frailty was measured by accumulation of health deficits frailty index (FI) based on 26 assessment variables. Hierarchical multiple regression models explained the variance of three groups of variables: (1) confounding variables (age, sex, education, APOE ε4), (2) index measures of neuropathology (neurofibrillary tangles, neuritic plaques, diffuse plaques, Lewy bodies, amyloid angiopathy, macrovascular disease, microvascular disease), and (3) the FI. Missing data values were addressed through the use of multiple imputation.

Results: After accounting for the confounding variables, neuropathological measures accounted for a significant amount of variation in both the Mini-Mental State Exam (MMSE; R^2 change = 0.22) and Clinical Dementia Rating Scale Sum of Boxes (CDR-SOB; R^2 change = 0.20) scores. When added to these models, the FI accounted for significant additional variation (MMSE R^2 change = 0.06; CDR-SOB R^2 change = 0.10).

Conclusions: Considering frailty significantly increased the explanatory value of models of the relations of neuropathological index measures and cognition. The findings suggest that overall health contributes to the relationship between neuropathology and disease expression in persons with dementia. Additional analyses using the NACC may provide further insights into the relationships between frailty, aging, neuropathology, and cognition in older adults.

Poster Station #4

A Supervisor Training Program for Work Disability Prevention: Preliminary Results from a Cluster Randomized Controlled Trial

PRESENTING AUTHOR:
Joshua J. Armstrong (1)

AUTHOR(S):
Armstrong, J.J.(1), Kristman, V.L.(1), Shaw, W.S. (2)

AFFILIATIONS:
(1) Department of Health Sciences, Lakehead University, Thunder Bay, ON
(2) Liberty Mutual Research Institute, Boston, MA

ABSTRACT:
Providing supervisors with tools to improve their response to workplace injuries or illnesses may improve disability outcomes. The primary objective of this study was to examine the effectiveness of the Supervisor/Manager Accommodation Recognition & Training (SMART) Program on reducing the total duration of workers' lost-time claims. Here, we provide preliminary results from two Canadian employers (ON & BC) and one American employer.

Methods: Within each organization, work units were randomly selected to have their supervisors receive the SMART training program. Work units not assigned to the training program served as the control group for the study. Work disability outcome data were one-year prior to and one-year post training for comparison purposes. Web based surveys were used to collect information on supervisors' knowledge and responses to workplace injuries at baseline, 3- and 6-months post training.

Results: For the Ontario-based employer, the SMART program did not impact the total duration of workers' lost-time claims when compared to the controls. For the BC-based employer, trained work sites had a reduction in both the number of days off per injury incident (-6.2) and the number of short-term disability claims per 100 workers (-10.5). Across the American-based employer, the work sites that received the SMART training had a significant reduction in the number of days off per workers' compensation claim (-4.9), a small decrease in the average number of days per short-term disability claim (-2.7) and the number of Workers' Compensation claims were reduced to half the rate post-training (8.3 claims per 100 employees per year down to 4.4). Survey results will also be discussed.

Discussion: The mixed results of the preliminary RCT data highlight the importance of context when studying complex organizations. Employee culture, policies and practices of management, type of industry, and other organizational factors have a strong influence on work disability outcomes.

Poster Station #6

Point of Care Ultrasound at NOSM: A qualitative evaluation of POCUS in undergraduate medical education

PRESENTING AUTHORS:
Sarah Byce and Ben Piper

AUTHOR(S):
Kuehner, Z (1); Dmitriew, M (1); Byce, S (1); Piper, B (1); Zanette, C (1, 2)

AFFILIATIONS:
1. Northern Ontario School of Medicine
2. Thunder Bay Regional Health Sciences Centre

ABSTRACT:
Point of care ultrasound is a rapidly expanding and increasingly versatile tool in medicine. It is especially useful in rural areas where access to imaging resources can be scarce. Recently, there has been debate regarding the feasibility and efficacy of teaching ultrasound techniques in undergraduate medical education. The present study investigated the experiences of first and second year medical students at the Northern Ontario School of Medicine (NOSM) who participated in ultrasound training sessions. Twenty students participated in 10 ultrasound teaching sessions that involved both lecture and hands-on components. Student experiences of the sessions was evaluated using Likert-type scales to assess their comfort with ultrasound before and after the training. They were also asked about engagement in the course, areas of strength and improvement, and desire for future integration of ultrasound in NOSM's curriculum. Qualitative analysis was performed using Wilcoxin sum of ranks test. At the end of the course, students reported statistically significant improved comfort with multiple ultrasound techniques, desire for future training, and integration of ultrasound into the curriculum. Students who participated in the ultrasound training sessions also showed trends towards superior image interpretation and knowledge of pathophysiology than a control group of their peers who had not participated in the training sessions. The results of this study provide both subjective (student perception) and objective (trends towards improved clinical skills) evidence for a positive role of point of care ultrasound training in undergraduate medical education.

Poster Station #10

Community Health Nursing Simulation Using a Standardized Patient

PRESENTING AUTHOR:
Caleigh Campbell

AUTHOR(S):
Filice, S. (1), Dampier, S. (2), Campbell, C. (1) & Halverson, K (1).

AFFILIATIONS:
(1) School of Nursing, Lakehead University, Thunder Bay, ON, (2) School of Health and Community Services, Confederation College, Thunder Bay, ON

ABSTRACT:
This is a community health nursing teaching innovation that focused on the competencies of assessment, communication, and implementation of a home visit. In the current learning environment where students crave more learning opportunities in acute care settings, community health nursing is usually not a high priority for students. Therefore one way of creating interest and preparing students for home visits in the community care setting was the use of simulation with a standardized patient in an actual simulation apartment. Simulation is valued for its ability to provide realistic, context-rich experiential learning in a safe environment. The need to develop inventive ways to strengthen community home nursing content in nursing curriculum is important so students understand community theory and its application through innovative ways. This simulation helped prepare students to develop a better understanding of assessment in the home environment, perform nursing interventions and create interest in this area of nursing. By discovering community health nursing applications through experiential learning students were in a better position to understand the scope, role and competencies of community health nursing practice. Further application of this teaching and learning simulation will add to excellence in the undergraduate community health nursing curriculum.

Poster Station #9

Perceptions of walkability and pedestrian safety in Thunder Bay

PRESENTING AUTHOR:
Joanna Carastathis (1)

AUTHOR(S):
Galway, L (2), Carastathis, J (1), and Krupper, A (3)

AFFILIATIONS:
(1) Thunder Bay District Health Unit, Thunder Bay, ON, (2) Department of Health Sciences, Lakehead University, Thunder Bay, ON, (3) Municipality of the City of Thunder Bay, Thunder Bay, ON

ABSTRACT:
Many developed countries are challenged with increases in overweight/obesity, leading to various chronic diseases, such as diabetes, heart disease, and some cancers. This trend is largely a result of physical inactivity. As an example, 38.5% of the population in Thunder Bay are not meeting the minimum requirements for physical activity, and 61.7% of the population are overweight or obese. At the local level, it is in the interest of public health to increase physical activity levels, and reduce the negative health effects of overweight/obesity.

Walking for transportation is an accessible and affordable way to incorporate physical activity into every-day life, but many residents in Thunder Bay choose not to commute actively. This presentation describes a collaborative research project to describe walkability and pedestrian safety in Thunder Bay in an effort to understand barriers to active transportation, address local knowledge gaps, and create baseline data for future research and action. This presentation describes the results of a two-part study:

1: Pedestrian-vehicle collision analysis: all reported pedestrian-vehicle collisions that occurred from 2004-2015 from police collision reports were mapped using GIS software to identify collision 'hotspots'. Descriptive analyses were conducted to examine trends over time, by demographics, conditions of collisions, and other variables.

2: Community perceptions of walkability and pedestrian safety: 300 community intercept surveys were conducted at 30 randomly selected intersections in Thunder Bay. The survey instrument was adapted from the widely used and validated Neighbourhood Environment Walkability Scale (NEWS) survey instrument. Descriptive statistics were calculated and visuals generated by to summarize perceptions of walkability and safety among pedestrians.

The presentation describes a successful local multi-sector collaboration to better understand transportation issues, help to develop solutions, and provide local decision-makers with evidence to support infrastructure investments or policy change to create healthier environments and increase physical activity levels.

Poster Station #12

Continuing Surveillance of *Haemophilus influenzae* in Northwestern Ontario and the emergence of serotype a as a significant cause of invasive disease

PRESENTING AUTHOR:
Ashley Cerqueira

AUTHORS:
Ashley Cerqueira, MSc (1); Jessica Gencarelli, BSc (2), Raymond S.W. Tsang, MMedSc PhD (3); Frances B. Jamieson, MD (4,5); and Marina Ulanova, MD/PhD (6)

AFFILIATIONS:
(1) Faculty of Medicine, University of Ottawa, Ottawa, Ontario; (2) Faculty of Medicine, Northern Ontario School of Medicine, Thunder Bay, Ontario; (3) Vaccine Preventable Bacterial Diseases, National Microbiology Laboratory, Public Health Agency of Canada, Winnipeg, Manitoba, (4) Public Health Laboratories, Public Health Ontario, Toronto, Ontario; (5) Department of Laboratory Medicine and Pathobiology, Faculty of Medicine, University of Toronto; (6) Division of Medical Sciences, Northern Ontario School of Medicine, Thunder Bay, Ontario

ABSTRACT:
Prior to the introduction of a pediatric conjugate vaccine in the early 1990s, *Haemophilus influenzae* serotype b (Hib) was a major cause of infant meningitis and pneumonia. While the addition of the Hib vaccine to the routine pediatric immunization schedule in Canada was very successful in eliminating Hib disease almost entirely, *H. influenzae* serotype a (Hia) has now emerged as a significant cause of invasive disease. An increased incidence of non-type b *H. influenzae* disease is now reported worldwide, and previous studies by our group found an increased incidence of invasive disease caused by *H. influenzae* serotype a (Hia), f (Hif), and non-typeable *H. influenzae* in Northwestern Ontario (50 cases between January 2002 to July 2011). Here we characterized 20 invasive *Haemophilus influenzae* isolates recovered in Thunder Bay, Ontario, over a 5-year period (August 2011 – March 2017). Among them were two cases of Hib, nine cases of non-typeable *H. influenzae*, and nine cases of Hia. Furthermore, four cases resulted in pneumonia, 3 resulted in respiratory failure, one resulted in necrotising fasciitis, and two Hia cases presented as epiglottitis, a life-threatening condition associated with invasive Hib disease historically but rarely reported in Hia infections. Moreover, of the three pediatric cases under 1 year of age, two required urgent transfer. Here we reviewed the clinical presentations of these cases and described the characteristics of the *H. influenzae* isolates. Our results stress the importance of continued surveillance of *H. influenzae* in the post Hib-vaccine era, and further support the significance of developing a Hia vaccine to prevent severe invasive disease.

Poster Station #11

Perceived Changes Secondary to A Six-Week Hand Training Program Using a Novel Concept Rehabilitation Device

PRESENTING AUTHOR:
Gabriela Coccimiglio(1)

AUTHOR(S):
Coccimiglio, G (1)., Vasiliu, D (2)., Pepe, AM (3)., Jain, A (4)., Lawrence-Dewar, JM (5)., Reinikka, K(4)., Johnson, VBK (4,6*).

AFFILIATIONS:
1 – Department of Psychology, Lakehead University, Thunder Bay, Ontario, Canada,
2 – Independent Consultant, 3 – Department of Biology, Carleton University, Ottawa, Ontario, Canada, 4 – St. Josephs Care Group Hospital, Thunder Bay, Ontario, Canada,
5 - Thunder Bay Regional Research Institute, Thunder Bay, Ontario, Canada,
6 – Department of Kinesiology, Lakehead University, Thunder Bay, Ontario, Canada.
*Senior and communicating author

ABSTRACT:
Background & Purpose: Hand function is often affected and/or severely compromised in individuals post stroke. Consequently, perceived functional abilities are diminished contributing to a significant decrease in quality of life. This study examined the impact of a community-based hand function training program using an innovative, low-cost hand rehabilitation device on perceived hand function and quality of life.

Methods: Eight participants (three females) who sustained a single stroke five or more months prior to the start of the study were recruited. All participants underwent training using a novel hand rehabilitation device three times per week for period of six weeks; a total of 18 one-hour sessions. Perceived functional abilities were assessed using ABILHAND. Quality of life was assessed using two different measures: Stroke Specific Quality of Life (SSQOL) and European Quality of Life (EQ-5D-5L). Data was analyzed using paired *t*-tests.

Results: Results indicated that participants' ABILHAND scores improved from pre-training (Mean ± SD: 23 ± 12.33) to post-training (Mean ± SD: 29.38 ± 9.74), and these differences were statistically significant (t_7 = -2.49, p = .02). Changes in both quality of life measures (EQ-5D-5L (t_7 = 1.19, p = 0.13) and SSQOL (t_7 = 0.65, p = 0.26)) were not statistically significant.

Conclusions: These results suggest that the six-week hand function training program resulted in an improvement in perceived hand function. However, this improvement did not translate to changes in quality of life for stroke survivors as measured by quantitative surveys. Future research with a larger participant group to expand upon the findings would allow for greater understanding.

Poster Station #13

Evaluating Physician use of a standardized written handover form (IPASS) at Muskoka Algonquin Healthcare Emergency Department (ED)

PRESENTING AUTHOR:
Erin Creasor

AUTHOR(S):
Creasor, E. (1) Taylor, M. (1) Simpson, J. (2)

AFFILIATIONS:
(1) NOSM Undergraduate Medical Student (2) Huntsville chief of the Emergency Department and physician preceptor

ABSTRACT:
Communication and continuity of care are two fundamental principles involved in safe, high quality patient care. In the Emergency Department (ED), these principles are challenged every eight to twelve hours during shift change when patients are transferred from one physicians care to another. The need for adequate information transfer is important for all patients, however it becomes critical for vulnerable patient populations. At the Muskoka Algonquin Healthcare (MAHC) hospitals in Huntsville and Bracebridge, Ontario, the IPASS standardized handover form was implemented as of 2014 to address this barrier to high quality health care. The IPASS form, in conjunct with training sessions, was initially validated in 2014, in a pediatric residency program and resulted in a 30% decrease in medical errors resulting in harm to patients[1].

The purpose of this study was to evaluate the uptake, use and completion rates of the new handover system at MAHC. The study used a multi-method design that combined a chart review with a qualitative physician survey.

In total, 600 ED charts were randomly selected between July 2015 and September 2016, 300 charts from each site. Of the 53 handovers that occurred in Huntsville, 33 (62%, 95% CI [0.48-0.74]) contained an IPASS form. In Bracebridge, 14 (63%, 95% CI [0.42-0.8]) of the 22 charts handed-over contained an IPASS form. These results were consistent with the qualitative data from the physician survey, where 73% of the physicians surveyed reported receiving an IPASS form with handover 'Most of the time."

By adopting the IPASS standardized handover form, MAHC has taken the first step in reducing errors secondary to medical communication. This research identifies areas in need of improvement and provides suggestions for future steps required to improve the handover process.

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Poster Station #14

Fetal Programming from Low Dose Radiation: Glucose Metabolism in the Liver and Brown Adipose Tissue

PRESENTING AUTHOR:
Caitlund Davidson (1)

AUTHOR(S):
Davidson, CQ (1), Lees, SJ (2), Khaper, N (2)

AFFILIATIONS:
(1) Department of Biology, Lakehead University, Thunder Bay, ON,
(2) Medical Sciences Division, Northern Ontario School of Medicine, Lakehead University, Thunder Bay, ON

ABSTRACT:
Exposure to ionizing radiation contributing to negative health outcomes is a widespread concern among the public, scientific community, and workers in the nuclear energy industry and diagnostic imaging. However, the impact of low-dose exposures remains contentious. Pregnant women represent a vulnerable group. The fetal programming hypothesis says that an adverse in-utero environment or stress during development of an embryo or fetus can result in permanent physiologic and metabolic changes often resulting in progressive metabolic dysfunction with age. Various models of fetal programming present similar outcomes with offspring demonstrating alterations in birth weight. Low birth weight predisposes offspring to insulin resistance and reduced glucose metabolism. To assess the effects of low dose radiation on fetal programming of glucose metabolism, pregnant C57Bl/6J mice were irradiated at 1000 mGy and compared to a sham irradiated group. Female offspring born to dams irradiated at 1000 mGy have lower birth weights and increased liver weights. Female offspring had increased uptake in interscapular brown adipose tissue (IBAT) measured by positron emission tomography (PET). Increased hepatic SOCS3 and PEPCK were found in irradiated females while both of these proteins were reduced in males, compared to sham. Irradiated males demonstrate increased hepatic triglycerides compared to sham. Treatment caused no change in circulating triglycerides, however significant sex differences were observed. Alterations in glucose uptake and metabolism are significant but subtle in mice at 4 months of age. These findings suggest that low dose radiation alters glucose metabolism in the IBAT and liver of offspring that may progress with age.

Poster Station #15

An assessment of baseline staging tests in primary breast cancer in a community setting in Northern Ontario

PRESENTING AUTHORS:
Liliana (Lily) DeMiglio (1) and Victoria (Jeanne) Murdoch (1)

AUTHOR(S):
DeMiglio, L (1), Murdoch, V (1), Hogenbirk, JC (1, 2) and Voutsadakis, IA (3, 4)

AFFILIATIONS:
(1) Northern Ontario School of Medicine
(2) Laurentian University
(3) Algoma District Cancer Program, Sault Area Hospital
(4) Division of Clinical Sciences, Northern Ontario School of Medicine

ABSTRACT:
Background: Specific guidelines set forth by Cancer Care Ontario (CCO) on the type and timing of staging radiologic investigations exist for newly diagnosed breast cancer in women undergoing surgical resection. Radiologic staging studies such as bone scan, liver ultrasound (US) and chest x-ray are recommended based on the stage of the primary tumor. This project sought to determine whether women with newly diagnosed breast cancer at the Sault Area Hospital in Sault Ste. Marie, Ontario, underwent appropriate baseline staging as recommended by the CCO guideline.

Methods: A retrospective chart audit was conducted on 133 newly diagnosed breast cancer patients between 2015 and 2016. Based on predefined inclusion criteria, data were extracted from 110 charts.

Results: The guideline was followed in just over half of the patients in the cohort (54.5%, n=60), while in 50 patients there were deviations from the guideline. In most cases, deviations consisted of more than the recommended baseline screening being ordered (a CT scan in 36% of cases and a bone scan or US in 38% of cases) and/or of the timing of screening (occurring preoperatively instead of the recommended postoperative screening, 12%). In 14% of deviated cases, a recommended staging test was omitted. The baseline screening was ordered by providers in primary care, surgery and medical oncology (in 6%, 38% and 40% of cases respectively). Patients with a more advanced stage or tumor grade and those subsequently receiving chemotherapy more frequently underwent screening not concordant with the guidelines.

Conclusions: While preoperative and additional imaging seems presumptive and may expose patients to unnecessary risks, others argue for the benefits of comprehensive staging with imaging in certain more advanced or biologically aggressive tumors. The findings point to the need to establish clinician collaboration to ensure appropriate baseline screening in order to avoid oversight, duplication and over-imaging.

Poster Station #16

Vaccine Safety Analysis of Prevnar 13 in Patients with Severe Chronic Kidney Disease Previously Immunized with 23-Valent Pneumococcal Polysaccharide Vaccine and PPV23 Naïve Patients.

PRESENTING AUTHOR:
Victoria Domonkos

AUTHOR(S):
Victoria Domonkos, William McCready, Marina Ulanova

AFFILIATIONS:
Northern Ontario School of Medicine, Thunder Bay, ON.

ABSTRACT:
The objective of the vaccine safety analysis is to determine if there is a difference in the incidence and severity of vaccine related adverse reactions following immunization with Prevnar 13 between two study cohorts. The study cohorts consist of adult individuals with severe chronic kidney disease (stage 4 or 5) who have been (cohort 1) or have not been (cohort 2) previously immunized with a 23-valent pneumococcal polysaccharide vaccine (PPV23). The vaccine safety analysis is part of a clinical trial assessing Prevnar 13 immunogenicity in these study cohorts.

Methodology: Data on adverse reactions following immunization were collected at 3 visits: (1) on the day of immunization, participants were observed for 1 hour following immunization, and adverse reactions recorded. Following immunization, participants recorded their daily body temperature and any adverse reactions in a diary that was collected on post-immunization day 7 (2) and again on day 28 (3). Systemic and local adverse reactions were determined to be vaccine related or not, and numbers of vaccine related reactions were compared between the study cohorts. Findings were also compared with published data on clinical trials of Prevnar 13 in adults. Statistical analysis was done using Fisher Exact Test, $p<0.05$ was considered statistically significant.

Results: At the time of analysis, 92 eligible participants have been immunized with Prevnar 13. No vaccine related severe adverse events have been recorded. In cohort 1, 30.3% of participants reported a systemic reaction, which was deemed vaccine-related, in comparison to 8.5% of participants in cohort 2. The difference in the number of reported systemic adverse reactions between the two cohorts was statistically significant.
Local reactions were reported by 21.2% of participants in cohort 1 and 27.1% in cohort 2 (not statistically significant difference). Difference in frequency of combined local and systemic reactions between the two cohorts was not statistically significant. As a total of 120 evaluable participants are required for final analysis, 30 more are being actively recruited to meet the required sample size.

Conclusion: Our preliminary analysis indicates that adult patients with severe chronic kidney disease who have been previously immunized with PPV23 may have higher frequency of systemic adverse reactions to immunization with Prevnar 13 compared to PPV23-naïve study participants. The analysis will be completed when a total of 120 participants are immunized.

Poster Station #17

Integrating Interprofessional Education into the Curricula: Opportunities and Challenges for Four Undergraduate University Nursing Programs in Northern Ontario

PRESENTING AUTHOR:
Emily Donato (1)

AUTHOR(S):
Donato, E (1), Lightfoot, N (2), MacEwan, L (3), Carter, L (4)

AFFILIATIONS:
(1) School of Nursing, Laurentian University, Sudbury, ON, (2) School of Rural and Northern Health, Laurentian University, Sudbury, ON, (3) School of Social Work, Laurentian University, Sudbury, ON, (4) Centre for Continuing Education, McMaster University, Hamilton, ON

ABSTRACT:
Formal inclusion of Interprofessional Education (IPE) curricula within Canadian undergraduate nursing programs has occurred over the last five years. This work derives from the inclusion of IPE as a key element in the accreditation standards of the Canadian Association of Schools of Nursing (CASN) for undergraduate nursing programs. While there is evidence that Canadian university nursing programs are working to achieve the IPE requirement and demonstrate integration of IPE in their curricula, little is known about the status of IPE integration nursing programs in Northern Ontario, particularly from faculty member and program administrator perspectives. The aims of this study were to explore how four-year undergraduate university nursing programs in Northern Ontario are integrating IPE within their curricula and to identify associated opportunities and challenges. Through a multiple case study design, program experiences were explored within and across four undergraduate nursing programs located in Sudbury (English language and French language programs), Thunder Bay, and North Bay. Data acquisition strategies included individual and focus group interviews with program directors and faculty members, and review of available program supporting documentation and program websites. A qualitative interpretive descriptive approach guided the research and thematic analysis. Preliminary results based on analysis of each case support the findings in existing literature, and reveal the various implementation aspects of IPE within each program. The final results of each case will be shared with the corresponding program directors and faculty. Cross-case analysis is currently underway and will facilitate identification of final themes. Overall study results will provide further information which may be incorporated into accreditation and other reports focused on program review and evaluation of IPE within curricula. Results may also be used to inform and refine current IPE practices more generally.

Poster Station #19

The Effect of Influenza Vaccination on the Systemic Inflammatory Response and Myocardial Protection in Patients Undergoing Cardiac Surgery: a Randomized Controlled Trial

PRESENTING AUTHOR:
Fady Ebrahim (1)

AUTHOR(S):
Dr. Ebrahim F (1), Dr. Mireau J (3), Dr. McElhaney J (2,3), Dr. Atoui R (2,3)

AFFILIATIONS:
1. Anesthesiology resident, Northern Ontario School of Medicine, Sudbury, Ontario
2. Associate Professor, Northern Ontario School of Medicine, Sudbury, Ontario
3. Staff physician, Health Sciences North, Sudbury

ABSTRACT:
Patients undergoing cardiopulmonary bypass have increased systematic inflammatory response. It is been shown that this elevated inflammatory reaction predisposes the patient to postoperative complications. Currently, no convincing drugs or techniques exist to reduce the severity and incidence of the systemic inflammatory reaction. This study is based on epidemiological studies, large cohort studies as well as recent randomized controlled trials that showed a significant beneficial effect of the influenza vaccine in patients with CAD (treated medically) as well as in patients undergoing percutaneous coronary interventions. Our project will therefore aim to elucidate the relationship between influenza vaccinations and the systematic inflammatory response and cardio-protection seen in patients undergoing cardiac surgery. Our research team is in the middle of a single center, double-blind, randomized, placebo-controlled crossover trial analyzing the beneficial effect of the influenza vaccine in patients undergoing cardiac surgery. By the end of this upcoming influenza season, we would have enrolled 30 patients. The study consists of patients undergoing cardiac surgery at HSN randomized into 2 groups: 1) those who receive the vaccine or placebo preoperatively, or: 2) those who receive the vaccine or placebo 4-6 weeks postoperatively. Subjects in both groups will be compared using standard laboratory tools to assess the level of various pro- and anti-inflammatory cytokines (IL-6, IL-8, IL-1B,TNF-α, IL-10) as well as other cardiac and inflammatory markers (troponins, CRP), at different time intervals intra- and post-operatively. Other clinical outcomes will also be collected prospectively and compared between the 2 groups. These include hemodynamic parameters as well as major postoperative events. Further assessments will include the Frailty Scale (in patients 65+) and length of stay after surgery.

Poster Station #18

Unintentional Weight Loss as a Factor of Adjuvant Chemotherapy Start Time in Patients with Resectable Colorectal Cancer: A Retrospective Chart and Clinical Practice Review

PRESENTING AUTHORS:
Daniella Febbraro[1] and Megan Gray[1]

AUTHOR(S):
Febbraro, D.[1], Gray, M.[1], Quevillon, T.[1], Elder, E.[1], Spadafora, S., MD, FRCPC[1,2]

AFFILIATIONS:
[1]Algoma District Cancer Program, Sault Ste. Marie, ON
[2]Northern Ontario School of Medicine, Sudbury, ON

ABSTRACT:
Introduction: It is known that colorectal cancer survival improves with adjuvant chemotherapy. Patients experiencing unintentional weight loss (UWL) prior to surgery may be at higher risk for post-operative complications, resulting in longer times from surgery to adjuvant chemotherapy. Literature states that for every 7 day increase in wait time, risk of death increases 5%. This review will determine if patients with resectable colorectal cancer experiencing pre-operative UWL have longer wait times from surgery to adjuvant chemotherapy.

Methodology: A retrospective chart review is being performed on patients diagnosed with resectable colorectal cancer at the Algoma District Cancer Program (ADCP) in 2015 and 2016. Data will be extracted from approximately 102 charts in the ADCP and Sault Area Hospital (SAH). Specifically, patient demographics, diagnosis, weight 6 months prior to surgery, date of surgery, weight prior to and post-surgery if taken, weight at medical oncology consultation, and date of initial dietician consult if any, will be captured. Start of adjuvant chemotherapy and time from surgery to adjuvant chemotherapy will also be recorded. Descriptive statistics will be used to analyze these variables. Reasons for delay in the start of adjuvant chemotherapy will also be evaluated to improve future practice.

Results: Once complete, the group of patients with UWL will be compared to those without to determine if those who experienced UWL prior to surgery had longer wait times from surgery to adjuvant chemotherapy.

Conclusion: It is hypothesized that patients with pre-operative UWL experience more post-operative complications, resulting in increased wait times from surgery to adjuvant chemotherapy. The results of this review are expected to benefit the overall outcome of patients at ADCP by facilitating the development of a screening tool to identify colorectal cancer patients at high risk for post-operative complications and, thus, allowing the use of dietary interventions to improve their care.

Poster Station #21

Examining the use of electronic patient portals in an integrated healthcare institution

PRESENTING AUTHORS:
Megan Gray and Melissa Reed

AUTHOR(S):
Shaw, N.T. (a), Breen, J.A. (b), Hirvi, E. (c), McGuire, S.K. (b), Gray, M. (d), Reed, M. (d), Akhtar, S. (d)

AFFILIATIONS:
(a) Associate Professor, Department of Sociology, Algoma University
(b) Former Research Intern, Health Informatics Institute, Algoma University
(c) Attending Physician, Group Health Centre
(d) Volunteer Research Assistant, Algoma University

ABSTRACT:
Introduction: There is a continual push from patients, healthcare providers, administrators, researchers, and political organizations to increase patient access to health data through the implementation of electronic patient portals. Electronic patient portals give patients access to information from their electronic health record and allow them to contact their health providers online to ask questions, refill prescriptions, setup appointments, and view test results. While their use is increasing, there is still much we do not know about the technology, who uses it, and why. The purpose of this study is to measure the use of the myCARE patient portal at the Group Health Centre and determine why or why not patients choose to engage in its use.

Methodology: Mixed-method, cross-sectional examination of electronic, demographic, and interview data to gain an understanding of (1) the types of people that do and do not use the portal, (2) why they choose to enroll or not, and (3) usage rates. Data was collected through the Group Health Centre, which is an integrated healthcare institution in the Sault Ste. Marie, Algoma District housing multiple types of healthcare professionals and already containing a Centre-specific electronic health record. Patients of Dr. Ed Hirvi and Dr. Russell Tull were invited to register for the portal. Anonymous data was collected through the Group Health Centre's aggregate database and analyzed to describe who is using the myCARE portal. Interviews were also performed with 36 random patients regardless of whether they used myCARE or not.

Conclusion: Data from this study will help to inform researchers and healthcare organizations about who exactly is using electronic patient portals and determine how usage rates may be improved. The next step in this research will be to explore methods of increasing patient registration in the portal and examining possible health benefits of portal use.

Poster Station #23

The immune response of adult patients with severe chronic kidney disease to the 13-valent pneumococcal conjugate vaccine

PRESENTING AUTHOR:
Huska, B. M. (1)

AUTHORS:
Huska, B. M. (1), Desbiens-Forget, A. (1), Gaultier, G. N. (2), Nix, E. B. (1), Williams K. (1), McCready, W. (3), Ulanova, M. (1,2)

AFFILIATIONS:
(1) Medical Sciences Division, Northern Ontario School of Medicine, Thunder Bay, ON, (2) Department of Biology, Lakehead University, Thunder Bay, ON, (3) Clinical Sciences Division, Northern Ontario School of Medicine, Thunder Bay, ON.

ABSTRACT:
Adult patients with chronic kidney disease (CKD) are immunocompromised and more susceptible than the general population to invasive pneumococcal disease and pneumococcal pneumonia. The effectiveness of the pneumococcal polysaccharide vaccine (PPV23) in this group remains controversial, and there is currently insufficient evidence to recommend the use of the 13-valent pneumococcal conjugate vaccine (PCV13). Recent data suggest that (1) in immunocompromised adults, PCV13 may be more immunogenic than PPV23, and (2) immunization with PPV23 may affect the subsequent response to PCV13. Our goal is to study the immune response to PCV13 in adults with severe CKD. Seventy Seven individuals aged 33-90 years with CKD stage 4-5 undergoing hemodialysis, were administered one dose of PCV13. The concentration of serotype-specific IgG, IgM, and IgA antibody against 7 individual pneumococcal serotypes were quantified at baseline, one month, and 1 year post-immunization using the standard ELISA. The antibody response was compared between the individuals who had or had not previously received PPV23 as part of standard care. One month following vaccination with PCV13, the concentrations of IgG and IgA antibody significantly increased for all serotypes tested. The IgM antibody response was significant for serotypes 6B, 19A and 19F. One month after vaccination a higher serotype-specific IgM antibody response to PCV13 was found in individuals previously vaccinated with PPV23, compared to those who are PPV23-naïve; no significant difference in IgG or IgA antibody response between these two groups was found. One year after vaccination no significant difference in IgG antibody response between the groups was found. We found that adult patients with severe CKD are able to respond to PCV13 with significant increase in serotype-specific antibody concentrations one month post-immunization. Based on the preliminary data, previous PPV23 immunization does not appear to have a negative effect on antibody response to PCV13.

Poster Station #20

Improving Interprofessional Collaboration for Indigenous Access to Health-Care Services

PRESENTING AUTHOR:
Justine Jecker

AUTHOR(S):
Jecker, J.

AFFILIATIONS:
Department of Education, Lakehead University, Thunder Bay, ON
Nokiiwin Tribal Council, Thunder Bay, ON

ABSTRACT:
In northern Ontario, interprofessional collaboration is needed to improve access to health-care services for Indigenous persons (Duckett, 2009; Dunn, 2016; Health Canada, 2005, 2007, 2015). The purpose of this study is to examine whether the introduction of interprofessional education competencies (CIHC, 2010), in a one-day training format, to health-care teams servicing northwestern Ontario reserves enhances: 1) interprofessional collaboration and 2) Indigenous health-care access. Models and theories from interprofessional education and collaboration, as well as Indigenous research practices, will be used to support the intervention in a participatory action research framework. Mixed method data involving the use of two validated surveys and interview case studies, will be gathered from participants representing up to six First Nation member communities belonging to a single Tribal Council. Results will address federal and provincial policy recommendations, as well as previous research that supports interprofessional collaboration as a mechanism to improve access to health-care services, specifically for those living on-reserve in northwestern Ontario. The communities will ultimately retain this knowledge for the purposes of establishing a long-term community sustainability plans following the research project.

Poster Station #25

Examination of patient characteristics associated with access to Virtual Critical Care service in rural special care unit of Temiskaming Shores

PRESENTING AUTHOR:
Matthew Jefkins[1]

AUTHOR(S):
Lalanne, J. [1], Besner, E.[1] Hutten Czapski, PA.[1,3] Manchuk D.[1,2]

AFFILIATIONS:
1) Northern Ontario School of Medicine, Sudbury, ON
2) Health Sciences North, Sudbury, ON
3) Temiskaming Hospital, Temiskaming Shores, ON

ABSTRACT:
Health care resources are limited in Northern Ontario and many communities rely on the broad scope and expertise of generalist family physicians for care. There are many challenges with delivering critical care services in Northern Ontario within a community including infrequent experience with critically ill patients and challenges maintaining continuing education. The Health Sciences North (HSN) Virtual Critical Care (VCC) model addresses distance as a barrier to critical care medicine using telemedicine to connect a multidisciplinary team of intensivists, nurses, respiratory therapists and pharmacists to physicians at the beside in rural communities. The purpose of our study was to determine what patient characteristics are associated with access to specialist ICU care for critically ill patients in the rural community of Temiskaming Shores. We conducted a retrospective chart review consisting of two cohorts (n=70), patients who received a VCC consult and those who did not, between October 1, 2014 and October 31, 2016. The study compared baseline characteristics including APACHE II score, use of non-invasive and mechanical ventilation and patient comorbidities. The Chi-squared test was used to assess the differences between categorical variables and the Student's t-test to assess the differences between continuous variables. There were a higher proportion of patients with mechanical ventilation, high APACHE II score, on vasopressors and broad spectrum antibiotics in the VCC cohort compared to the non-VCC cohort ($p<0.05$). A higher proportion of patients were transferred to HSN in the VCC cohort ($p<0.001$). These may represent key factors that predict how critically ill patients in Temiskaming shores access specialist ICU care. These differences highlight more acutely ill patients, challenges with rural critical care medicine and the importance of programs such as VCC. This data may contribute to the development of policies and procedures that will improve access to care for critically ill patients in rural Northern Ontario.

Poster Station #22

A Rural Pharmacy Role-Emerging Placement: Considering Collaborative Relationships

PRESENTING AUTHOR:
Frances Kilbertus

AUTHOR(S):
Maurianne Reade (1,5); Kaitlin Bykowski (2); Andrea Wong (2); Leah Migwans (3); Chris Gauthier (5); Tammy Maguire (4); Frances Kilbertus (1,5)

AFFILIATIONS:
(1) Northern Ontario School of Medicine
(2) The University of Waterloo School of Pharmacy
(3) M'Chigeeng First Nation
(4) Noojmowin Teg
(5) Manitoulin Central Family Health Team

ABSTRACT:
In 2013 the Ontario government approved a transition to a Doctor of Pharmacy (PharmD) degree as its entry-to-practice standard for pharmacists. Role-Emerging Placements (REPs) offer diverse learning experiences and promote role expansion while addressing a shortage of "role established" placements. Consideration for the collaborative nature of relationships of educators may provide insight into successful transferability of rural IPE initiatives.[1] Interprofessional educators will share the successes and challenges of a rural pharmacy role emerging placement.

The University of Waterloo School of Pharmacy and the Northern Ontario School of Medicine (NOSM) have entered into a collaborative arrangement to create interprofessional clinical placements for senior PharmD students. The Waterloo program emphasizes communication, collaboration and problem solving during experiential learning within a co-op program in addition to the final fourth year clinical rotations. Longitudinal Integrated Clerkships (LIC) are key to the structure of NOSM.

Building upon the experience of IP rotations in larger settings in Northern Ontario, a pilot project on Manitoulin Island was developed for Pharm D learners. The experience is designed as a collaborative longitudinal rotation with 4 local partners: Manitoulin Central Family Health Team, Manitoulin Health Centre, M'Chigeeng Health Clinic and, Noojmowin Teg Health Centre. Interprofessional rural educators utilized their experience with the LIC model in the development of this placement. The in-service learning pharmacy student will be involved in activities such as individual patient encounters, group interprofessional rounds, chart audits, presentations to health professionals and patients and adaptation of in-patient order sets. Key throughout this learning experience is the opportunity to learn about traditional Anishinabek culture. This REP has been built using the concept of Degohnegaadeh, suggesting the combination of "western and traditional healing approaches in a complementary fashion without losing the original integrity of each"(Noojmowin Teg. (n.d.).

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Poster Station #27

Developing a culturally relevant workplace mental health app for the Indigenous population

PRESENTING AUTHOR:
Dr. Vicki Kristman (1, 2, 3, 4)

AUTHOR(S):
Gilbeau, A (5)

AFFILIATIONS:
(1) Department of Health Sciences, Lakehead University, Thunder Bay, ON; (2) Division of Human Sciences, Northern Ontario School of Medicine, Thunder Bay, ON; (3) Institute for Work & Health, Toronto, ON; (4) Dalla Lana School of Public Health, University of Toronto, Toronto, ON; (5) Nokiiwin Tribal Council, Thunder Bay, ON

ABSTRACT:
Introduction: Workplace stress stemming from lateral violence in the workplace is problematic for Indigenous workers. Information on mental health and mental health resources within these workplaces is lacking. Therefore, our objective was to develop an e-health intervention for Indigenous mental health in the workplace.

Methods: We participated in the CIHR "Work Stress and Wellbeing Hackathon" to achieve our objective. The Hackathon was a two and a half day event where participants "hack" out a solution with their team to devise a solution to their problem. The event was collaborative and involved multiple perspectives in the development of the e-mental health solution. In addition to the principal investigator and knowledge user, the team included an individual with lived experience and technical expertise, including designers and programmers.

Results: At the end of the hackathon we had developed a prototype of a working e-mental health application based on the medicine wheel and Indigenous cultural teachings. We also developed a relationship with Cossette Health, who will be working with us over the next year to turn the prototype into a viable working e-health application.

Conclusion: Future goals will be to evaluate the effectiveness of the completed e-mental health application, in the communities affiliated with the Nokiiwin Tribal Council, with respect to improving access to relevant mental health information and reducing workplace lateral violence.

Poster Station #24

Developing a Research Institute for Enhancing Prevention of Injury and Disability in Northwestern Ontario

PRESENTING AUTHOR:
Dr. Vicki Kristman

AUTHOR(S):
Kristman, Vicki (1, 2, 3, 4)

AFFILIATIONS:
(1) Department of Health Sciences, Lakehead University, Thunder Bay, ON; (2) Division of Human Sciences, Northern Ontario School of Medicine, Thunder Bay, ON; (3) Institute for Work & Health, Toronto, ON; (4) Dalla Lana School of Public Health, University of Toronto, Toronto, ON

ABSTRACT:
Introduction: Injury and disability are issues with numerous and complex implications for individuals, communities, and society: they result in exclusion of individuals from full participation in society, education, and employment, and increase the need for social and health care. Persons with disabilities have lower participation rates in the labour force than those without. Work is related to health: good work keeps you healthy, good health keeps you working. The proposed Research Institute will enhance knowledge related to injury and disability and inform practice and policies aiming to improve health and social outcomes in Northwestern Ontario, and beyond.

Objectives: The primary goals of the new Research Institute will be to:
1) Conduct high-quality, transdisciplinary research in the areas of injury and disability prevention, with focus on issues relevant to Northwestern Ontario;
2) Participate in knowledge exchange with stakeholders and the greater research community;
3) Be a resource for researchers in Northwestern Ontario, providing services in all aspects of epidemiological, health promotion, public health, and statistical studies;
4) Provide an exemplary training and experience opportunity for the next generation of transdisciplinary researchers in Northwestern Ontario and beyond.

Focus: Seven areas of potential research focus include: workplace factors, injury and disability across the lifespan, mental health in the workplace, musculoskeletal injuries, indigenous communities, intellectual and developmental disabilities, and homeless populations.

Conclusion: The Institute has secured some start-up funding and is aiming to open in July 2018. This presentation highlights some of the ongoing research in the areas of injury and disability prevention and presents opportunities for involvement and collaboration.

Poster Station #26

Age and Sex Influences on Health Care Utilization through the Ontario Telemedicine Network

PRESENTING AUTHOR:
Jessica Lowey

AUTHOR(S):
Lowey, J [1], Kristman, VL[1234], Hogenbirk, J [5], Warry, W [5], Moeller, H[1]

AFFILIATIONS:
1. Department of Health Sciences, Lakehead University, Thunder Bay, ON
2. Institute for Work & Health, Toronto, ON
3. Dalla Lana School of Public Health, University of Toronto, Toronto, ON
4. Northern Ontario School of Medicine, Lakehead University, Thunder Bay, ON
5. Center for Rural and Northern Health Research, Laurentian University, Sudbury, ON

ABSTRACT:
Background/Objectives: The Ontario Telemedicine Network (OTN) provides virtual health care services to the Ontario population, specifically to those patients in underserviced regions. This research seeks to determine the associations between age and sex and health care utilization rates through the OTN and to determine if geographical location modifies these associations.

Methods: A historical, population-based, retrospective cohort study, utilizing administrative billing data and census data was employed. Utilization was determined by Ontario Health Insurance Plan (OHIP) medical billing data that has OTN listed as the service location. Associations between the exposures, outcome, and effect modifier were analyzed using multivariate Poisson regression.

Results: There were 913,996 patient sessions facilitated through OTN from 2008/2009 to 2014/2015. The mean age of patients using these services was 42 years. The majority of patients (54%) were male. Of the 35 specialty services used, addiction services, mental health, family practice and practice in general, surgery, internal medicine, and psychiatry had the highest provincial usages. Full analyses to determine utilization rates and the influence of patient geography on utilization will be completed in July 2017, and presented at the conference.

Conclusion: This project provides a detailed description of telemedicine use in Ontario by sex, age, rurality, and region. Results will positively impact OTN and allow for the organization to prioritize their focus on developing the best services in the areas of care patients most frequently use. Full conclusion to be provided upon completion of results.

Poster Station #29

Chart Audit Investigating High Frequency Emergency Department Users, Their Health Demographics for Chronic Pain and Practice Patterns of Opioid Provision

PRESENTING AUTHOR:
Bryan MacLeod (1,2)

AUTHOR(S):
Bryan MacLeod (1,2), Bayley Ostenfeldt (2), Josh Burley (1), Samantha Biggs (1), David Savage (1) Patricia Poulin (3), Catherine Smyth (4), Yaad Shergill (5)

AFFILIATIONS:
(1) Northern Ontario School of Medicine, Lakehead University Thunder Bay, ON, (2) Pain Research NWO, Thunder Bay, ON (3) The Pain Clinic, The Ottawa Hospital, Ottawa, ON, (4) Department of Anaesthesiology, The Ottawa Hospital, Ottawa, ON, (5) Clinical Research, The Ottawa Hospital, Ottawa, ON.

ABSTRACT:
Chronic pain (CP) affects 1 in 5 Canadians and challenges primary care providers (PCP). Lack of community care and limited expertise access can lead to frequent, costly emergency department (ED) visits and hospital admissions. A retrospective chart review, by The Ottawa Hospital, of 1000 patient visits in the ED in 2012-2013 demonstrated that 10.4% of all visits were associated with CP. Over the same period, a review of 255 patient charts with more than 12 visits over a 12-month period revealed that for 36.4% of patients, the majority of the visits were for CP; 80.6% of CP patients had a history of other conditions; and CP repeated admissions were related to back pain (21.5%), abdominal pain (21.5%), MSK pain (11.8%), chest pain (9.7%), & headaches (5.3%). This study replicates TOH protocol within Thunder Bay Regional Health Sciences Centre (TBRHSC) ED, one of Canada's busiest with over 100,000 visits annually. The goals of this study are: to provide demographic characteristics of HFU at TBRHSC ED; identify percentage of CP- HFU presenting; identify percentage of CP-HFU with a PCP; CP-HFU length of ED stay; and expense of CP-HFU for TBRHSC.

To understand CP-HFU of the ED, a random sample of 268 charts, meeting HFU criteria, from TBRHSC ED will be reviewed in a retrospective chart audit over a one year period, yielding a 13% prevalence of CP HFU of ED; 95% CI; 4% margin of error. The audit will be completed by two R2 family medicine residents. 20% of charts will be assessed for inter-observer reliability, disagreements settled by PI.

Data collection ongoing. These remote urban setting results will be compared to TOH findings. CP is a personal and systems burden. Clarification of reality in Canada's busiest ED will assist in RTC phase of research Fall 2017: implementing an interprofessional care pathway.

Poster Station #28

"Evaluation of LIPSS' SimChallenges to Better the Student's IPE Experience"

PRESENTING AUTHOR:
Kim MacNiven

AUTHOR(S):
Kim MacNiven, Justine Jecker

AFFILIATIONS:
Faculty of Health and Behavioural Sciences, Lakehead University, Thunder Bay, ON

ABSTRACT:
Background: LIPSS is a group of students from a variety of health disciplines at Lakehead University who seek to promote inter-professional education and practice. LIPSS was formed in 2013. As a student group LIPSS strives to create an inter-professional environment among learners in Thunder Bay that enhances their ability to participate in collaborative and holistic, person-centred care. LIPSS develops and maintains partnerships with the Northern Ontario School of Medicine and Confederation College in Thunder Bay, to extend our collaboration with our community partners.

With the SimChallenge we are able to accomplish Inter-Professional Education (IPE) through 4-5 realistic scenarios, each involving different standardized patients, followed by a debriefing session that helps focus on the different inter-professional competencies from the CIHC's Inter-Professional Education Competency Framework. The SimChallenge allows for different health disciplines to learn from each other and practice through real scenarios that can translate into their professional practice after education.

Methods: The SimChallenge was prepared by students from the LIPSS committee, as well as reviewed by facilitators (either medical students or FHBS professionals) prior to delivery of the scenarios. Upon completion of the day's SimChallenge student participants, facilitators, and standardized patients were given the option to evaluate the conference with qualitative responses. The evaluation consisted of two scaled questions and six open-ended questions regarding suggestions, improvements, and things that worked well throughout the SimChallenge. After all data has been complied from the evaluations of the different questions and sub-categories (facilitators, participants, and standardized patients) a theme of the data will be completed for better service for future events.

Results: Evaluations have been collected and responses are being inputted into a thematic system for best interpretation format. Delivery of data hopefully to be presented at NHRC this October.

Conclusion: Data and research is still being compiled and will be used to improve future LIPSS SimChallenges and IPE learning workshops/events.

Poster Station #31

Distracted Driving and Crash Risk in Fatal Collisions

PRESENTING AUTHOR:
Carlina Marchese (1-2)

AUTHOR(S):
Marchese, C (1,2), Dubois, S (1-4), Weaver, B (1-3) and Bédard M.(1-4)

AFFILIATIONS:
(1) Department of Health Sciences, Lakehead University; (2) Centre for Research on Safe Driving, Lakehead University; (3) Northern Ontario School of Medicine; (4) Centre for Applied Health Research, St. Joseph's Care Group, Thunder Bay, ON.

ABSTRACT:
Background: Distracted driving occurs when the driver engages in a secondary activity (e.g. cell phone use, eating) that affects the performance of the primary task of driving. Distracted driving has been associated with driver errors and increased crash risk. This study examined the association between driving distractions and risk of fatal crash responsibility.

Methods: Drivers (aged 20 and older, blood alcohol of zero, drug negative) of passenger type vehicles involved in a fatal USA crash were included in a case-control design. Cases had at least one unsafe driving action (UDA) recorded, related to responsibility for the crash; controls had no UDAs reported. Distraction was first included as a variable in the Fatality Analysis Reporting System database in 1991, and independently of the UDAs in 2010. We examined the prevalence of distracted driving by sex and age over time (1991-2015; n = 86,656) and also computed adjusted odds ratios of committing an UDA (distracted relative to not distracted) for male and female drivers at several ages via logistic regression (2010-2015; n = 27,241).

Results: Between 1991 and 2015, prevalence of distracted driving fluctuated between 6% and 12% depending on year and driver's sex. Young drivers, especially males, had the greatest number of fatal crashes involving distraction. Proportionally, more females involved in fatal crashes were distracted. This difference was most pronounced for drivers aged 20-35 and 50-75. Driving distracted increased the odds of crash responsibility (i.e., one or more UDAs), especially for middle-aged drivers.

Conclusion: Regardless of driver age, distracted driving increased the odds of crash responsibility. Given the role of distractions in fatal crashes, their prevention should be addressed as a public health issue.

Poster Station #30

Kids Don't Float: An Analysis of an Alaskan Youth Drowning Prevention Program

PRESENTING AUTHOR:
Justina Marianayagam (1)

AUTHOR(S):
Marianayagam, J (1), Giles, AR (2)

AFFILIATIONS:
(1) Interdisciplinary School of Health Sciences, University of Ottawa, Ottawa, ON, (2) School of Human Kinetics, University of Ottawa, Ottawa, ON

ABSTRACT:
The state of Alaska has a vast coastline and their citizens rely heavily on coastal waterways primarily for transportation, fisheries and tourism. Alaska coastal waters are cold, even in the summer, with an average surface water temperature rarely exceeding 15°C. Prolonged submersion in cold water increases the likelihood of developing hypothermia, and ultimately drowning. Between 2013-2015, 143 drowning deaths with an average age-adjusted rate of 6.3 deaths per 100,000 Alaskans were reported. In comparison, the drowning mortality rate for Indigenous Alaskans is reported being as high as 17.9 per 100,000 during the same period, more than 3 times the average for the state.

Kids Don't Float (KDF) is a statewide program started by community members in 1996 in response to the high drowning rate in Alaska. KDF adapts the influencer approach to promote water safety to youth through in-class training and by maintaining lifejacket loaner stations across the state.

The current prevention efforts carried out in reducing drowning rates in Alaska have primarily focused on children and have not targeted the high-risk populations of adult males and Alaskan Natives. Indigenous communities, such as Alaskan Natives are marginalized groups that have been being responsible for their own problems, such as unintentional deaths by drowning. This dominant mentality has neglected the broader social contexts that may be influencing and contributing to the high rates of drowning in these respected populations. KDF has made good progress in reducing youth drowning rates in Alaska, but much work remains to be done to bring down the overall rate of drowning, particularly amongst adult males and Indigenous peoples. The limitations to the influencer approach must be addressed and KDF will need to adapt its public health approach to injury prevention to target some of its resources towards those who are most vulnerable to drowning.

Poster Station #33

Systematic Review of Depression as an Outcome of Mild Traumatic Brain Injury (MTBI): An Extension of the Results of the International Collaboration on Mild Traumatic Brain Injury Prognosis (ICoMP)

PRESENTING AUTHOR:
Charlotte C. McEwen

AUTHOR(S):
McEwen, C.[1], Kristman, V.[1234] , Lowey, J.[1], Asselstine J.[1], Plata J.[1], Chambers-Bedard, C.[1], Armstrong J. [1]

AFFILIATIONS:
1. Department of Health Sciences, Lakehead University, Thunder Bay, ON
2. Institute for Work & Health, Toronto, ON
3. Dalla Lana School of Public Health, University of Toronto, Toronto, ON
4. Northern Ontario School of Medicine, Lakehead University, Thunder Bay, ON

ABSTRACT:
Objectives: Mild Traumatic Brain Injury (MTBI), otherwise known as concussion, is an injury frequently sustained during sports activities, traffic collisions and falls. In 2012, ICoMP systematically reviewed literature on MTBI prognosis, but at that time depression was not included in analysis. This paper extends the MTBI prognosis review initiated by ICoMP, analyzing depression as an outcome of MTBI.

Methods: MEDLINE, PsychINFO, Embase, CINAHL and SPORTDiscus were searched from 2001 to 2016 using ICoMP search protocols with an additional search screen for depression. Inclusion criteria focused the results to controlled trials, case-controls or cohort studies with a minimum of 30 MTBI cases that assessed depression as an outcome. Each eligible study was then assessed by two independent reviewers for scientific admissibility using Scottish Intercollegiate Guidelines Network criteria. A third reviewer resolved cases of impasse. Evidence from relevant, methodologically sound studies was collectively analyzed.

Results: In total, 10,155 records were detected, and after screening, 96 were full text reviewed. Twelve of these studies met inclusion criteria and of those relevant studies, reviewers concluded that six were scientifically admissible. Three of these studies detected no association, two detected some association, and one study had inconclusive findings.

Conclusion or Next Steps: The limited literature available on this topic suggests there may be no association between MTBI and the development of depression. However, this evidence is insufficient and more methodologically sound research is necessary. Researchers specifically call for studies with larger sample sizes, stronger measures of depression as an outcome, and more consistent definition of MTBI.

Poster Station #32

Investigation of peripheral blood neutrophils, lymphocytes, and platelet counts at diagnosis as prognostic markers in metastatic colorectal cancer patients

PRESENTING AUTHOR:
Joey Mercier

AUTHOR(S):
Joey Mercier (1), Ioannis A. Voutsadakis, MD, PhD (2,3)

AFFILIATIONS:
(1) Northern Ontario School of Medicine,
(2) Division of Clinical Sciences, Sudbury, Ontario, Canada
(3) Algoma District Cancer Program, Sault Area Hospital, Sault Ste. Marie, Ontario, Canada

ABSTRACT:
Background: The cancer micro-environment is recognized as having an increasing importance in cancer progression. Immune cells originating from the peripheral blood are important elements of this environment. Neutrophilia and lymphocytopenia have been found to be negative prognostic indicators in many cancers. This study aims to further evaluate the use of the neutrophil to lymphocyte ratio (NLR) as a potentially quick, reliable, and inexpensive prognostic tool in metastatic colorectal adenocarcinomas.

Patients and methods: Charts from 305 patients with colorectal cancer were retrospectively reviewed. Of these, 152 had metastatic disease with complete follow-up data on progression and survival and were thus included in the analyses. Data was extracted and stratified by an NLR cut-off point of 4.1, which was obtained with ROC analysis. Univariate and multivariate regression analysis was performed on variables of interest.

Results: There were significant differences between sex, LDH, neutrophils, lymphocytes, oligometastatic status, and patients who had undergone metastatectomy ($\chi 2$ $p < 0.05$), with the negative prognostic factors associated with the group with an NLR above the cut-off point. The NLR itself had a hazard ratio of 1.76 (95% CI 1.08 – 2.86, $p = 0.02$) and of 1.18 (95% CI 0.78 – 1.81, $p = 0.42$) for Progression-free Survival and Overall Survival, respectively.

Conclusion: In this retrospective analysis of metastatic colorectal cancer patients, NLR had prognostic value for OS and PFS. While other variables held significance for poorer prognosis, NLR had the highest HR and the highest significance in multivariate analysis for both PFS and OS.

Poster Station #34

Evaluating the Impact of Concurrent Medication Assisted Treatment and Mental Health Services on the Morbidity and Mortality of Individuals with Opioid Use Disorder and Mental Health Disorders

PRESENTING AUTHOR:
Kristen Morin

AUTHOR(S):
Morin, K (1), Eibl, Jk (2) and Marsh, DC (2, 3)

AFFILIATIONS:
(1) School of Rural and Northern Health, Laurentian University, Sudbury ON (2) Northern Ontario School of Medicine, Sudbury, ON (3) Canadian Addiction Treatment Centers

ABSTRACT:
Northern Ontario experiences some of the highest opioid-related emergency department (ED) visits, hospitalizations, and deaths in the province. Additionally, over 50% of individuals with Opioid Use Disorder (OUD) have a concurrent mental health disorder. This research will employ a retrospective cohort study design to examine patterns of health service utilization and its effects on health system and treatment outcomes for individuals with OUD and mental health comorbidities. The study is is grounded in the hypothesis that additional outpatient mental health and addiction services for individuals enrolled in Medication Assisted Treatment (MAT) will render positive treatment and health system outcomes. These positive outcomes include: reduced hospital admissions, ED visits, opioid-related deaths, and increased retention in MAT. This study will utilize secondary health administration data obtained from the Institute of Clinical and Evaluative Sciences (ICES). A cohort of patients with OUD will be extracted from several Ontario provincial datasets within the period of January 1, 2004 to December 31, 2014. Two groups will be created from the full cohort: patients with mental health comorbidities and patients without. A descriptive analysis will be conducted to describe the prevalence of comorbidities, to compare characteristics of the two groups in regard to demographics and health system use, and to evaluate changes over time. The group with comorbidities will be further grouped into those who receive mental health services and those who do not. A logistic regression model will be utilized to determine the relationship between the co-occurring mental health and OUD treatment and outcomes in northern Ontario. Understanding health care utilization patterns is essential to addressing the needs of individuals with OUD and reducing the social and economic burden of this health crisis.

Poster Station #35

The Thunder Limb Protocol – Implementation and Analysis of an Innovative Clinical Pathway for the Evaluation and Management of Erythematous, Painful Lower Extremities in the Emergency Department

PRESENTING AUTHOR:
Mr. Nathaniel Murray

AUTHOR(S):
Murray, N (1), Poliakova, E (1, 2), Littlefield, S (3), Sawula, E, Garnett, M (1, 2)

AFFILIATIONS:
(1) Northern Ontario School of Medicine, 955 Oliver Road, Thunder Bay, ON, P7B 5E1
(2) Department of Emergency/Trauma Medicine, Thunder Bay Regional Health Sciences Centre, 980 Oliver Road, Thunder Bay, ON, P7B 6V4
(3) Thunder Bay Regional Health Research Institute, 980 Oliver Road, Thunder Bay, ON, P7B 6V4

ABSTRACT:
Introduction: A red and painful limb is a common presentation to the emergency department (ED) with a broad differential diagnosis. Painful, erythematous lower extremities are often clinically diagnosed as a skin and soft tissue infection, but there is great variability in its management due to the lack of Canadian clinical practice guidelines and geographic variation in its microbiological etiology. Many lower extremity presentations mimic cellulitis, including serious diagnoses such as arterial occlusion and deep vein thrombosis, and are misdiagnosed even by experienced clinicians.

Research Question: We seek to determine if the number of subsequent, more serious diagnoses made in the thirty days following an initial dose of intravenous antibiotics in patients with a presumed skin and soft tissue infection decreased following the implementation of an innovative clinical pathway for the evaluation and management of erythematous, painful lower extremities in the ED. We hypothesize that the clinical pathway will improve diagnostic accuracy.

Methods: A retrospective observational study following two cohorts of adult patients presenting to the Thunder Bay Regional Health Sciences Centre (ED) will be undertaken before and after implementation of the innovative clinical pathway. Approximately 300 charts will be reviewed. Standard descriptive statistics will be summarized using means and standard deviations. The data will be analyzed using a two-tailed t-test and 95% confidence intervals.

Results: The pre-implementation data will be gathered in the summer of 2017 and available for dissemination at the Northern Health Research Conference.

Conclusion: This research study will evaluate the effectiveness of this clinical pathway in improving the diagnosis and management of painful, erythematous lower extremities in the ED.

Poster Station #36

The Effects of Exercise and Cycle Ergometry in Post-Operative Total Knee Patients – A Randomized Controlled Trial

PRESENTING AUTHOR:
Sarah Niccoli (1)

AUTHOR(S):
Niccoli, S (1), Sanzo, P (2,3), Droll, K (3,4), Puskas, D (3,4), Cullinan, C (3,4), Lees, SJ (1)

AFFILIATIONS:
(1) Medical Sciences Division, Northern Ontario School of Medicine, Thunder Bay, ON. (2) School of Kinesiology, Lakehead University, Thunder Bay, ON. (3) Clinical Sciences Division, Northern Ontario School of Medicine, Thunder Bay, ON. (4) Thunder Bay Regional Health Sciences Centre, Thunder Bay, ON.

ABSTRACT:
The combination of an increasing aging population, a higher rate of osteoarthritis (OA), and higher rates of obesity have resulted in an increased incidence of total knee arthroplasty (TKA). The proposed goals of this surgery are to provide pain relief, improve but not normalize range of motion (ROM), and increase functional abilities. It is imperative that evidence based post-operative rehabilitative protocols and new innovative devices that increase blood flow, ROM, and maximize patient compliance and recovery are integrated into the clinical setting. In this study we will compare the current post-operative exercise regime given to TKA patients alone (control) and in combination with the use of an innovative and newly developed cycle ergometer (Viscus) to compare pre- and post-operative pain, ROM, strength, and swelling of the knee, as well as inflammatory and thrombogenesis risk markers in the blood. The Viscus is a compact unit that can be placed and used anywhere the patient is seated; a feature that the developers believe will increase compliance, and, therefore, boost recovery. Initial data analyses on a subset of participants reveal improvements in some aspects of ROM, as well as in lower extremity functional scale ratings in the Viscus group, compared to the control group.

Poster Station #38

Forecasting Traffic-Related Pedestrian Fatalities within the United States

PRESENTING AUTHOR:
Jeff Pascua (1)

AUTHOR(S):
Pascua, J (1), Dubois, S (2-5), Pernia, J (1,2), Bédard, M (2-5)

AFFILIATIONS:
(1) Department of Civil Engineering, Lakehead University; (2) Centre for Research on Safe Driving, Lakehead University; (3) Human Sciences Division, Northern Ontario School of Medicine; (4) Centre for Applied Health Research, St. Joseph's Care Group; (5) Faculty of Health and Behavioural Sciences, Lakehead University, Thunder Bay, Ontario.

ABSTRACT:
Introduction: While vehicle occupant fatalities are decreasing, pedestrian fatalities have been found to be recently increasing. In the last five years pedestrian fatalities have increased by 25% (Retting, 2016). As cities are incorporating active transportation into their development plans, the importance of pedestrian safety has become more apparent. Our study aims to predict the magnitude of pedestrian fatalities to the year 2030, accounting for changes in walking behaviour. A secondary objective is to identify specific at-risk pedestrian age groups susceptible to traffic-related injury.

Methods: Yearly pedestrian fatality rates were developed using a combination of fatality and exposure data. The United States' Fatality Analysis Reporting System (FARS) contains data regarding pedestrian fatalities from the year 1975 through 2015. Two measures of pedestrian exposure, namely number of walk trips and person miles walked, were derived using data from multiple instances of the National Household Travel Survey. Survey years under analysis include 1983, 1990, 1995, 2001, and 2009. Linear interpolation was employed to determine exposure for years in which a survey has not been conducted.

Results: A range of statistical models (e.g., logarithmic, logistic, negative exponential) will be fitted to the extracted data. Age-categorized fatality projection curves will be presented for both male and female pedestrians based on goodness-of-fit metrics and applicability.

Conclusion: The developed projection curves serve to advise transportation agencies and policy makers in setting traffic-related injury reduction targets. Additionally, the generated curves shall assist with allocating resources towards pedestrian fatality countermeasure development (e.g., pedestrian signal retiming, educational improvements to at-risk groups) to expedite the endeavour of reducing pedestrian-related fatalities.

Poster Station #37

Biomarkers for the Early Recognition of Life-threatening Infections in Resource Constrained Settings

PRESENTING AUTHOR:
Melissa Richard-Greenblatt

AUTHOR(S):
Richard-Greenblatt, M (1), Boillat-Blanco, N (2) Zhong, K (1), D'Acremont, V (2), Kain KC (1)

AFFILIATIONS:
(1) Sandra Rotman Centre for Global Health, University of Health Network, Toronto General Hospital, Toronto, Canada
(2) Swiss Tropical and Public Health Institute, Basel, Switzerland

ABSTRACT:
Fever is one of the most common causes to seek medical care; however, most infections are self-limited and few progress to critical illness. We currently lack tools to rapidly identify patients with life-threatening infections (LTIs) and this is a major barrier to rational triage and management of severe infections, especially in communities in Northern Canada. We have previously identified biomarkers of endothelial and immune activation pathways that are implicated in the pathobiology of LTIs. Measuring these markers at clinical presentation may permit the early recognition and triage of LTIs. In the current study, we examined the performance of these markers to identify LTIs in a prospective cohort of consecutive adults ($\geq$18 years of age) presenting with fever ($\geq 38^0$C) to emergency departments in low resource settings in Tanzania. We quantified circulating levels of markers of endothelial (Ang-2, sFlt-1, sVCAM-1) and immune (sTREM-1, IL-6, IL-8, CHI3L1, sTNFR1, PCT, CRP) dysfunction at clinical presentation (n=507) using Luminex® multiplex platform or ELISA to determine if they predicted disease severity and outcome in "all cause" fever syndromes (i.e. independent of etiology). Several biomarkers predicted LTIs, with sTREM-1 demonstrating the best performance (28 day mortality AUROC 0.87; NPV 97.9%). The addition of sTREM-1 to a clinical variable significantly improved clinical prediction of individuals with LTIs (for example, the sepsis bedside clinical score, qSOFA (AUROC 0.91; NPV 99.2%) or Glasgow Coma Scale (AUROC 0.94; NPV 99.3%).These findings further validate sTREM-1 as a clinically informative marker for the early recognition of serious infections and related mortality. Since sTREM-1 displayed superior performance to clinical scoring systems, a point-of-care rapid diagnostic test for this marker could have clinical utility in the triage and risk stratification of febrile patients, as well as to inform evidence-based decision making for referral/medivac from rural settings.

Poster Station #39

The Hidden GEM: Impact of the Geriatric Emergency Management Program on Admission Rates to the West Parry Sound Health Centre

PRESENTING AUTHORS:
Julie Sabourin and Zachary Strong

AUTHOR(S):
Sabourin, J (1) and Strong, Z (1)

AFFILIATIONS:
(1) Northern Ontario School of Medicine, Laurentian University, Sudbury, ON

ABSTRACT:
Background: The Geriatric Emergency Medicine (GEM) Program is an evidence-based approach to providing care to seniors in the emergency department (ED) that are at high-risk of unnecessary hospital utilization. Limited healthcare funding drives the need to evaluate the effectiveness of such programs. The purpose of this study was to evaluate the impact of the GEM Program at the West Parry Sound Health Centre (WPSHC) on rates of admission to hospital.

Methodology: All patients 75 years of age or older with a Canadian Triage and Acuity Scale (CTAS) score of 3, 4 or 5 at their index ED visit were included in the study. A retrospective analysis was performed using administrative patient data from the 2015/16 fiscal years to compare the admission rates of patients that were seen by the GEM nurse (GEM group) to those that were not seen by the GEM nurse (non-GEM group).

Results: In 2015/16, the WPSHC documented 3189 ED visits from patients over the age of 75. The non-GEM group included 2375 ED visits that were either not eligible for the GEM program or were not seen by GEM due to other factors. The GEM group included 301 visits that were eligible and seen by GEM. When comparing admission rates between the two groups, the GEM group admitted 17.94% of patients, whereas the non-GEM group admitted 27.71% of patients. Mean CTAS levels were comparable between both groups.

Conclusion: The GEM program at the WPSHC is associated with a reduction of rates of admission to hospital following ED visits. This reduction is at par with other GEM programs across the province. The evaluation of the effectiveness of GEM programs and similar initiatives is important as the aging population continues to grow rapidly, especially in Northern Ontario, and consumes the largest proportion of the health care budget.

Poster Station #40

Health-Related Quality of Life (HRQOL) and patient-assessed treatment outcomes measured up to 2 years post-treatment with the EPIC (Expanded Prostate Cancer Index Composite) in men treated with EBRT for prostate cancer

PRESENTING AUTHOR:
Stacey Santi (1)

AUTHOR(S):
Santi, S (1), Bissett, R (2), Bowen, J (2), Carlson, R (2), Chiang, A (2), Pearce, A (2,4), Want, D (2), Meigs, M (1), Conlon, M (1,3,4)

AFFILIATIONS:
(1) Epidemiology, Outcomes and Evaluation Research, Northeast Cancer Centre, Health Sciences North, Sudbury, ON (2) Radiation Oncology Program, Northeast Cancer Centre, Health Sciences North, Sudbury, ON (3) Laurentian University, Sudbury, ON (4) Northern Ontario School of Medicine (NOSM), Sudbury, ON

ABSTRACT:
Purpose: Prostate cancer treatments such as prostatectomy, brachytherapy, and external beam radiation therapy are associated with various side effects. This prospective study followed men who were diagnosed with intermediate- or high-risk prostate cancer and measured their patient-assessed treatment outcomes during and after receiving external beam radiation treatment (EBRT).

Methods: In order to measure the impact of treatment-related side effects on patients' health-related quality of life, men who were being treated with EBRT for their prostate cancer (n=157) completed the EPIC questionnaire (**E**xpanded **P**rostate **C**ancer **I**ndex **C**omposite) which measures adverse reactions to prostate cancer treatment on four scales. The EPIC inventory was completed before treatment began, at treatment conclusion, and 1- and 2-years after treatment completion.

Results: Men reported significant decreases in HRQOL scores on both bowel and urinary scales at the end of treatment. HRQOL scores on urinary scales decreased at the end of treatment (X=71.7; SE=1.4) and were significantly lower than baseline (X=83.0; SE=1.2), but then recovered to baseline levels at 1- and 2-years (X=82.4; SE=1.4; and X=81.5; SE=1.3). In contrast, HRQOL bowel scores were significantly decreased at the end of treatment (X=83.3; SE=1.2) compared to baseline (X=92.2; SE=0.80). However, unlike the urinary scales, bowel scores did not return to pre-treatment levels at both the 1- and 2-year follow-up (X=85.1; SE=1.4 at the 1-year follow-up).

Conclusions: External beam radiation therapy impacts patient-assessed HRQOL during, and up to 2 years post-treatment for some patients. While adverse reactions observed on the urinary scales largely returned to baseline levels, the extent of recovery was dependent on the initial issues reported. This pattern was different for the bowel, where adverse reactions were reported in some patients 2 years later. The results of this study provide much needed information about the impact of EBRT treatment and HRQOL in prostate cancer patients.

Poster Station #41

The effects of taping on maximal throwing velocity in baseball players.

PRESENTING AUTHOR:
Paolo Sanzo[1, 2]

AUTHOR(S):
McCall, L.[1], Sanzo, P.[1,2], Zerpa, C.[1]

AFFILIATIONS:
School of Kinesiology, Lakehead University, Thunder Bay, ON[1]
Northern Ontario School of Medicine, Thunder Bay, ON[2]

ABSTRACT:
Introduction and Objective: Therapeutic taping is often used to improve performance in athletes. In baseball, where throwing velocity and control could be the difference between winning and losing; shoulder performance is of the utmost importance. Taping has been proposed to increase function by enhancing proprioception, increasing blood flow, correcting misalignment, and supporting fatigued muscles. Therefore, the purpose of this pilot study was to examine the effects of taping (Leukotape (LT), Kinesio tape (KT), and no tape) on maximal pitch velocity.

Methods: Ten male participants (9 right-handed throwers, 1 left-handed thrower) had their maximal throwing velocity measured under three taping conditions (no tape, LT, KT). After warming up, participants threw 30 maximum velocity throws in order to induce fatigue in the shoulder. Three maximal velocity throws were then completed and recorded with no tape, LT, and KT. A one-way repeated measures ANOVA was used to examine the effect of taping on maximal throwing velocity (mph). The alpha level was set at $p<.05$.

Results: A one-way repeated measures ANOVA revealed no statistically significant difference between taping conditions with respect to maximal throwing velocity ($F(2, 87)=0.018$, $p=.982$). The maximal throwing velocity was not affected by the application of tape (pitch velocity without tape M=59.60 mph; SD=5.44; with LT M=59.43 mph; SD=5.40; and with KT M=59.33 mph; SD=5.52).

Conclusions: The results of this study suggest that the application of tape has no effect on maximal throwing velocity in baseball players. Further investigation is required to research the application of therapeutic taping's ability to assist with maintaining maximal velocity over more pitches; to see if this impacts fatigue or overall velocity; and/or examining different types of techniques of application (facilitatory, inhibitory, versus mechanical corrective technique).

Poster Station #42

Predicting patient admission from the emergency department using administrative data

PRESENTING AUTHOR:
David W. Savage (1)

AUTHOR(S):
[1]Weaver, B (1) and Wood, D (1,2)

AFFILIATIONS:
(1) Northern Ontario School of Medicine, 955 Oliver Rd., Thunder Bay, ON, P7B 5E1
(2) Thunder Bay Regional Health Sciences Centre, Emergency Department, 980 Oliver Rd, Thunder Bay, ON, P7B 6V4

ABSTRACT:
Background: Emergency department (ED) over-crowding and increased wait times are a growing problem. Many interventions have been proposed to decrease patient length of stay and increase patient flow. Early disposition planning is one method to accomplish this goal. In this study, we developed statistical models to predict patient admission based on ED administrative data. The objective of this study was to predict patient admission early in the visit with goal of preparation of the acute care bed and other resources.

Methods: This was a retrospective cohort study using administrative ED data from the Thunder Bay Regional Health Sciences Centre from May 2014 to April 2015. Logistic regression models were developed using administrative variables (i.e., age, sex, mode of arrival, and acuity). Sensitivity, specificity, positive and negative predictive value and the area under the curve were used to evaluate the model.

Results: The logistic regression model had high specificity (0.97) but low sensitivity (0.23). The receiver operating characteristic curve was calculated, the area under the curve was 0.78. Although, prediction of admission for a particular individual was satisfactory, the summed probabilities for the group on a particular day provided a much better estimate of the number of beds required on an hour by hour basis.

Interpretation: The statistical model developed in this study would allow preparations for patient admission to begin before admission orders from physicians. Acute care beds and other resources could be managed more effectively. In addition, during periods of hospital over capacity, managers would be able to prioritize transfers and discharges based on ED demand for beds.

Poster Station #43

The Need for Control: Illustrating the Role of Control Group on Effect Sizes

PRESENTING AUTHOR:
Rebecca Scott (1,2)

AUTHOR(S):
Scott, R (1,2), Ozen, L (1,2), Dubois, S(1-4), Maxwell, H(1,2), Bédard, M (1-4).

AFFILIATIONS:
(1) Centre for Research on Safe Driving, Lakehead University; (2) Centre for Applied Health Research, St. Joseph's Care Group; (3) Human Sciences, Northern Ontario School of Medicine; (4) Faculty of Health and Behavioural Sciences, Lakehead University, Thunder Bay, Ontario.

ABSTRACT:
Background/Objectives: Control groups serve to account for improvements distinct from the intervention (e.g., placebo effect). Given logistical and cost considerations associated with control groups they are not always utilized. Using existing data we explored the impact of omitting a control group on effect sizes.

Method: We used depression symptom data (Beck Depression Inventory – II, BDI-II) from a multi-site, crossover, Mindfulness-Based Cognitive Therapy, randomized control trial. An overall effect size (Cohen's D) was generated based on the full parallel design (Intervention versus Control in a single analysis). Separate Intervention and Control effect sizes were generated to simulate a pre-post design. Control participants were stratified by study completion status: No Crossover; Crossover but did not finish (DNF); Crossover Complete.

Results: The overall effect size for the parallel design BDI-II total score was 0.56 (n=76). Pre-post effect sizes were: Intervention (*n*= 38; *d*= 0.70); No Crossover (*N*= 7, *d*= 0.38); Crossover DNF (n= 8; d= 0.75); Crossover Complete (*n*= 23; *d*= -0.02).

Conclusion: Using a pre-post design, an inflated effect size was observed for the Intervention group. Small to medium effect sizes were observed in Control drop-outs. These observations illustrate: 1) control groups are essential to generate effect sizes; 2) the importance of analyzing all participant data regardless of completion status.

Poster Station #45

"Strengthening Compass North's Health Promotion Workshops Through Continued Evaluation"

PRESENTING AUTHORS:
Jonathon Scully and Barbara Gunka

AUTHOR(S):
S. Bennett[1], J. Gencarelli[1], M, Haggrty, M. Horbatuk[1], C. Petrick[1], N. Shahi[1]

AFFILIATIONS:
Northern Ontario School Of Medicine (WEST)

ABSTRACT:
Background: Compass North Student-Led Health Outreach is an interprofessional student-led clinic (SLC) that endeavours to improve the health and wellbeing of underserved populations in the city of Thunder Bay, such as through the delivery of health-related workshops. The committee comprised of students from the Northern Ontario School of Medicine and Lakehead University collaborate with community partners Anishnawbe Mushkiki Nurse Practitioner-Led Clinic (AM) and Shelter House (SH). Monthly workshop implementation began in Fall of 2015, with workshop topics being based on findings from the community needs assessment completed in 2015 as well as on input from clients and staff from both partner sites. The ongoing workshops have been evaluated by participants and student-presenters for continuing improvement.

Methods: The workshop materials prepared by students are reviewed by registered healthcare professionals and the partner site staff prior to delivery. Following delivery, participants and presenters were given a voluntary opportunity to evaluate, both quantitatively and qualitatively, their overall satisfaction and usefulness. Surveys included seven 3-point likert scale questions on content and delivery, three open-ended questions on learning and suggestions and one question for general comments. Presenter surveys included five 3-point likert scale questions on content and perceived participant interest, and five open-ended questions on learning and suggestions, with one opportunity for comments. Following data collection, basic quantitative review of attendance and satisfaction will be analyzed, and thematic analysis of open-ended questions and comments will be completed.

Results: Preliminary results from the workshops will be available in February 2017. The information from the surveys will inform development, promotion, and delivery methods for the remaining workshops.

Conclusion:
This research is being compiled and will be used to influence future direction and content of health promotion workshops.

Poster Station #44

The use of urine drug screening by primary care providers in rural Northern Ontario for detecting and managing misuse amongst patients being prescribed opioids for chronic non-cancer pain

PRESENTING AUTHOR:
Niharika Shahi

AUTHOR(S):
Shahi, N (1) and Patchett-Marble, R (2)

AFFILIATIONS:
(1) Northern Ontario School of Medicine, Lakehead University, Thunder Bay, ON, (2) Marathon Family Health Team, Marathon, ON

ABSTRACT:
The prevalence of opioid abuse has reached an epidemic level, despite physicians being involved in the prevention of opioid addiction through their safe prescription for chronic non-cancer pain (CNCP). National guidelines have been created to support the safe prescriptions of opioids, recommending regularly monitoring patients through urine drug screening (UDS). Since very few family physicians utilize this recommended test, it is unknown to what extent the test can affect patient and prescriber outcomes when utilized in a systematic and comprehensive manner.

The Marathon Family Health Team (MFHT) has designed and implemented a program aimed at making opioid prescription safer. The program applies universal precautions so that all patients prescribed opioids for CNCP are subjected to monitoring for abuse with UDS testing. High risk patients have more frequent drug screening than low risk patients. Although, the MFHT has built a foundation of the program to systemically utilize UDS, there are many questions about how it affects outcomes of opioid prescriptions. This research project tests the efficacy of urine drug screening to detect and manage opioid misuse amongst patients with CNCP. The data from the UDS program at MFHT is being extracted and analyzed. The research objective is to examine how primary care providers have been managing opioids prescriptions based on the results of UDS among CNCP in Marathon, a rural community in Northern Ontario. The patient chart review will be completed by the end of June 2017 and data analysis will be done using SPSS software. The results of this study will help train primary care providers in efficient use of urine drug screening tests in managing CNCP patients and avoid substance misuse among patients in rural and remote communities of Northern Ontario.

Poster Station #46

Therapeutic Christmas hampers: Impact on nutrition knowledge, attitudes and behaviour with hemodialysis patients

PRESENTING AUTHORS:
Marisa Tamasi (1) and Holly Freill (1)

AUTHOR(S):
Omeljaniuk, V (2), Payne, M (2), Freill, H (1), and Tamasi, M (1)

AFFILIATIONS:
(1) Thunder Bay Regional Health Sciences Centre (TBRHSC), Renal Services, Thunder Bay, ON, (2) Northern Ontario Dietetic Internship Program, Thunder Bay, ON

ABSTRACT:
Purpose: To evaluate the impact of an annual 'food box' program at the TBRHSC hemodialysis unit.

Process: The renal appropriate Christmas hampers consisted of low phosphorus, potassium, and sodium food items with recipes to prepare a dinner, dessert and breakfast meal including a beverage for two people. A 5-item survey was administered to 177 patients receiving hemodialysis in the Thunder Bay site one to two days after receiving the hamper. The survey included open and closed ended questions related to patient's knowledge of food items and overall satisfaction. Completed surveys were collected and responses inputted and analyzed in Excel© using frequencies and pivot tables.

Project summary: The response rate was 67% (n=119). Of those who responded, 15 chose not to accept the hamper for various reasons. Nearly half (44%, n=99 responses) reported an introduction to a new food. Of these 44 patients, 66% (n=29 responses) said they were likely to purchase the new food again. The average satisfaction rating of the hampers was 8.8 out of 10 (n=99 responses). Limitations included a lack of clarity with some questions, insufficient administrator assistance (English was a second language for some patients) and survey timing (many patients had not had an opportunity to try the foods yet).

Conclusions and recommendations: This small study showed that an innovative approach with therapeutic Christmas hampers introduced new foods to this patient population which may motivate them to purchase and consume in the future. A larger and longer term study with more diverse hemodialysis patients and sites is needed to fully understand the translation of nutrition knowledge to behaviour change.

Poster Station #47

Influence and associations of the Oncotype Dx assay in the treatment of ER+, Her2-, lymph node- breast cancer patients: A single center experience

PRESENTING AUTHOR:
Stephane Thibodeau

AUTHOR(S):
Thibodeau, Stephane (1), Voutsadakis, Ioannis A. (2, 3)

AFFILIATIONS:
(1) Northern Ontario School of Medicine, Sudbury, ON
(2) Division of Medical Oncology, Department of Internal Medicine, Sault Area Hospital, Sault Ste. Marie, ON
(3) Division of Clinical Sciences, Northern Ontario School of Medicine, Sudbury, ON

ABSTRACT:
Background: The Oncotype Dx assay is commonly used to inform therapeutic decision-making of adjuvant chemotherapy in women with carcinomas of the breast that are estrogen receptor (ER) positive, human epidermal growth factor receptor 2 (Her2) negative, and lymph node negative or micrometastatic. Our present study reports the experience with the Oncotype Dx assay in a single cancer center.

Methods: Medical records of women diagnosed with carcinoma of the breast whose tumour specimens were submitted for the Oncotype Dx assay during an eight-year period were reviewed. Their demographic and cancer characteristics, assay report, and course of treatment data, including survival outcomes and treatment decision-making, were extracted.

Results: Two hundred and one patients were included in the study. The mean age of the entire cohort was 65.1 years (SD 9.74). One hundred and thirty-two patients (65.7%) had a low recurrence risk (RS <18), sixty (29.9%) had an intermediate recurrence risk (RS 18-30), and nine (4.5%) had a high recurrence risk (RS >30). One hundred and fifty-three patients were Stage I and forty-eight patients were Stage II. More patients in the intermediate risk cohort had stage II cancer than in the low risk cohort (Fisher exact p=0.03). Three patients had a recurrence, one of whom was in the low risk cohort and two in the intermediate risk cohort. Seven patients died, four of whom were in the low risk cohort and three in the intermediate risk cohort. Sixteen patients (26.7%) in the intermediate risk cohort received chemotherapy, while forty-four (73.3%) did not. The mean difference in recurrence score between the intermediate risk patients that received chemotherapy and those that did not was statistically significant (24.6, 21.5 respectively, p=<0.00001).

Conclusion: Our analysis demonstrates the avoidance of adjuvant chemotherapy in low and low-intermediate risk patients with early ER-positive/Her2-negative/lymph node-negative or micrometastatic carcinoma of the breast. A higher recurrence score in the intermediate risk cohort predicted adjuvant chemotherapy.

Poster Station #48

Supervisor and worker perspectives on workplace accommodations for mental health disorders: Pilot study and preliminary results

PRESENTING AUTHOR:
Chris Viel

AUTHOR(S):
Viel, C., Lakehead University
Kristman, V., Lakehead University

AFFILIATIONS:
Lakehead University

ABSTRACT:
Background/ Objectives: Mental health disorders (MHD) are an issue that affect every workplace in Canada. People with MHD function better in the workplace when they are provided with appropriate work accommodations. However, there is little understanding of how social, organizational, and interposal factors influence the decision-making of supervisors to develop and provide work accommodation.

Methods: An Advisory Board committee consisting of research team members, a graduate student, interested stakeholders (Canadian Mental Health Association, Workplace Safety and Prevention Services, SAFE Work Manitoba), a worker and supervisor with MHD experience, and a representative from the Workers Compensation Board of Manitoba met to assemble a survey to identify supervisors and workers perspective on workplace mental health accommodations. Prior to data collection, a pilot study was performed to determine the functionality and reliability of the survey questions.

Results: Pilot participants (supervisors (n=2); workers (n=5)) were interviewed for approximately one hour to gain feedback on the surveys. Both workers (4/5) and supervisors (2/2) found it difficult to answer questions regarding what accommodations were available in the workplace due to the novelty of workplace mental health awareness (Job Accommodation Outcome Measures). Participants also questioned if they should require a formal MHD diagnosis to answer mental health questions, or if symptoms should be sufficient. In addition to the pilot study, descriptive results (industrial sector participation and response rates, barriers to response etc.) from the data collection period will be presented.

Conclusion: Overall, both surveys proved to be effective at gathering information of how social, organizational, and interposal factors influence the decision-making of supervisors to develop and provide work accommodation. Following review of the Advisory Board, these survey tools were adjusted and finalized for data collection (currently in progress).

Poster Station #50

Detecting Functional Brain Activity using Hyperpolarized (HP) ^{129}Xenon Magnetic Resonance Imaging (MRI)

PRESENTING AUTHOR:
Alanna Wade (1)

AUTHOR(S):
Hane, F (2), Li, T (2), Lawrence-Dewar, J (2,3), Hassan, A (4), Granberg, K (4), Pellizzari, R (2), Plata, J (2), and Albert, M (1,2,3)

AFFILIATIONS:
(1) Department of Chemistry, Lakehead University, Thunder Bay, ON, (2) Thunder Bay Regional Health Research Institute, Thunder Bay, ON, (3) Northern Ontario School of Medicine, Thunder Bay, ON, (4) Thunder Bay Regional Health Sciences Centre, Thunder Bay, ON

ABSTRACT:
Hyperpolarized (HP) ^{129}Xenon (^{129}Xe) Magnetic Resonance Imaging (MRI) is a novel imaging modality that can potentially provide more information on localized brain activity than ^{1}H fMRI. HP ^{129}Xe fMRI is similar to BOLD fMRI, in that HP ^{129}Xe has the capacity to localize areas of brain activity because it is detectable in the cerebro-vasculature. In this work, we compared BOLD fMRI to HP ^{129}Xe fMRI. Brain imaging was performed in five (n=5) healthy volunteers, where each one inhaled 1 L of HP ^{129}Xe and held their breath for 20 seconds. The volunteer was then asked to perform a 1-back memory task. ^{129}Xe fMRI data was attained using 2D fast field echo sequence with the following parameters: FOV = 250 x 250 mm, matrix 32 x 32 mm, TR/TE = 250 ms/0.84 ms, and FA = 12°. ^{1}H fMRI data was acquired by using turbo spin echo sequence with the following parameters: FOV = 250 mm x 250 mm, matrix = 256x256, TR/TE = 3 s/80 ms, FA = 90°. ^{129}Xe fMRI and ^{1}H fMRI data were analyzed using a customized MATLAB script and statistical parametric mapping 12 (spm12), respectively. After 10 seconds following termination of the breath-hold, we observed a ca. 20% increased signal in the posterior region of the brain, suggesting the visual cortex; also, we noticed a 50% decreased signal in the anterior region in the brain, possibly in the prefrontal cortex. Based on the assumption that increased perfusion correlates with stimulated neurons, we speculate that stimulated regions results from increased perfusion of Xe, thus providing localized Xe signal enhancement. Our results suggest that ^{129}Xe fMRI can better detect localized brain activity than ^{1}H fMRI. Future studies are needed to further confirm this phenomenon and to elucidate the mechanisms involved.

Poster Station #49

Challenging cultural essentialism in health research: A scoping review of the Indigenous value of non-interference

PRESENTING AUTHOR:
Joe Wark

AUTHOR(S):
Neckoway, R. (1), and Brownlee, K. (2)

AFFILIATIONS:
(1) School of Social Work, Lakehead University, Thunder Bay, ON, (2) School of Social Work, Lakehead University, Orillia, ON

ABSTRACT:
Health disparities between Indigenous peoples and other Canadians have been well documented. The cultural value of non-interference has been cited as a consideration in various aspects of Indigenous health, including mental health, suicide, violence, and substance misuse. This study critically explores how non-interference is portrayed in the prominent literature and how historical and spiritual contexts shape understandings of non-interference. A scoping literature review was conducted and 103 articles were reviewed. Content was categorized based on essentialist and/or dynamic descriptions of non-interference. The data was analyzed using a Fisher's exact test to determine statistical significance. Results identified that the key literature was significantly more likely to describe non-interference in absolute terms and as a deficient cultural trait. Moreover, the literature that placed non-interference within the context of spiritual and pre-Contact societal factors was significantly more likely to include exceptions to non-interference among Indigenous peoples and to describe how non-interference has altered since European contact. However, dynamic and essentialist descriptions of non-interference were not mutually exclusive in the literature and contextual descriptions of non-interference were not immune to being characterized as cultural absolutes and/or deficiencies. Future health research examining the complex relationship between culture and the health of Indigenous peoples should operationalize culture as a dynamic variable that is shaped by historical and spiritual factors. This will likely require researchers who look beyond easily available sources and actively seek out buried perspectives on health and culture. Research that includes meaningful input from Indigenous peoples and communities can further reject essentialist assumptions of culture.

Poster Station #52

A complex adaptive systems approach to primary care in the North West LHIN

PRESENTING AUTHOR:
Brianne Wood

AUTHOR(S):
Wood, B (1,2), Ferris, K (1) Logozzo, J (1), Ahmed, SZ (1,3), and on behalf of the North West LHIN and its Primary Care Forecasting Working Group

AFFILIATIONS:
(1) Health System Design and Innovation, North West LHIN, Thunder Bay, ON; (2) School of Epidemiology, Public Health, and Preventive Medicine, University of Ottawa, Ottawa, ON; (3) Institute of Health Policy, Management, and Evaluation, University of Toronto, Toronto, ON

ABSTRACT:
Introduction: Ontario's *Patients First Act* recently expanded the role of the Local Health Integration Networks (LHINs) in primary care planning, with an aim to provide care that is more integrated and responsive to local needs. The rural, remote, and northern context in the North West LHIN requires careful consideration to describe and model primary health systems that address the unique needs of residents and primary care practitioners.

Methods: Primary care simulation models were identified through Canadian Health Human Resource Data Network, Google Scholar, and Ovid Medline. Data elements, sources, and simulation methods from these models were assessed to inform our modelling approach. How the models aligned with the domains outlined by the Ministry of Health's Primary Care Capacity Assessment Framework was also considered. A working group was established between LHIN representatives, primary care providers, and other knowledge users to inform the design and execution of the model.

Results: A complex adaptive systems approach was used, accounting for three practitioner roles (physician, nurse practitioner, physician assistant). The overall model contains three sub-models that represent the LHIN's primary care needs by Local Health Hub and sub-region, the amount of primary care provided in these areas, and the utilization of primary care services. Model inputs include local primary data and data from administrative databases. Comparing the sub-models will allow us to examine gaps in primary care use and delivery in the North West LHIN.

Conclusion: This study illustrates how a rural, remote, and northern lens can be applied to a rigorous methodology to describe current and future states of primary care in the North West LHIN. This analysis is important for identifying recommendations to deliver the right primary care, at the right place, at the right time. More work is needed to validate and update the model as new information becomes available.

Poster Station #51

The effect of yoga on balance and proprioception

PRESENTING AUTHOR:
Carlos Zerpa (1)

AUTHOR(S):
Bodrucky, C (1), Zerpa, C (1) and Sanzo, P (1, 2)

AFFILIATIONS:
(1) School of Kinesiology, Lakehead University, Thunder Bay, ON, (2) Northern Ontario School of Medicine, Thunder Bay, ON

ABSTRACT:
Introduction: Yoga may be of great benefit for fall prevention in older adults because it seems to improve balance and proprioception.The objective of this study was to examine the effect of yoga on balance and proprioception between individuals who participated in yoga weekly versus those who did not participate in yoga for the last two years.

Method: Twenty-eight participants (yoga=12, non-yoga=16) were recruited for this study. An Advanced Mechanical Technology Inc (AMTI) force plate was used to acquire centre of pressure displacement data when conducting the Balance Error Scoring System (BESS) protocol under three balance conditions classified as tandem, double and single support. The tandem instance involved standing with the dominant foot in front of the non-dominant foot in a heel to toe position. The double leg stance involved standing with feet together. The single leg stance involved standing on the non dominant leg. A proprioception machine was also used to collect angular displacement data through ankle movement while the participant was sitting.

Research Findings: Mixed factorial ANOVA model revealed a significant interaction effect between group (yoga and non-yoga) and balance condition (double, single, tandem) on measures of centre of pressure displacement, $F\ (2, 50)= 5.264,\ p= .008,\ \eta^2=.174$. The mixed factorial ANOVA model, however, revealed no significant interaction effect between group type (yoga and non-yoga) and ankle movement condition (plantar and dorsiflexion) on proprioception measures of angular displacement, $F\ (1, 26) = 0.001,\ p> 0.05$.

Conclusion: These outcomes suggest that yoga seems to have an effect on balance, specifically in tandem and single leg conditions. Proprioception, however, does not seem to change as a result of the yoga intervention. These results may have implications on fall prevention and in assessing the effectiveness of yoga on balance and proprioception. Further research will be conducted with a larger sample size.

Poster Station #8

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Presentation Notes

Presentation Notes


Lakehead UNIVERSITY
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AC Avila Centre
AT Advanced Technology & Academic Centre (ATAC)
BB Braun Building
BC Balmoral Street Centre
BL Bora Laskin Building
BM Building Maintenance
BS Bike Shelter
CB William Tamblyn Centennial Building
FB Centre for Advanced Studies in Engineering and Sciences
GH Greenhouse
HG Psychology Research Lab
HF The Centre of Education and Research of Positive Youth Development
LI Chancellor Paterson Library
MS School of Medicine
MV Music & Visual Arts Centre
ND Nanabijou Childcare Centre
NO 1294 Balmoral Building
PA PACI (see bottom right)
PH Power House
RB Ryan Building
RC Regional Centre
RL Lot 5 Research Lab
SB Sanders Fieldhouse
SC Student Centre
SH Sanders Hangar
SN School of Nursing Building
UC University Centre (Agora)
Residence Legend
1. Prettie Residence
Dorion
Sioux Lookout
2. Bartley Residence
Atikokan
Dryden
Ear Falls
Fort Frances
Geraldton
Kenora
Longlac
Marathon
Nipigon
Rainy River
3. Deer Lake Ridge
Red Rock
Rossport
Eagle River
Minaki
Quetico
Sandy Lake
4. North Residence
Shebandowan
Armstong
Upsala
5 South Residence
Schreiber
Balmertown
Jellicoe
6 Halliday Hall
Wawa
Shabaqua
7. North Spirit Heights
Wabigoon
White River
Beardmore
Keewatin
Ignace
Nakina
8. Bearskin Lake
Kakabeka
Ogoki
Ouimet
Silver Islet
Lansdowne
Rocky Bay
Exterior Accessibility
Automatic Door
Ramp
One Way
Accessible Parking
Bus Stops
Bike Racks
Walking, Cycling Paths
Tunnels
Emergency Phones
Parking Meters
Entrance University Drive North
Entrance Agora Circle
Entrance Sanders Drive
Oliver Road
to PACI
LU Radio
Academy Drive
Beverly Street
Thunder Bay Regional Hospital
Shipping & Receiving
C.B. Way
Lot R
Lot 5
Lot 1
Lot G6
Lot 7
Pay & Display hourly and daily permit parking "G" lots only
Pedestrian Underpass
Bearskin Lake Rd
Hwy 11-17
Gated Access
Golf Links Road
FSRN Community Campus Garden
Lake Tamblyn
Car Pool
R14
BM
R15
N. Spirit Rd
Deer Lake Rd
McIntyre River
Sweat Lodge Site
G16
G17
Lot A
Lot R
Reaume Street
Balmoral Street
1294 Balmoral Building
Central Avenue
Main Entrance
Lakehead University Drive South
Pay & Display hourly and daily permit parking
Smoking in designated areas only
BORA LASKIN Faculty of Law
PACI LOCATION
401 Red River Rd.
LAKEHEAD UNIVERSITY
955 Oliver Road
RED RIVER ROAD
OLIVER ROAD
HIGH STREET
WEST
EAST
Best Route between locations

Northern Ontario
School of Medicine

École de médecine
du Nord de l'Ontario

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