



NORTHERN HEALTH RESEARCH CONFERENCE 2012

May 10-11, 2012
Thunder Bay, Ontario

Lakehead
UNIVERSITY



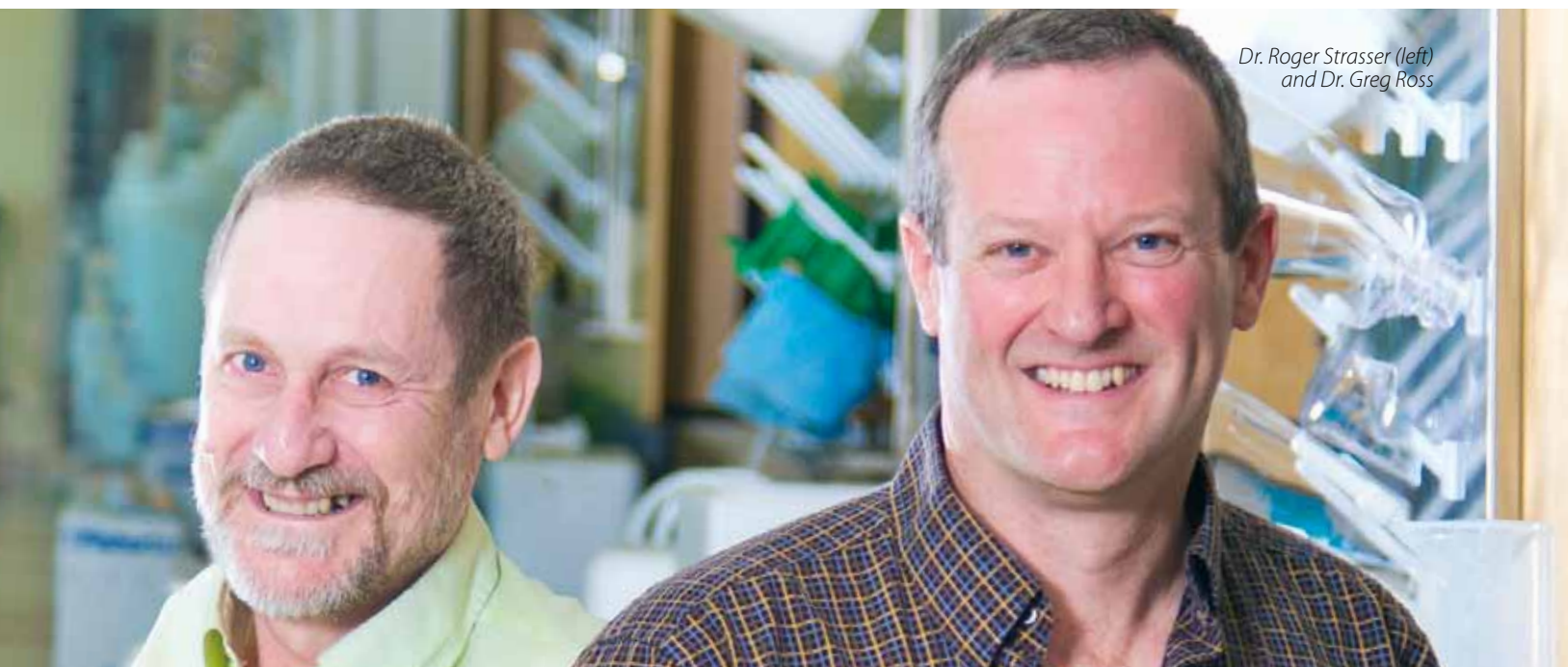
Northern Ontario
School of Medicine
École de médecine
du Nord de l'Ontario
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For information on the Northern Ontario School of Medicine's Research programs, please contact us at research@nosm.ca or through NOSM's website at www.nosm.ca.

TABLE OF CONTENTS

Welcome Message	2
A Message from the Mayor	3
Welcome from the MPPs	4
Keynote Speaker	5
Conference Agenda: Day One	6
Conference Agenda: Day Two	7
Poster Presentations	8
Acknowledged with Thanks	10
Oral Abstracts	12
Poster Abstracts	35
Author Index	73



*Dr. Roger Strasser (left)
and Dr. Greg Ross*

WELCOME MESSAGE

On behalf of the Northern Ontario School of Medicine (NOSM), we welcome you to the seventh annual Northern Health Research Conference (NHRC). We are pleased to be hosting the conference at NOSM's West Campus at Lakehead University in Thunder Bay.

Not only is Thunder Bay home to one of our two host campuses, it is also home to a network of research opportunities which are undertaken at the School, the Thunder Bay Regional Health Sciences Centre, St. Joseph's Care Group, the Regional Cancer Care Program, the Thunder Bay Regional Research Institute, Lakehead University, and at Confederation College.

Once again, the NHRC is poised to engage participants with a vast array of oral and poster research presentations. Research topics presented at the conference will cover topics ranging from the use of tobacco by emergency department patients, to the opportunities and challenges for integrating sex and gender considerations into basic experimental biomedical research, and beyond.

Since the beginning, NOSM has promoted and encouraged socially accountable research activities being undertaken across the North. In its seventh year, the NHRC continues to be

an exciting opportunity for researchers to engage with their peers, collaborate, and develop partnerships that will benefit the health of people across Northern Ontario.

We are thrilled to welcome our Keynote Speaker, Dr. Sonia Anand, to the Northern Health Research Conference. Adding to the excitement this year, NOSM is also hosting the seventh meeting of the Canadian Oxidative Stress Consortium, this week.

Welcome, and please enjoy the the networking opportunities the NHRC has to offer!

Dr. Roger Strasser
NOSM Dean

Dr. Greg Ross
NOSM Associate Dean, Research



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 seventh annual Northern Health Research Conference and the seventh meeting of the Canadian Oxidative Stress Consortium.



A special welcome to our out-of-town guests who have travelled for these conferences; 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.

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 successful conferences.

Keith P. Hobbs

Mayor, City of Thunder Bay

www.thunderbay.ca

WELCOME FROM THE MPPs

As the Member of Provincial Parliament for Thunder Bay – Atikokan, I would like to take this opportunity to welcome you to our city for the seventh annual Northern Health Research Conference.



The creation of partnerships between our health care professionals and researchers is fundamental to address the ever changing and unique health care needs of the North. I applaud the Northern Ontario School of Medicine for providing the opportunity for this collaboration which strengthens health care services and plays a vital role in research and advancements specific to our region. Thank you for your commitment to the enhancement of our health care system.

Welcome, out of town guests, to our wonderful city. Our community offers a number of activities you are sure to enjoy and I hope you find an opportunity to experience some of them.

On behalf of the constituents I represent, best wishes for a productive and successful conference.

Bill Mauro, MPP

Thunder Bay - Atikokan

On behalf of myself and the constituents I am honoured to represent, it's a great pleasure to extend a warm welcome to all the participants at the 7th Annual Northern Health Research Conference here in Thunder Bay..



As you may know, I am heavily invested – as a member of the government, professionally, and as a life-long Northerner – emotionally, with the long-term success of the Northern Ontario School of Medicine and the benefits that NOSM provides to Northern health care.

On this personal level, having met students and faculty over the years, I can honestly say that NOSM is turning out doctors with a solid educational foundation and great passion for their work. The NOSM mandate and philosophy are at the heart of this annual conference. Community-based research is key to our Northern-specific needs. There is clear evidence that the North in general, and small and remote communities specifically, are seeing the benefits.

I'm especially pleased to see that the bi-annual meeting of Canadian Oxidative Stress Consortium will be taking place at the same time. It's a testament to the status of our Northern Ontario School of Medicine to host this gathering of leading Canadian researchers in this field.

Our heartfelt thanks to all of you for your continued hard work and dedication. It is my hope that this year's conference will inspire you, and help you to network and share your research for the betterment of all.

Michael Gravelle, MPP

Thunder Bay - Superior North



KEYNOTE SPEAKER

Dr. Sonia Anand is a Professor of Medicine and Epidemiology at McMaster University, the Director of McMaster Population Genomics Program and a vascular medicine specialist.

She recently received the Canada Research Chair in Ethnic Diversity and Cardiovascular Disease. She also holds both the new Heart and Stroke Foundation of Ontario/Michael G. DeGroote Chair in Population Health Research, as well as the Eli Lilly/May Cohen Chair in Women's Health Research at McMaster.

Her present research focuses upon the environmental and genetic determinants of vascular disease in populations of varying ancestral origin, women and cardiovascular disease, and peripheral vascular disease. Her most recent work includes the development of two large birth cohort studies, funded by the CIHR and Heart and Stroke Foundation of Canada, among South Asian women of the greater Toronto area and another among Aboriginal women from the Six Nations Reserve.



CONFERENCE AGENDA

WEDNESDAY, MAY 9, 2012

6:00 - 8:00

"Meet and Greet" BBQ & Tours | Early Registration

- NOSM Medical School Building
- Confederation College REACH Centre*

** Busses will be available for those interested in a tour of the Confederation College REACH Centre.*

Lakehead University
University Centre Faculty Lounge
955 Oliver Road, Thunder Bay

THURSDAY, MAY 10, 2012

8:00 - 9:00

Registration / Poster Set-Up / Open Poster Viewing (Groups #1 and #2)

Lakehead University
University Centre Agora

9:00 - 9:05

Welcome and Opening Remarks

9:05 - 9:30

Welcome Message from Dignitaries and Special Guests

9:30 - 9:45

Stacey Ritz

Opportunities and challenges for integrating sex and gender considerations into basic experimental biomedical research

9:45 - 10:00

Patricia Smith

Tobacco Use: ED Patients (Emergency Department)

10:00 - 10:15

Lee Rysdale

Growing Children Well: A National Inter-professional Collaboration

Session Chair: Tom Kovala

10:15 - 10:45

Nutrition Break / Poster Viewing (Group #1)

10:45 - 11:00

Chiachen Cheng

Psychosis 101: evaluation of a pilot training program for northern and remote youth mental health service providers

11:00 - 11:15

Silvana Spadafora

Review of Breast Cancer Treatment Choices in Sault Ste. Marie 2008-April 2012: document trends before and after the opening of a Radiation Satellite Bunker

11:15 - 11:30

Crystal Morra and Kathleen Shaw

Development and Cognitive Testing of a First Nation School Food Survey for Manitoulin Island

11:30 - 11:45

Kyle Lafreniere

How do Attitudes and Perceptions Towards Rural Health Practice Differ Before and After Undergraduate NOSM Education?

Session Chair: Patricia Smith

11:45 - 1:30

Lunch / Open Poster Viewing (Groups #1 and #2)

1:30 - 2:30

Keynote Address

Dr. Sonia Anand, MD, PhD, FRCPC, Professor of Medicine, Heart and Stroke Foundation, Michael G. DeGroote Chair in Population Health Research, McMaster University
The Epidemic of Diabetes among Aboriginal People in Canada: Cause and Consequences

2:30 - 2:45

Pauline Bodnar and Robert Fenton

Flying Pizzas to Fort Severn: Learning How to do Stroke Research with First Nations Youth

2:45 - 3:00

Megan Murphy

Quality of care indicators for maternal-infant care: Results from a systematic review

Session Chair: Greg Ross

3:00 - 3:30

Nutrition Break / Poster Viewing (Group #2)

THURSDAY, MAY 10, 2012 (continued)

3:30 - 3:45	Robert Cormier Discovery of Driver Genes for Colorectal Cancer Using Transposon Mutagenesis	Session Chair: John Hogenbirk
3:45 - 4:00	Patrick Timony Methodological considerations for identifying 'where' French speaking physicians in Ontario practice and 'who' they serve	
4:00 - 4:15	Slim Babay The Effect of Omega-3 PUFAs on Anxiety in Rats	
4:15 - 4:30	Behdin Nowrouzi Sustaining the Nursing Workforce in Northeastern Ontario: An examination of recruitment and retention factors in the workplace	
6:00 - 9:00	Dinner & Social Evening (Cash Bar) <ul style="list-style-type: none"> 6:00 Cocktails 7:00 Dinner 	White Fox Inn 1345 Mountain Road, Thunder Bay

FRIDAY, MAY 11, 2012

8:00 - 9:00	Breakfast / Open Poster Viewing	Session Chair: Lee Rysdale
9:00 - 9:15	John Hogenbirk Undergraduate Medical Learners' Feedback on Their Education Program: Comments Categorized by Accreditation Standard	
9:15 - 9:30	Eli Nix Immune response to <i>Haemophilus influenzae</i> type b vaccination in patients with chronic renal failure	
9:30 - 9:45	Pouya Sadeghi-Aval Emergence of Non-Type b encapsulated <i>Haemophilus influenzae</i> as a Cause of Pediatric Meningitis in Northwestern Ontario	
9:45 - 10:00	Ingeborg Zehbe Ethical Space for a Sensitive Research Topic: Engaging First Nations Women in the Development of Culturally Safe Human Papillomavirus Testing	
10:00- 10:30	Nutrition Break / NHRC & COSC Open Poster Viewing	Session Chair: Stacey Ritz
10:30 - 10:45	Carol Cameletti Nurse Peer eHealth Network (NPEN)	
10:45 - 11:00	Amy Stewart The Effect of Tobacco Smoke Inhalation on Airway Cells and Inflammatory Markers in New Smokers	
11:00 - 11:15	Diana Coholic Exploring the Acceptability and Benefits of Arts-Based Group Methods for Aboriginal Women: How Arts-Based Methods can Incorporate Culture and Contribute to Healing and Health	
11:15 - 11:30	Zsolt Toth An exploration of family influence on the acceptance of dietary recommendations for Type 2 Diabetes in Aboriginal communities	
11:30 - 12:00	Closing Remarks / Conference Evaluation / Wrap Up / Poster Teardown	

POSTER PRESENTATIONS

Group #1

Poster
Station

Presenter

Title

1	John Haggarty	Shared Mental Health Care and Emergency Department Visits: An analysis of utilization and impact over 6 years
3	Carol Cameletti, Sonny Lee, and Christel Glinker	A Salutogenic Perspective to Primary Care in Chronic Pain
5	Janis Seeley and Shawn Utinen	Evaluation of an Interprofessional Educational Initiative
7	Janique Vandal	Antimicrobial activity of natural plant products native to Northern Ontario
9	Christopher Auger	How <i>Pseudomonas fluorescens</i> survives under nitrosative stress: Implications for the development of novel bactericidal agents
11	Nya Fraleigh	Estrogen influences T cell mediated differentiation in the presence of metals foundw in particulate air pollution
13	Silvana Spadafora	Retrospective Review of charts of ADCP Patients diagnosed with Colorectal Cancer
15	TC Tai	Characterization of Brainstem Phenylethanolamine N-methyltransferase Gene in Fetal Programming of Hypertension
17	Kristen Jones	"Researching Resilience": Early Reflections on Educational Research within Community Nursing Agencies in Northwestern Ontario
19	Patricia Smith	Nursing Needs Assessment to Inform Translating Tobacco Cessation Guidelines into Practice
21	Nadia Mullen	Preparing for Driving Cessation: Does Health or Personality Make a Difference?
23	Patricia Smith	Abuse and Smoking Cessation in Nursing Practice
25	Sandhya Khurana	Regulation of Adrenaline Synthesis by Intermittent Hypoxia
27	Atheana Buckley and Kelsey MacKinnon	Iron Supplementation Recommendations for Post Roux-en-Y Gastric Bypass Patients: A Systematic Literature Review
29	Mike Conlon	Smoking behaviours in cancer patients
31	Fei Wang	Vital Sign Score to Predict In-Hospital Mortality
33	Rashmi Narendrula	Comparison of gene expression changes in docetaxel resistant, carboplatin resistant and combined docetaxel and carboplatin resistant ovarian cancer cell lines
35	Brian Ross	Rapid quantification of volatile products of lipid peroxidation using Selected Ion Flow Tube Mass Spectroscopy
37	Lee Rysdale	Effective interventions to promote healthy weights in Aboriginal children and youth-A systematic literature review

Group #2

Poster
Station

Presenter

Title

2	Taddese Wondimu	SIFT-MS for evaluating the dehumidifying and hydrogen sulphide permeating efficiency of some methods in breath analysis
4	Chelsea Seguin	Pediatrician or Family Physician: Who is the Most Responsible Provider for Adults with Cerebral Palsy in Northern Ontario Communities?
6	Boran Baragzay	The cumulative effect of hyperglycaemia and hypoxia on cardiac oxidative stress
8	Amanda Hollingsworth	Protective Effects of Polyphenolic Compounds on Oxidative Stress-Induced Cytotoxicity in Rat Cardiac Myocytes
10	Eli Nix	Immunological Basis for Increased Burden of Invasive Bacterial Disease among First Nations in Northern Ontario
12	Mary Wilson	Chemotherapy Induced Hypertension Management
14	Silvana Spadafora	Acute Myelogenous Leukemia Secondary to Oxaliplatin and 5-fluorouracil Chemotherapy for the Treatment of Colorectal Cancer: A Case Report
16	TC Tai	Transgenerational Programming of Hypertension: Role of Phenylethanolamine N-methyltransferase
18	Kristen Jones	Improving communication around death and dying for personal support workers in long-term care using high-fidelity simulation
20	Nadia Mullen	Older Drivers' Driving Patterns and Satisfaction
22	Jaime Suffel	Retrospective review of outcomes for individuals referred to ADCP with esophageal cancer in 2009 and 2010
24	Avani Mehta	Investigation into role of urothelium in experimental models of Interstitial Cystitis
26	Tom Kovala	Endothelial cell migration and differentiation are regulated by the Janus kinase-Signal transducer and activator of transcription pathway
28	Silvana Spadafora	A Case Study of Shingles Presentation in a Cancer Clinic
30	Sungwon Han	Programming of Stem Cells: A Metabolomic Perspective
32	Imran Malik	Tissue lipid and aldehyde concentrations in rats fed diets with differing omega-3 fatty acid content
34	Alexandra Kruse	Examining social determinants of health and wellbeing in First Nations communities
36	Brian Ross	The breath concentration of ethane, a volatile marker of lipid peroxidation, is correlated with a measure of fatty acid-dependent signalling in patients with schizophrenia



NOSM West Campus,
Lakehead University

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*Thank you to **Peter Puna** at
Lakehead University for providing
the photo on page 5.*

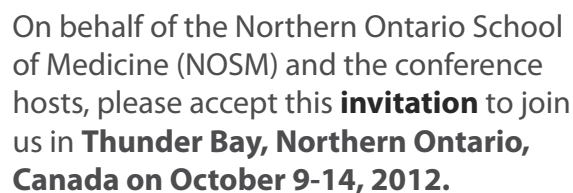
The Northern Ontario School of Medicine
would like to thank **Confederation
College** for their support.



Plan to be in Northern Ontario on October 9-14, 2012

Community Participation in Education, Research and Service.

***Chair, International Advisory Committee and
Dean, Northern Ontario School of Medicine***



with world-renowned keynote speakers, lively workshops, new ideas, and international networking opportunities—all in the natural beauty of Canada's North.

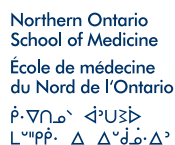
I encourage you to visit the conference website at **www.rendez-vous2012.ca** for more information about this exciting conference. I hope to see you... here!



- 1 **Learn** from the wide array of expertise and perspectives of delegates from around the world. Rendez-Vous 2012 will comprise of six days of exceptional keynote presentations, thought-provoking discussions, collaborative learning, and lively workshops.
- 2 **Discover** opportunities for networking and engaging with six organizations that share a common interest in the conference's theme: *Community Participation in Education, Research and Service.*
- 3 **Witness** through site-visits a working model of distributed medical education that is addressing the health-care needs of the people of Northern Ontario. As a preview, watch the Rendez-Vous 2012 promotional video by visiting www.rendez-vous2012.ca
- 4 **Explore** the autumn landscapes and the sandy shores of Lake Superior. The serenity and nature's splendor is not to be missed.
- 5 **Uncover** the history of the Thunder Bay area, and discover why Rendez-Vous 2012 is a name befitting a conference that will convene delegates from across the globe.

www.rendez-vous2012.ca

Rendez-Vous 2012 Conference Hosts:



CONSORTIUM for
LONGITUDINAL
INTEGRATED
CURRICULA (CLIC)

THEnet: Training for Health Equity Network
Build Community in Action

ORAL ABSTRACTS

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

Abstracts have been published as submitted.

Opportunities and challenges for integrating sex and gender considerations into basic experimental biomedical research

PRESENTING AUTHOR:

Stacey A. Ritz

AUTHOR(S):

Ritz SA (1), Antle D (2), Côté J (2), Deroy K (3), Fraleigh N (4), Mergler D (5), Messing K (5), Parent L (5), St-Pierre J (3), and Vaillancourt C (3).

AFFILIATIONS:

(1) Medical Sciences Division, Northern Ontario School of Medicine, Sudbury ON; (2) McGill University, Montréal QC; (3) INRS Institut Armand-Frappier, Laval QC; (4) Department of Biology, Laurentian University, Sudbury ON; (5) Université du Québec à Montréal, Montréal QC.

ABSTRACT:

There is no single recipe for the integration of sex and gender (s/g) considerations into health research, and approaches will vary between disciplinary domains. We have observed that basic experimental biomedical researchers face unique challenges to the incorporation of s/g, and that these challenges have remained largely unarticulated, misunderstood, and unaddressed. Even among those who are conscious of the importance of addressing s/g and dedicated to doing so, there are significant challenges in taking on s/g issues while remaining ‘the scientists we are’.

We have attempted to make explicit the difficulties of accounting for s/g in experimental biomedical research. While it may appear simple to incorporate sex by ensuring the use of biological materials that are both male and female, our analysis demonstrates that once one digs into the details of experimental design, such approaches often prove to be difficult in practice. With respect to gender, we argue that the paradigms under which most experimental studies are conducted make it problematic to incorporate gender (which is a complex construct that is inherently contextual) into a research framework that is deliberately built to remove context and reduce complexity.

We have developed a ‘checklist’ approach to guide basic biomedical scientists as they attempt to address s/g in their research. The checklist tool is not oriented to literally incorporate s/g into every experimental design, but to guide researchers to think critically about s/g in their research and appropriately take it into account.

The mainstreaming of s/g in basic biomedical research depends on an approach that will allow experimental biomedical scientists to address s/g issues in ways that do not undermine their ability to pursue their fundamental scientific interests. The checklist tool we are developing will provide targeted support for basic experimental researchers in feasibly and meaningfully incorporate s/g considerations in their research.

Tobacco Use: ED Patients (Emergency Departments)

PRESENTING AUTHOR:

Patricia M. Smith, PhD (1)

AUTHOR(S):

Smith, Patricia M. (1)

AFFILIATIONS:

(1) NOSM, Thunder Bay, ON

ABSTRACT:

Purpose. This study involved systems-level changes to systematically track tobacco use among emergency department (ED) patients.

Relevance. ED patients who smoke are an important target for tobacco cessation interventions but ED tobacco prevalence is not known. Studies have been limited methodologically by small samples and surveys which introduce sample error, and have not taken the age-tobacco use relationship into account. Systems-level tobacco surveillance methods are rare and determination of prevalence using patients' charts is hindered by lack of standardization for wording and location in charts.

Methods/Analyses. A tobacco-use question was integrated into the Meditech registration software in 11/12 NW Ontario hospitals. Tobacco prevalence was calculated separately for each year; to maintain independence of data only patients' first visit each year was included. To enhance the specificity of tobacco prevalence, the data were stratified by age and compared to national, provincial, and regional rates for the general population.

Results/Significance. From 2007-10, tobacco use was documented for 88% of the 545,352 adult visits of which 52% were readmissions. Tobacco use averaged 27% each year. The community hospitals had 8% higher prevalence than the regional hospital (33% vs. 25%). Age-stratified outcomes showed tobacco use remained high up to age 50 (M=36%); rates began to decrease for patients in their 50's (M=26%) and 60's (M=16%), and decreased substantially after age 70 (M=5%). The age-stratified ED tobacco rates were almost double those of the general population nationally and provincially for all but the oldest age groups but were virtually identical to regional rates highlighting the importance of choosing the appropriate comparison group. At a local level, the results elucidate the magnitude of the tobacco-use problem in these northern rural communities and highlight the possibility of using the ED for other surveillance purposes, especially in smaller communities where community-specific population data might not be available.

Growing Children Well: A National Inter-professional Collaboration

PRESENTING AUTHOR:

Lee Rysdale

AUTHOR(S):

Rysdale, L (1), Trumpler, J (2), Corby, L (3) and Randall Simpson, J (4)

AFFILIATIONS:

(1) Northern Ontario Dietetic Internship Program, Sudbury, ON, (2) Thunder Bay Regional Health Sciences Centre, Thunder Bay, ON, (3) Dietitians of Canada, Victoria, BC, (4) University of Guelph, Guelph, ON.

ABSTRACT:

Background: Monitoring growth is the single most useful tool for defining health and nutritional status in children at both the individual and population level. New infant and child growth charts, based on the World Health Organization (WHO) Growth Standards and WHO Growth References, were recently recommended for use in Canada by leading health professional associations – Dietitians of Canada (DC), Canadian Paediatric Society (CPS), Community Health Nurses of Canada (CHNC) and the College of Family Physicians of Canada (CFPC). To support the implementation of these recommendations, federal funding (Public Health Agency of Canada) was received to develop a self-directed training package for health professionals.

Description: This training package was developed through a national inter-professional collaboration and peer review process involving DC, CPS, CHNC, CFPC, Canadian Obesity Network, National Aboriginal Health Organization and NutriSTEP® as well as nation-wide reference groups for each participating organization. Registered Dietitians (RDs) with the Northern Ontario Dietetic Internship Program (NODIP) participated on the National Advisory Committee (NAC) and RD Reference Group. A series of web based self-instructional modules along with case studies, counseling guide, decision tree for assessment and referrals, and parent and professional resources were developed in English and French. The package was launched in December 2011 through DC's website Knowledge Centre www.dietitians.ca/Knowledge-Center/Events-and-Learning/Online-Courses.aspx.

Conclusions: A national inter-professional collaboration enabled the development of bilingual, evidence-based resources to support a variety of health care practitioners working in primary and public health settings and with select populations including First Nations. A process evaluation will be conducted in early 2012 at the federal, provincial and territorial levels. Pending additional funding, further evaluation is planned to assess the uptake and utilization of materials as well as the transfer of knowledge and skills into practice.

Psychosis 101: evaluation of a pilot training program for northern and remote youth mental health service providers

PRESENTING AUTHOR:

Dr. Chiachen Cheng

AUTHOR(S):

Cheng, C (1, 2), Howlett, AL (3), deRuiter, W (2), Hanson, M (4)

AFFILIATIONS:

(1) Canadian Mental Health Association, Thunder Bay ON; (2) Centre for Addiction and Mental Health, Toronto ON; (3) Department of Psychiatry, University of Toronto, Toronto ON; (4) Faculty of Medicine, University of Toronto, Toronto ON

ABSTRACT:

Objectives: Most early psychosis intervention (EPI) training has focused on family physicians participants. In northern Ontario, there is a shortage of primary care. This presentation will present evaluation results of a pilot training program for Northern and remote youth mental health service providers.

Approach: A mixed methods approach was used for evaluation. Prior to the intervention, participants' knowledge was measured using a validated questionnaire. This questionnaire was re-administered at 3 and 9 months follow-up. A second knowledge questionnaire was administered immediately post-intervention and at 9 months follow-up. Statistical analysis was conducted to evaluate knowledge acquisition among participants of the two modes of intervention. At 6 months, focus group interviews were conducted to explore experiences of the mode of intervention delivery. Interviews were recorded and transcribed. Emerging themes were iteratively derived through a series of discussions involving two independent coders.

Results: There were 19 participants across 4 agencies. Of the 19, almost half (47%) had >10 years work experience. Early results showed most participants preferred on-site intervention over videoconferencing, and disruptions in technology affected all participants. 6 month data indicated that the initial focus on technology was not significant; what became important was youth's increased access to services because participants believed they were part of a network with other providers and had a relationship with EPI providers. The follow-up process engaged participants in learning. The knowledge indicators showed no difference in knowledge acquisition between the two groups, even months post-intervention. A greater proportion of off-site participants performed well on the post-intervention knowledge scores than on-site participants.

Conclusion: Results are encouraging for policy and service decision-makers to address mental health service needs in northern/remote areas. During this presentation, we will discuss key findings that suggest viable alternatives that lead to increased access to mental health services for rural and remote youth.

**Review of Breast Cancer Treatment Choices In Sault Ste. Marie 2008-April 2012:
document trends before and after the opening of a Radiation Satellite Bunker**

PRESENTING AUTHOR:

Silvana Spadafora

AUTHOR(S):

Michela Febbraro, Dr. Silvana Spadafora, Alissa Tedesco, Dr. Malcolm Brigden

AFFILIATIONS:

Algoma District Cancer Program

ABSTRACT:

Breast Cancer is the most common cancer among Canadian women (excluding non melanoma skin cancer). Breast Cancer incidence has been rising steadily over the past 30 years, likely related to screening, but survival rates have been improving. Treatment includes surgery, radiation and systemic therapy. Depending upon the stage of the disease at presentation, conservation surgery with radiation has been the gold standard. However, difficulties accessing treatments for rural residents or smaller urban areas has been documented. Most patients will need to travel to access multi-disciplinary therapies creating financial and personal burdens for themselves and their families. Treatment choices are affected in turn. In April 2011, a radiation bunker opened in Sault Ste. Marie, allowing women to access radiation for Stage 1and 2 disease closer to home.

To assess if a difference in treatment choices occurred for Algoma Breast Cancer Patients before and after the opening of the Radiation Bunker April 2011, we reviewed the number of women seen and their treatment choices regarding surgery and radiation before and after the Radiation Bunker opening at our site.

Development and Cognitive Testing of a First Nation School Food Survey for Manitoulin Island

PRESENTING AUTHOR:

Crystal Morra (2) and Kathleen Shaw (3)

AUTHOR(S):

Cobean, K (1), Stirpe, S (1), Morra, C (2), Shaw, K (3)

AFFILIATIONS: (1) Northern Ontario Dietetic Internship Program, Sault Ste. Marie, ON, (2) Noojmowin Teg Health Centre, Aundeck Omni Kaning, ON, (3) Anishnawbe Mushkiki Nurse Practitioner Led Clinic, Thunder Bay, ON

ABSTRACT:

Background: Given the high rates of child obesity and chronic disease in First Nation (FN) populations, schools are one way to promote healthy lifestyles. School nutrition programs (SNPs) can include a meal or snack while foods sold (i.e. vending machines, cafeteria, fundraisers, special food days, etc.) may also impact a child's eating habits and overall health. An environmental scan of SNP tools in fall 2011 found no appropriate self-administered survey for use in FN schools.

Objective: To develop and cognitively test a FN school food survey on Manitoulin Island.

Methods: The food survey was adapted from the School Health Environment Survey (SHES) and BC Healthy Schools Network Assessment Tool with a focus on foods provided free of charge and sold for profit. Consultation with a Traditional Coordinator, peers and colleagues for readability will occur in February 2012. The self-administered, written survey will be completed in March 2012 by the school principal/education director and one teacher, who is most knowledgeable of their school nutrition practices. Six schools (five elementary and one secondary) consented to participate. In April 2012, a 30-minute face to face interview using a standardized guide will occur with the participating teacher. Cognitive testing will include clarity and understanding of questions, completeness, and comfort level; recorded responses will determine which questions should be retained, deleted or revised. Data from the closed-ended food survey will be entered into Microsoft Excel (version 2007) while open-ended responses will be grouped into thematic categories.

Discussion: Through a culturally appropriate school food survey, knowledge about the foods provided and sold in FN schools will enable community Dietitians to assist in identifying priority areas to support the nutritional quality of foods offered; can improve the school's awareness of their strengths and future priorities; and could track changes to the school food environment over time.

How do Attitudes and Perceptions Towards Rural Health Practice Differ Before and After Undergraduate NOSM Education?

PRESENTING AUTHOR:

Kyle M. Lafreniere (1)

AUTHOR(S):

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ABSTRACT:

Rural and northern Canadians are a unique subsample of the national population that experience a number of health discrepancies relative to southern and urban counterparts. Issues such as a poorer health status, less accessible medical services, and a maldistribution of health care providers demonstrate the need to improve physician recruitment and retention efforts in rural and northern areas. In 2005, the Northern Ontario School of Medicine (NOSM) was established with a mandate to contribute to improving the health of the people and communities of Northern Ontario. NOSM aimed to optimize recruitment and retention efforts by encouraging students that possess demographic characteristics of the Northern Ontario population.

The multi-year tracking study of students and graduates of NOSM is an ongoing project jointly conducted by the Centre for Rural and Northern Health Research (CRaNHR) and NOSM. During their undergraduate medical education at NOSM, students are given the opportunity to participate in the tracking study by completing questionnaires, surveys and interviews. The tracking study is administered upon entry, midpoint and exit from medical school and is both anonymous and voluntary.

This investigation examines responses to a questionnaire that evaluates attitudes and perceptions towards rural health practice. We first examine changes in attitudes and perceptions of rural health practice at entry to NOSM and exit from NOSM. Secondly, we examine if attitudes toward rural practice vary with demographic factors such as age, gender and rural background.

Preliminary results suggest that NOSM medical students with more rural exposure under the age of 18 foster more positive attitude and perception changes towards rural health relative to students with less childhood rural exposure. No significant differences are observed when examining attitude and perception changes for age and gender demographic variables.

Flying Pizzas to Fort Severn: Learning How to Do Stroke Research With First Nations Youth

PRESENTING AUTHOR:

Pauline Bodnar and Robert Fenton

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ABSTRACT:

In 2009, the Ontario Stroke Network supported a project to explore stroke education needs of Aboriginal youth age 10-13 in Northwestern Ontario. The goal was to develop age and culturally-appropriate tools. This research was done in response to a previous stroke education project, in which First Nations Elders requested that future stroke awareness initiatives “teach First Nations youth” about stroke. Community members suggested that stroke education would help youth recognise the signs and symptoms and know the need to respond promptly. Elders felt very strongly that the youth could serve as messengers, bringing stroke awareness information home to their parents and grandparents. They also emphasized the importance of culturally appropriate health teachings. Fifteen communities and organizations were interested in the study and ten First Nations and four organizations participated in the research component, which included discussion groups with youth and interviews with health and education professionals. Six First Nations and one Aboriginal organization assisted with the filming of the educational tool, a DVD featuring First Nations youth teaching youth about stroke. This presentation describes the lessons learned, about the uniqueness of First Nations, the generous support offered by the communities and organizations and their strong commitment to improving youth awareness of stroke. It offers concrete examples of the strategies that were effective, the practical supports that were needed, and how barriers were overcome. The enthusiasm of the youth who took part in the project, their interest in learning more about stroke, and their creativity in finding ways to teach about stroke are illustrative of the positive results that can be achieved when researchers work with First Nations to develop culturally-appropriate health education tools. (And the pizzas did make it to Fort Severn!)

Quality of care indicators for maternal-infant care: Results from a systematic review

PRESENTING AUTHOR:

Megan Murphy (1)

AUTHOR(S):

Nicola Shaw (1), Heather Peltsch (1), Megan Murphy (1), Jordan Robson (1) and the CIHR team in Maternal-infant care (MiCare)

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ABSTRACT:

The quality of care received throughout and following pregnancy, by mothers and newborns, can significantly alter health outcomes. Enhancing quality of care requires measurement of the existing care and the factors that affect care. Indicators for evaluating determinants of health, health outcomes and healthcare performance specific to the maternal-infant populations are used for monitoring health status, identification of gaps in the healthcare system and informing quality improvement initiatives. We performed a review of existing indicators related to maternal-infant care to develop a set of quality indicators that span the patient journey from preconception to early childhood. Scientific databases and grey literature were searched using MeSH terms describing care received along the maternal-infant continuum cross references with quality of care terms. Indicators identified from the search strategy were subsequently categorized along the continuum of care into themes and then grouped by topics. Our search strategy yielded 61 relevant reports and 155 citations from the primary literature that were included for full text read and indicator extraction. The grey literature produced 630 relevant indicators that were specific to maternal-infant care and the primary literature produced 553 relevant working indicators that were reviewed in more detail. We identified more than 2600 indicators related to maternal-infant care which included significant overlap and duplication. Of all the indicators reviewed, more than 1180 were pertinent to our inclusion criteria and were organized along the maternal-infant continuum of care into 48 topics and 9 themes. These indicators will be reviewed and ranked by an expert panel using a modified Delphi method. Establishing a standard set of quality indicators specific to maternal-infant care is critical for use in hospital and primary care settings to measure healthcare performance and inform quality of care improvement efforts that enhance the patient journey and improve patient outcomes.

Discovery of Driver Genes for Colorectal Cancer Using Transposon Mutagenesis

PRESENTING AUTHOR:

Robert Cormier (1)

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ABSTRACT:

To identify drivers of gastrointestinal tract tumorigenesis we have performed forward genetic screens in mice using the *Sleeping Beauty* (SB) DNA transposon as a mutagen. Mice experiencing random SB-mediated mutations in intestinal epithelial cells developed tumors and by analyzing the tumor DNA, the transposon insertions were mapped to the mouse genome. Genomic loci that were recurrently mutated by the SB transposon at a high frequency are referred to as common insertion sites (CIS). Genes within these CIS are likely drivers of tumorigenesis. We conducted the screen in wild-type mice and identified 77 candidate genes. We also conducted the screen in mice already harboring an *Apc* mutation (*Apc*^{Min}) and identified an additional 25 genes that likely cooperate with an existing *Apc* mutation during tumor development. We have conducted an additional screen in mice with a *Trp53* mutation. We have made significant progress in validating the function of candidate genes associated with CIS, as for example, five of nine candidate genes identified in the *Apc*^{Min} screen caused a reduction in cellular proliferation in SW480 human colon cancer cells following their knockdown by siRNA. We have confirmed the tumor suppressor function of several candidate genes by targeted germline mutagenesis in mice. Notably, we compared our list of mouse candidate genes with a list of significant breakpoint cluster regions that were discovered in an analysis of more than 500 human late stage colorectal cancers using arrayCGH. We found an overlap of 17 genes, including several known fusion oncogene partners such as EVI1, ERG and ETV6, and numerous novel genes that demonstrated breakpoints in > 10% of human CRC samples. Ongoing work is focused on further functional validation of our candidate genes in human colorectal cancers, especially the identification of fusion oncogenes using next generation sequencing, including Illumina 2000 RNA resequencing and NanoString counting.

Methodological considerations for identifying ‘where’ French speaking physicians in Ontario practice and ‘who’ they serve

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AFFILIATIONS:

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ABSTRACT:

Francophones in Ontario represent a distinct minority (4.8% of Ontarians) with their own health risks and outcomes (e.g. higher prevalence of chronic illnesses, CVD and obesity than the rest of the province). Though some studies have focused on the health needs of this group, none have examined the distribution and practice patterns of French speaking physicians. The purpose of this presentation is twofold; first we will present preliminary results from our work on the distribution of French speaking physicians in Ontario; second we will review a methodological approach to further unveil where they practice and who they serve.

Our preliminary work compared the distribution of French speaking physicians in various geographical locations of Ontario. The results from this study suggest there is a maldistribution of French health services in Ontario. The majority (81.2%) of French speaking physicians are located in urban communities of Southern Ontario, where only 63.3% of the Francophone population resides. The largest disparity in service provision was identified in rural Northern and urban Northern communities where only 4.7% and 7.5% of physicians are located, while 10.3% and 16.3% of Francophones reside in these communities.

It is somewhat paradoxical that Francophones in general have a more favourable physician to population ratio than Anglophones/Allophones. As a whole the ratio of French speaking physicians to Francophones (1/297) is considerably more favourable than that of physicians to the general population (1/1096). Why then do Francophones in Ontario report having so much difficulty receiving primary care services in French?

A discussion of a methodology for answering this question will be included as a conclusion to the presentation. First, considerations for revisiting administrative databases will be discussed. Second, the value of explanatory qualitative interviews will be detailed. The discussion will focus on the implications to provision of French language medical services in Ontario.

The Effect of Omega-3 PUFAs on Anxiety in Rats

PRESENTING AUTHOR:

Slim Babay

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ABSTRACT:

Omega-3 polyunsaturated fatty acids are a class of lipids which have been linked to some cancers, mental health, immune function, and cardiovascular disease. Meta-analyses of previous studies have suggested that omega-3 PUFA supplementation may be as effective in treating major depressive disorder as conventional antidepressants. Given that there exists significant comorbidity and pharmacological overlap between mood and anxiety disorders, it suggests that both types of disorders may be mechanistically related. Supported by recent clinical and in vitro data, it is also plausible to hypothesize that omega-3 supplementation may also be used as an anxiolytic. Since omega-3 supplementation is usually administered as marine oils which are made up of various types of fats, supplementation of EPA, DHA, and ALA was given to different test groups to in order to investigate the biochemical and physiological effects of each omega-3 PUFA in vivo. 32 rats were given a diet consisting of 10% by weight total fat, composed of 1% supplemented omega-3 and 9% palm oil, ad libitum for a period of 8 weeks. Anxiety was assessed using the open field test and the elevated plus maze. A cortisol assay was also used to support the findings and indicate the animals overall level of stress. Lipid analysis of the brain and liver was also performed to confirm the uptake of the supplemented omega-3 PUFA.

Sustaining the Nursing Workforce in Northeastern Ontario: An examination of recruitment and retention factors in the workplace

PRESENTING AUTHOR:

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- 3) School of Nursing – Laurentian University, Sudbury, ON

ABSTRACT:

Objectives:

The study presents the findings from a survey of the registered nurse and registered practical nurse workforce of northeastern Ontario conducted in the spring of 2011. A profile of the nurses and their workplace recruitment and retention practices was identified.

Methods:

Separate questionnaires were developed for the RN and RPN sample. Home addresses of nurses working in NE Ontario who consented to participate in research were obtained from the College of Nurses of Ontario. Using a modified Dillman approach with two mail-outs, survey packages were sent to a random sample of RNs (n=1537) and all RPNs (n=1338). Completed questionnaires were received from 459 RNs (30%) and 512 RPNs (38%).

Results:

Nurses ranked income and benefits, workload allocation, peer support and full-time employment opportunity as extremely important factors to keep them working in their current positions. RN and RPN satisfaction with these factors was low for workload allocation. For RPNs satisfaction with income and staff turnover was low. A higher proportion of RNs (50%) were satisfied with full-time employment opportunity in their current workplaces compared to RPNs (36%). In the logistic regression model for RNs, RNs satisfaction with staff mixing of RN with non-registered staff (OR 1.4, CI 1.13 - 1.83) was associated with RN retention. Similarly, in the logistic regression model for RPNs, years of experience (OR 0.938, CI 0.91 - 0.95) and employment status (OR 0.619, CI 0.44 - 0.88) were inversely linked to retention.

Conclusion:

Understanding the work environment is closely linked to recruitment and retention strategies because promoting a health workplace increased retention and recruitment efforts. A clear understanding of the recruitment and retention of nursing health workforce is required in order to address the nursing shortage in rural and northern areas.

Undergraduate Medical Learners' Feedback on Their Education Program: Comments Categorized by Accreditation Standard

PRESENTING AUTHOR:

John Hogenbirk

AUTHOR(S):

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AFFILIATIONS:

Centre for Rural and Northern Health Research¹
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ABSTRACT:

Medical education programs in the United States and Canada are accredited by the Liaison Committee on Medical Education (LCME), which assesses each program for its compliance with medical education program standards. One of the accreditation standards stipulates that faculty and medical institutions “must monitor medical students’ experiences and modify them as necessary to ensure that the objectives of the medical education programme are met” (LCME 2010). The Centre for Rural and Northern Health Research (CRaNHR) is conducting a multi-method longitudinal study of the students and graduates of the Northern Ontario School of Medicine (NOSM) on behalf of the Ontario Ministry of Health and Long Term Care (MOHLTC). Responses to open-ended questions were compiled and interpreted in the context of accreditation standards pertaining to (1) Institutional Setting; (2) Educational Program for the M.D. Degree; (3) Medical Students; (4) Faculty; and (5) Educational Resources. Qualitative findings from four cohorts, surveyed from April 2009 to April 2010 (n= 153, response rate of 68%) are used to illustrate the connection between accreditation standards and the students’ perspective. Results from this analysis provide additional feedback from students that could assist NOSM in meeting accreditation standards.

Immune response to *Haemophilus influenzae* type b vaccination in patients with chronic renal failure

PRESENTING AUTHOR:

Eli Nix

AUTHOR(S):

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2. Vaccine Preventable Bacterial Disease, National Microbiology Laboratory, Public Health Agency of Canada, Winnipeg, Manitoba, Canada

ABSTRACT:

Background. Chronic renal failure (CRF) patients undergoing haemodialysis are immunocompromised and therefore highly susceptible to various infections, especially those caused by encapsulated bacteria. We hypothesized that such patients are able to respond to the *Haemophilus influenzae* type b (Hib) polysaccharide-protein conjugate vaccine.

Methods. Thirty-four adult CRF patients and 19 healthy controls received one dose of paediatric Hib conjugate vaccine; serum anti-Hib IgG antibody levels and functional antibody activity were monitored during one year.

Results. Less than 50% of non-vaccinated haemodialysis patients had ≥ 1.0 $\mu\text{g/ml}$ of anti-Hib IgG and 29% expressed detectable serum bactericidal activity (SBA). Four weeks post-vaccination, 97% had developed protective antibody levels with a 23-fold increase in geometric mean concentrations; 91% of patients exhibited detectable SBA. One year post-vaccination, 92% and 85% of patients maintained protective IgG antibody levels and SBA, respectively. Vaccine response was significantly reduced in CRF patients who had type 2 diabetes mellitus or chronic obstructive pulmonary disease.

Conclusions. Adult CRF patients can be at an increased risk of invasive Hib disease due to the lack of functionally active anti-Hib antibodies. The conjugate Hib vaccine is highly immunogenic in these patients and can provide protection against invasive Hib disease for at least one year.

Emergence of Non-Type b Encapsulated *Haemophilus influenzae* As a Cause of Pediatric Meningitis in Northwestern Ontario

PRESENTING AUTHOR:

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ABSTRACT:

Prior to the introduction of the conjugate vaccine, *Haemophilus influenzae* serotype b (Hib) was a leading cause of bacterial meningitis in children. Although successful in reducing Hib cases, the vaccine confers no protection against other serotypes of *H. influenzae*, such as a (Hia) or f (Hif). We previously reported emergence of invasive disease caused by non-type b *H. influenzae* in Northwestern Ontario (38 cases during 2002- 2008) with predominance of Hia. At that time, no cases of pediatric meningitis caused by *H. influenzae* were recorded in the region. Continued surveillance identified 12 new cases of invasive non-type b *H. influenzae* disease between January 2009 and July 2011. Among them, 3 young children developed meningitis with severe complications caused by Hia or Hif. In this study, we have reviewed clinical presentation of these cases and also characterized recent *H. influenzae* isolates from the region, i.e. their genetic background and antibiotic sensitivity. Our findings point to the clonal nature of circulating Hia strains as well as to an increase in frequency and severity of pediatric invasive *H. influenzae* infections in Northwestern Ontario. The results of our study emphasize the need for continued surveillance of non-type b strains in the post-Hib vaccine era and for research on host and microbial factors responsible for the development of severe disease.

This study was supported by the NOSM Dean's Summer Medical Student Research Award.

Ethical Space for a Sensitive Research Topic: Engaging First Nations Women in the Development of Culturally Safe Human Papillomavirus Testing

PRESENTING AUTHOR:

Dr. Ingeborg Zehbe (1)

AUTHORS:

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AFFILIATIONS:

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ABSTRACT:

Background/Objective: First Nations women are widely under-screened for Human Papillomavirus (HPV) infection and cervical cancer. This may be due to issues around screening for a sexually transmitted infection. These issues may include experiences of stigmatization, feelings of shame, and fear of lack of privacy when results are reported in very small communities.

Methods: Any HPV research in First Nations communities must be done in a sensitive, respectful, and culturally appropriate way, preferably involving community members themselves. In studying ways to promote HPV and cervical cancer screening in First Nations communities in Ontario, the authors of this paper used a participatory action research (PAR) approach, which involves collaboration between the research team and the people the research is supposed to benefit. The authors also used First Nations scholar Willie Ermine's concept of ethical space—where groups with separate worldviews come together to recognize differences and negotiate mutual understanding—in their approach to working with the communities.

Results: Through a series of engagements with community members to introduce, develop, and refine the proposed research, the authors were able to create a study that was both scientifically sound and accepted by the community. A pilot study was completed in one First Nations community with a larger, randomized trial scheduled to begin in nine additional communities involving up to 1,000 women.

Conclusion: Although the PAR/ethical space approach may be more time- and resource-intensive, involving local women, health care providers, leaders, and other community members helps ensure acceptance by and benefit to the First Nations communities involved in research.

Note: This work has been accepted for publication in the Journal of Aboriginal Health

Nurse Peer eHealth Network (NPEN)

PRESENTING AUTHOR:

Carol Cameletti

AUTHOR(S):

Christel Glinker

Tamara Shewciw

AFFILIATIONS:

Northern Ontario School of Medicine

Registered Nurses Association of Ontario

NE LHIN

ABSTRACT:

Purpose: This network shows how the NE LHIN is working collaboratively with the Registered Nurses Association of Ontario (RNAO)'s Nursing Peer to Peer Strategy to form a Nurse Peer eHealth Network (NPEN) throughout the region. The purpose of this Network is to provide a forum for nursing professionals to communicate and disseminate current developments in health care information systems through teleconference as well as their concentrated efforts towards eHealth advancements in Nursing and allied health.

Methodology: This Network of Nurses was formed with the sole purpose of wanting to communicate more effectively and engage with the Nurses throughout the LHIN regarding eHealth. This Network encompasses an area that includes 26 hospitals and over 200 health service organizations. NPEN meets bi-monthly by various electronic means in order to connect with Nurses about eHealth initiatives in the region and also to gain nursing insight and build on their expertise for needs and wants on the front-line of health care.

Results/Outcomes:

- Greater understanding and awareness of the importance of nursing's full involvement in all aspects of eHealth by both nurses and other stakeholders —
- Nurses are more involved in and vocal about how eHealth and nursing are best integrated. —
- Less of a focus on eHealth as a challenge and more of a focus on making it work for better nursing care. —
- More awareness of link between eHealth and quality patient care.

Conclusions: Recognition of the engagement of nurses is a key success factor to the evolution of Electronic Health Record. Because of the large role that nursing professionals play in the health care industry, the collaborative efforts between Nurses, the NE LHIN CIO and RNAO Nurse Peer to Peer Lead will allow for increased engagement, understanding and appreciation of eHealth on the front-line of health care. Due to the creation of this Nurse Peer eHealth Network, we are able to facilitate the stronger linkages between the LHIN and the broader nursing community.

The Effect of Tobacco Smoke Inhalation on Airway Cells and Inflammatory Markers in New Smokers

PRESENTING AUTHOR:

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ABSTRACT:

In Canada, two teenagers begin smoking every 10 minutes. The Youth Smoking Survey (YSS) reported 22% of students in grades 6-9 had tried smoking a cigarette and 3% were current smokers. Well-documented evidence exists linking cigarette smoking to a variety of respiratory diseases including chronic obstructive pulmonary disease (COPD) and lung cancer. A gap in the current literature exists assessing the early effects of cigarette smoking as the majority of studies have been performed on chronic smokers. Data on 'new' or short-term smokers is sparse. The greatest prevalence of smoking in Canada is in young adults, with ages 15-24 years being the highest risk for taking up smoking. These statistics highlight the importance of determining the effects of short-term smoking on respiratory health, and to assess the contribution of these effects towards developing chronic respiratory disease.

The purpose of this study was to assess the effects of cigarette smoking on the lungs and airways of 'new' smokers. 54 male and female subjects were recruited from the Sudbury community (20 never smokers, 20 new smokers, 14 long term smokers). Physiological measures of lung function, blood pressure, oxygen saturation and exhaled breath carbon monoxide were recorded. Subjects answered a questionnaire regarding health status, smoking habit, occupation, physical activity levels and socioeconomic status. Induced sputum samples were obtained and differential cell counts and enzyme-linked immunosorbent assay (ELISA) were performed to determine an inflammatory cellular profile and biomarker analysis within the lungs of new smokers, compared to healthy never smokers, and healthy long-term smokers. Preliminary results indicate new smokers have a similar inflammatory cell profile to long term smokers, with statistically significant differences in a number of inflammatory cell types when compared to never smokers. These results indicate an early airway damage pattern comparable to long-term smokers.

Exploring the Acceptability and Benefits of Arts-Based Group Methods for Aboriginal Women: How Arts-Based Methods can Incorporate Culture and Contribute to Healing and Health

PRESENTING AUTHOR:

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ABSTRACT:

There is burgeoning interest within helping/health professions in arts-based methods. We explored the suitability and benefits of arts-based group methods for improving aspects of resilience in Aboriginal women. The main research question was: Are arts-based group methods feasible, suitable, and beneficial for Aboriginal women? Our idea was that through the use of arts-based methods, women could be assisted to explore their feelings and experiences, improve their ability to be mindful, and develop their strengths in a creative and enjoyable manner within a strengths-based and culturally relevant context. Group activities included constructing dream collages, guided imagery, painting, etc. Also, cultural teachings such as the Medicine Wheel were discussed.

The research design was qualitative and exploratory because there was little written research that reported specifically on the use of arts-based methods with Aboriginal women. Our research was in cooperation with the Shkagamik-Kwe Health Centre, where we facilitated three different groups (two groups were 6-weeks in duration and one group was 8-weeks long). This pilot research was guided by a grounded theory strategy that constructed knowledge from the analysis of the group sessions, which were all video-recorded and transcribed. The data analysis was collaboratively conducted by the three authors. Two main categories emerged: expressions of Aboriginal culture within the group exercises; and the benefits of the groups. When these two main categories were further analyzed, the main story-line emerged, which was the strong belief expressed by the women that it was up to them to “break the cycle” of pain found within their families and communities by healing themselves. These findings will be discussed as well as some of the limitations of our research. Arts-based and experiential methods could contribute successfully to helping Aboriginal women achieve healing and health.

An exploration of family influence on the acceptance of dietary recommendations for Type 2 Diabetes in Aboriginal communities.

PRESENTING AUTHOR:
Zsolt Toth, RD, MPH, CDE

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AFFILIATIONS:

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- 3) Human Sciences Division, Northern Ontario School of Medicine, East/West.
- 4) Kinesiology, Lakehead University, Thunder Bay, ON.

ABSTRACT:
The purpose of this research is to elucidate the impact of cultural beliefs related to familial support on the acceptance of dietary recommendations for the management of Type 2 Diabetes (T2DM) amongst Anishinabek community members in M’Chigeeng First Nation, Canada.

Methods: The research used culturally-appropriate grounded theory research, with a participatory action research framework. Focus group discussions with Anishinabek community members with T2DM were conducted.

Results: Four focus groups were conducted with a total of 20 participants. Global themes emerged from focus group discussions: 1) The diabetes diet is an unnatural way of eating, 2) Diabetes takes away pure cultural experience, 3) Anishinabek family is key to successful diabetes management.

Conclusions: Family support is an important factor in accepting the dietary recommendations for the management of T2DM. Both supporting behaviours and non-supporting behaviours were described by participants. Incorporating family into traditionally patient-only programming and counselling models may improve acceptance of dietary recommendations for T2DM.

[illegible]

POSTER

ABSTRACTS

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

Abstracts have been published as submitted.

The poster abstracts are in alphabetical order by presenting author.

How *Pseudomonas fluorescens* survives under nitrosative stress: Implications for the development of novel bactericidal agents

PRESENTING AUTHOR:

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ABSTRACT:

The rise in bacterial resistance to commercially available drugs presents a dire threat to our well being. Novel targets for antibiotic development are scarce, and most new drugs are merely improvements on older scaffolds for which resistance may already be present. In this work, we have demonstrated that nitric oxide (NO), an endogenous anti-bacterial agent released by macrophages, disrupts the standard machinery of aerobic respiration. This impedes the ability of *Pseudomonas fluorescens* to generate a substantial amount of ATP via oxidative phosphorylation. In order to survive, *P. fluorescens*, a model microbe with versatile nutritional habits, reconfigures its metabolic pathways in order to generate energy by substrate-level phosphorylation. This is accomplished by the up-regulation of the enzymes pyruvate phosphate dikinase and pyruvate water dikinase. The significance of phosphotransfer networks mediating the proper storage of ATP will be discussed. With this knowledge in hand, one can conceivably develop more efficient biochemical strategies to disrupt *in vivo* proliferation of NO-resistant bacteria with minimal impact on the host.

Poster Station #9

The cumulative effect of hyperglycaemia and hypoxia on cardiac oxidative stress

PRESENTING AUTHOR:

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AFFILIATIONS:

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ABSTRACT:

Hyperglycaemia induced oxidative stress plays an important role in cardiomyocyte cell death leading to cardiac dysfunction. Autophagy is an intracellular bulk degradation process and can be induced by stresses such as nutrient depletion and acute ischemia, to promote cell survival. Oxidative stress is an important regulator of autophagy in various pathophysiological conditions such as ischemia/reperfusion injury and hypoxia. The role of autophagy in the oxidative stress tolerance of cardiac cells exposed to simultaneous hyperglycemia and hypoxia has not been studied. The aim of the present study is to determine the role of autophagy in cardiac cells in response to combined hyperglycemia and hypoxia. H9c2 cells were grown in DMEM supplemented with standard (5.6mM), moderately high (25mM) and high (33mM) glucose concentrations. The cells were then exposed to hypoxia condition (1% O₂) for 24 and 48 hours using the hypoxia chamber. Cell viability and oxidative stress was measured by the 2,5-diphenyl-2H-tetrazolium bromide (MTT) and 2'7'-dichlorofluorescein (DCF) assays respectively. Preliminary data obtained thus far indicate that H9c2 cells exposed to 25mM and 33mM glucose concentrations during hypoxia for 48 hours showed a decline in cell viability. Decrease in cell viability was associated with an increase in oxidative stress in 25mM glucose concentration at 48 hours hypoxia as compared to normoxia condition. Future studies are directed towards studying autophagy related protein and gene expression under the same conditions.

Poster Station #6

Iron Supplementation Recommendations for Post Roux-en-Y Gastric Bypass Patients: A Systematic Literature Review

PRESENTING AUTHOR:

Atheana Buckley and Kelsey MacKinnon

AUTHOR(S):

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ABSTRACT:

Introduction: Obesity is a worldwide epidemic and is a significant contributor to co-morbidities and mortality. In an effort to reduce the number of people living with obesity, the Ministry of Health and Long-Term Care has provided the option of surgical weight loss for people who meet specific criteria. Bariatric surgery is the most effective long term treatment for morbid obesity; it extends life expectancy and enhances quality of life. There has been an increase in the number of bariatric surgeries being performed across Canada, most commonly, the Roux-en-Y gastric bypass. The Roux-en-Y gastric bypass is a restrictive and malabsorptive procedure. Despite its benefits of improving co-morbidities and extending life expectancy, this surgery can result in malnutrition, specifically deficiencies in iron. There are limited evidence-based guidelines available in the literature to provide clinicians with recommendations for iron supplementation following Roux-en-Y gastric bypass.

Objective: A systematic literature review of the iron supplementation recommendations is currently being undertaken to strengthen the knowledge in this area.

Methodology: Databases including PUBMED and MEDLINE and sources of grey literature are currently being searched using defined search terms for studies published since 2006. The level of evidence for each study was determined using the *Selected User Guides to the Medical Literature Worksheets* from Dietitians of Canada's Practice-based Evidence in Nutrition (PEN) writer's guide. The pooled evidence will be graded in the winter of 2012 using the PEN *Evidence Grading Checklist* which ranks the conclusions as good, fair, limited or poor.

Research Findings and Implications: Results are pending and will be shared with the Ontario Bariatric Network (OBN) Dietitian Task Force. These results will be presented to the OBN Advisory Board for standardized of iron supplementation throughout the Bariatric Centers of Excellence in Ontario.

Poster Station #27

A Salutogenic Perspective to Primary Care in Chronic Pain

PRESENTING AUTHOR:

Carol Ann Cameletti (1), Sonny Lee (2), Christel Glinker (3)

AUTHOR(S):

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ABSTRACT:

Chronic pain sufferers constitute a heterogeneous population characterized by multiple morbidities, substance dependence and mental issues. With priority placed on improving the efficacy of prescribed evidence based therapies, the process of facilitation of a local chronic pain clinic and how this affects clients who have experienced adversity presents conceptual, ethical and methodological challenges. Using a modeled windshield survey and in depth interviews from a primary care paradigm in primary health care and health promotion, the prevention, diagnosis and treatment of illness may be seen as an approach that encompasses a spectrum of services beyond the traditional health care system. From integrated political, economic, cultural, psychosocial and neurobiological perspectives, a salutogenic perspective to chronic pain originated by Aaron Antonovsky provides a framework in addressing the role of stress and generalized resistance resources in human functioning. Mind-body, emotional and spiritual domains of stress as related to chronic pain and sense of coherence may be viewed as a health determinant continuum in self and social regulation and prediction towards positive health outcomes. In view of achieving strategies that secure participation and healthier lifestyle choices, a Project Logic Model to evaluate health resources, identify priorities, establish goals and determine courses of action to improve life quality and assess attitudes towards established therapies may be reviewed in the context of making informed decisions. Within service provider and grass roots communities, team implementation is focused in Sudbury to promote a common approach and shared knowledge. Objectives of exploring morbidities in lifestyle choices are to increase accessibility to therapies while demonstrating enhancements in life quality with increasing communal awareness of available health programs. Long-term objectives include showcasing how cost-effective treatments may transcend socio-economic boundaries and highlighting therapies that have made a positive impact on patients while identifying quality of services rendered by leveraging of existing local resources.

Poster Station #3

Smoking behaviours in cancer patients

PRESENTING AUTHOR:

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(2) Northern Ontario School of Medicine

(3) Laurentian University School of Nursing

ABSTRACT:

Successful smoking cessation may offer a treatment and survival benefit for cancer patients, including those with head and neck cancers who often exhibit high rates of smoking. This ongoing prospective study was designed to assess baseline smoking characteristics, intention to quit, smoking cessation rates, and the role of genetic variants in nicotine dependence and cessation in this population of cancer patients. Patients who were classified as “ever smokers” and attended the dental oncology clinic within the Northeast Cancer Centre for treatment-related assessments were invited to participate. Participation involved completing a questionnaire that assessed baseline smoking-related behaviours, including nicotine dependence using the Fagerstrom Test for Nicotine Dependence (FTND), and intention to quit smoking. Participants were also asked for consent to provide a saliva sample for genetic analyses and for future contact to assess smoking cessation and other health-related outcomes. Personalized smoking cessation counselling, by trained staff, was offered. One hundred and eleven patients have participated. Most (77%) are male, with a median age of 65 years (range 36-92 years). Participants reported a median of 37 pack-years of smoking, and 43% were nicotine dependent. Nicotine dependence level was significantly associated with smoking status, with current smokers more likely to report significantly higher nicotine dependence levels than those who were not smoking ($p=0.03$). While 96% ($n=104$) of the participants had previously attempted smoking cessation, 35% ($n=39$) were current smokers. Most of the current smokers (80%) were interested in quitting smoking and in receiving personalized counselling for cessation. This study demonstrates the need to support cessation efforts in this population of cancer patients, and highlights the role of nicotine dependence and smoking behaviour. Future research into the success of smoking cessation methods, including the role of genetic variants in nicotine dependence and cessation may help us better address smoking behaviours in cancer patients.

Poster Station #29

Estrogen influences T cell mediated differentiation in the presence of metals found in particulate air pollution

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ABSTRACT:

Air pollution is a heterogeneous mixture of elements and its chemical composition is greatly influenced by local factors. The particulate matter component is known to exacerbate both cardiovascular and respiratory diseases in those at risk, and has been shown to act as an adjuvant for allergic disease.

Sex hormones are known to be important modulators of the immune response. Estrogen in particular is able to influence T cell differentiation, enhance humoral mediated immunity as well as influence the efficacy of antigen presenting cells. Thus, it is crucial to not assume that both sexes will respond in the same manner to particulate matter in air pollution. In this study, our objective was to investigate whether naive T cells treated with metals found in particulate will be influenced by estrogen when they differentiate.

We used healthy human volunteers and obtained 60 mL of blood per treatment. The blood was separated using a density gradient and the naive CD4⁺ T cells were isolated from the buffy coat by magnetic sorting. Naive CD4⁺ T cells were then treated with 250 μ M NiCl₂ for 4 hours and treated concurrently with 17 beta-estradiol (E2) for either 4 or 24 hours. The cells were then activated using immobilized anti-CD3 and soluble anti-CD28 for 96 hours at 37°C, 5% CO₂. The cell supernatants were then analyzed using a Th1/Th2 ELISA to determine cytokine levels present. Our data indicate that while Ni enhances IL-2 production and depresses IFN-gamma, the presence of estrogen alters the cytokine profile. We conclude that estrogen may be an important factor influencing the outcome of primary immune responses by modulating T helper cell differentiation, which may explain differences in the natural history of allergic disease in males and females.

(This research has been funded by NOSM/NOSMFA and the CIHR Team in Gender, Environment and Health.)

Poster Station #11

Shared Mental Health Care and Emergency Department Visits: An analysis of utilization and impact over 6 years

PRESENTING AUTHOR:

John Haggarty

AUTHOR(S):

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AFFILIATIONS:

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2. St. Joseph's Care Group
3. Local Health Integration Networks
4. Lakehead University

ABSTRACT:

Background/Objectives: This study examines the impact of a primary care located shared mental health care (SMHC) on emergency department (ED) usage for mental health reasons.

Methods: Data for all visits from the sole ED in Thunder Bay were analysed for patients of 4 large primary care clinics (N= 259,220). Patients from over fifty family physicians were included. Two of these clinics offered SMHC services (SC-1 and SC-2), and two did not (nSC-1 and nSC-2). Patient data was obtained from the local hospital database for all ED visits for the period of April 1st 2004 to March 31st 2010. ICD-10 codes were used to distinguish between mental health-related visits and non-mental health related visits.

Results: The majority of visits to the ED were not for mental health, and 2.6% were mental health-related. Depression and anxiety were the most commonly listed mental health issues. A regression analysis found that when compared to SC-1, SC-2 had significantly higher odds of an ED visit for mental health. There were no significant differences between SC-1 and the two non-shared care clinics. An examination of the severity of the issue at the first visit revealed that the proportion of severe mental illness from clients of SC-2 was significantly higher than that of nSC-1, but not different for subsequent visits. Clients of SC-1 also tended to have higher proportions of severe mental illness-related visits, however, the findings were not significant.

Conclusions: The four primary care clinics showed many similar patterns of use, with few significant differences. Shared care-affiliated patient groups showed higher use for more severe mental health issues at initial visit, but not for subsequent visits to the ED. Our findings may imply a 'break-wall' effect that Shared Care may have managed those with mild/moderate problems, permitting a better filter for those with severe illness.

Poster Station #1

Programming of Stem Cells: A Metabolomic Perspective

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ABSTRACT:

The stem cell differentiation technologies focus heavily on genetic side of the story. The gene expression patterns and epigenetic regulation studies have indeed allowed identification of important genetic aspects in differentiation. Despite these advancements in the field, the molecular framework that controls differentiation is still not fully understood. This may be partially due to the challenges in understanding the complex orchestration between genotype and phenotype changes during differentiation, thus, emphasizing the need to investigate phenotypical events within stem cells. In this presentation, some of the current results obtained from metabolomic and proteomic analysis of differentiating embryonal carcinoma stem cells will be discussed. This knowledge will provide valuable information on the molecular events involved in differentiating cells and perhaps, even open a route into alternate stem cell programming methods utilizing metabolism.

Poster Station #30

PROTECTIVE EFFECTS OF POLYPHENOLIC COMPOUNDS ON OXIDATIVE STRESS-INDUCED CYTOTOXICITY IN RAT CARDIAC MYOCYTES

PRESENTING AUTHOR:

Amanda Hollingsworth

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ABSTRACT:

Cardiovascular disease is an increasingly prevalent disease that is provoking an ever-increasing burden on our health care system. It is becoming clear that it is more cost effective to prevent incidences of cardiovascular disease than it is to treat both it and its sequelae of medical complications. Reactive Oxygen Species (ROS) have been implicated in the pathophysiology of numerous cardiovascular disorders such as ischemia-reperfusion injury, heart failure, atherosclerosis as well as hypertension. A proposed preventive strategy in the attenuation of these disorders is increased consumption of foods rich in polyphenolic compounds such as green tea, fruits and red wine. The antioxidant effects of many of these polyphenolic compounds can be mediated through the preferential oxidation of these compounds or through the upregulation of the cell's own endogenous antioxidant mechanisms. Numerous studies have demonstrated the protective effects of antioxidant compounds in cardiovascular disease states. In the present study, the polyphenols, methyl gallate (MG), epigallocatechin-gallate (EGCG) and gallic acid (GA) were screened for their ability to attenuate cellular insults resulting from oxidative stress induced via exposure to either cobalt chloride or hydrogen peroxide in cultured rat cardiac myocytes. Specifically, the primary goal of this study was to examine the efficacy of these polyphenols in decreasing intracellular ROS levels, increasing cell viability and in protecting mitochondrial membrane potential after exposure to oxidative stress. Preliminary evidence indicate that these polyphenols have the potential to combat oxidative stress in cultured rat cardiac myocytes and thus be of cardioprotective value suggesting that there may be a role for these compounds in the amelioration of a number of cardiovascular diseases.

Poster Station #8

“Researching Resilience”: Early Reflections on Educational Research within Community Nursing Agencies in Northwestern Ontario

PRESENTING AUTHOR:

Kristen Jones (1)

AUTHORS:

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ABSTRACT

I am currently in my third year of the Joint PhD in Educational Studies program at Lakehead University. My dissertation research is titled: “What Guides Us Here?: Exploring community nurses’ experiences of moral distress in Northwestern Ontario”. The purpose of this qualitative research study is to explore nurses’ experiences of everyday ethical issues and moral distress in the community care setting in a mid-sized city in Northwestern Ontario in order to identify educational needs and ethical decision making strategies, with the final product being a workshop that facilitates knowledge exchange. This qualitative study has a phenomenological design and uses narrative inquiry as a methodology to guide data collection as well as a method for data analysis. This study consists of two phases. ‘Phase One’ will be comprised of individual semi-structured interviews. ‘Phase Two’ will be participation in a moral distress workshop. This study is currently in the recruitment phase. This poster will highlight some of my current (early) reflections about how issues that are currently affecting nurses in their practice in the community care setting, particularly in Northwestern Ontario, are coincidentally impacting my ability and success to recruit them for educational research on this important topic.

Poster Station #17

Improving communication around death and dying for personal support workers in long-term care using high-fidelity simulation

PRESENTING AUTHOR:

Kristen Jones (1, 2, 4)

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ABSTRACT:

This research is a sub-study of a much larger five-year research project called *Improving Quality of Life for People Dying in Long-Term Care Homes* as part of the Quality Palliative Care in Long-Term Care (QPC-LTC) research alliance. This project developed out of the need for an educational intervention focused on communication around death and dying for Personal Support Workers (PSWs; non-regulated care providers) in long term care (LTC) as identified in an environmental scan conducted by the QPC-LTC project. This sub-study involved PSWs from two LTC homes in Ontario. Data collected from 50 PSWs indicated that many of them had difficulty around communicating about issues related to death and dying with both residents and their family members. The research question for this study was: "Is high-fidelity simulation an effective teaching tool for improving confidence and communication around death and dying for PSWs in LTC?" Specific study objectives included: 1) Evaluate the learning needs of PSWs related to palliative care and communication around end-of-life issues. 2) Develop and implement a palliative care simulation experience to meet the specific learning needs of PSWs in LTC. 3) Evaluate the intervention quantitatively using a pretest-post test self-efficacy survey. 4) Gather qualitative data on the process and outcome of the learning experience. A 3.5 hour educational intervention was developed and titled: "Caring in the moment: Companionship Carolyn at the end-of-life". There were nine participants in each of the two sessions offered. Data was collected from surveys and focus group debriefings, as well as through videos and follow up interviews with the participants. The results of this study indicated a statistically significant improvement on self-efficacy related to the provision of end-of-life care ($p = < 0.05$).

Poster Station #18

REGULATION OF ADRENALINE SYNTHESIS BY INTERMITTENT HYPOXIA

PRESENTING AUTHOR:

Sandhya Khurana

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ABSTRACT:

Epidemiological studies show a strong correlation between Obstructive Sleep Apnea (OSA) and cardiovascular disorders. Patients who suffer from OSA experience intermittent hypoxia (IH), which is characterized by brief, but recurring episodes of cessation in breathing. OSA patients have higher levels of circulating catecholamines and an increased incidence of hypertension; however the mechanisms defining this association are not clearly established. Genetic linkage studies have associated the phenylethanolamine N-methyltransferase (PNMT) gene to the development of hypertension. PNMT, the terminal enzyme in the catecholamine biosynthetic pathway is directly responsible for adrenaline synthesis and is elevated in hypertensive animals. Recent studies utilizing PC12 cells show increased levels of Reactive Oxygen Species (ROS) accompanied by an increase in expression of PNMT and its regulatory transcription factors when exposed to continuous hypoxia (5% O₂) compared to normoxia controls. The current study examined the regulation of cellular pathways, and the role of ROS in the regulation of catecholamine biosynthesis under conditions of intermittent hypoxia (alternating cycles of 21% O₂ and 1.5% O₂). Preliminary data reveals an increase in the transcript levels of PNMT and the transcription factors Egr-1 and Sp1, both pivotal regulators of PNMT expression. Further, the data reveals that the regulation of PNMT expression may entail an alternative splicing mechanism with a switch in the ratio of the two splice variants of PNMT synthesized under IH conditions. The transcription factor HIF1 α , induced under hypoxia and oxidative stress, and also known to affect Egr-1 and Sp1 expression, is also elevated. Moreover, an analysis of the PNMT promoter activity, as demonstrated by a PNMT promoter-driven luciferase assay, revealed an increase in the activity from the PNMT promoter under IH compared to normoxia. These results lay an antecedent for the regulation of PNMT by IH conceivably via an altered regulation of its transcription factors and establish a possible role for PNMT in IH mediated hypertension in OSA patients.

Poster Station #25

Endothelial cell migration and differentiation are regulated by the Janus kinase-Signal transducer and activator of transcription pathway

PRESENTING AUTHOR:

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ABSTRACT:

Angiogenesis is the expansion of the existing vascular network in response to inadequate vascularisation caused by injury or disease. Signalling mechanisms initiated by vascular endothelial growth factor (VEGF) and sphingosine 1-phosphate (S1P), a lipid activator of angiogenesis, are linked with S1P signalling mediated through VEGF receptor (VEGFRs) transactivation. In human umbilical vein endothelial cells (HUVECs) stimulated with VEGF or S1P, Janus kinases (JAKs) are activated and stimulate signal transducer and activator of transcription (STAT) proteins that regulate gene expression. Inhibition of VEGFR-2 blocks VEGF- or S1P-induced JAK activation, indicating dependence on VEGFR transactivation. We have previously demonstrated that this process is essential for expression of proangiogenic and proinflammatory cytokines. Both cell migration and differentiation are fundamental processes in angiogenic process as endothelial cells move to sites of new vessel formation and then differentiate to form stable vessels. The current studies investigated the role of the JAK-STAT pathway in endothelial migration and differentiation. Matrigel tube formation assays were used to examine endothelial differentiation following stimulation with VEGF or S1P. Inhibitors to VEGFR2 partially tube formation to both S1P and VEGF, supporting a transactivation mechanism. The general JAK inhibitor AG490 also inhibited differentiation induced by either treatment, implicating the JAK-STAT pathways in the process. Using a panel of small molecule drugs, the STAT5 inhibitor was found to have a significant effect on the differentiation process. Signalling pathways involve the ERK cascade, Src and NF-kappaB were also found to play important roles in the upregulation of the differentiation. The migration of endothelial cells was studied using a modified Boyden chamber assay and the inhibition of the JAK-STAT pathway also blocked HUVEC migration. The JAK-STAT pathway plays important roles in both endothelial migration and differentiation. Numerous diseases depend on altered angiogenesis for progression, determining the signalling mechanisms involve will identify potential therapeutic targets.

Poster Station #26

Examining social determinants of health and wellbeing in First Nations communities

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Alexandra Kruse

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ABSTRACT:

Examining social determinants of health (e.g., income and social status, education and literacy, employment and working conditions, physical environments, health services, culture) that may predict overall community wellbeing is necessary for informing policy decisions, especially among First Nations. In predicting suicide rates among First Nations people, Chandler and Lalonde (1998) examined cultural continuity (i.e. a social determinant of health), which they defined as collective community efforts to rehabilitate community practices. Their findings showed that cultural continuity (e.g., engagement in community practices) was related to lower rates of suicide. This research is important, as social determinants of health and their impact on health behaviour can inform policy recommendations aimed at intervening at the population-level. However, broader relationships between social determinants of health and community wellbeing among First Nations people require additional examination. The present study was designed to test if social determinants of health are related to wellbeing in First Nations communities. Using community-level data available from the Aboriginal Affairs and Northern Development Canada website (Government of Canada, n.d.) as predictors and the Canadian Indices of Wellbeing (Michalos, Smale, Labonté, et al., 2011) as outcome variables, this study will test the influence of various social determinants of health on community wellbeing in First Nations communities in Canada. Preliminary results will be presented.

Poster Station #34

Tissue lipid and aldehyde concentrations in rats fed diets with differing omega-3 fatty acid content

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ABSTRACT:

Oxidative stress is caused by an imbalance between the production and removal of reactive oxygen species (ROS). Polyunsaturated fatty acids (PUFAs), due to their multiple carbon-carbon double bonds, react readily with ROS in a process termed lipid peroxidation. Lipid peroxidation generates a number of potentially harmful secondary products, including the aldehydes ethanal, propanal, and hexanal. Indeed, raised aldehyde levels have been associated with various diseases, including cancer, leading researchers to consider them as potential diagnostic markers. However the abundance of their fatty acid precursors is dependent on dietary intake. As such, tissue aldehyde content may be diet-dependent, reducing their desirability as markers. To investigate this we fed 32 male wistar rats diets containing 90% fat-free rat chow, 9% palm oil (mostly saturated fat), and 1% omega-3 fatty acid (EPA, DHA, ALA, or palm oil control) for 8 weeks. As expected, the different diets resulted in changed fatty acid lipid composition, for example, compared to controls, DHA and EPA diets significantly decreased liver arachidonic acid levels by 10%, while increasing levels of EPA and DHA by 7-11%. A similar affect was seen in brain lipid composition, although the changes, while significant, weren't as pronounced. Preliminary SIFT-MS analysis of the rat livers and brains however, suggests that diet does not significantly affect the concentrations of various aldehydes ($P>0.05$), or overall levels of oxidative stress (as measured by TBARS assays) in liver or brain ($P>0.05$). Our results suggest that diet does not affect tissue aldehyde concentrations, and therefore that aldehydes present a potentially beneficial biomarker for cancer.

Poster Station #32

Investigation into role of urothelium in experimental models of Interstitial Cystitis

PRESENTING AUTHOR:

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ABSTRACT:

Objective: To investigate role of urothelium in experimental models of Interstitial Cystitis.

Material and Method: 36 Adult female wistar albino rats weighing 200-250 g were divided into control, Cyclophosphamide (CYP) (60 mg/kg; i.p.) induced and Lipopolysachharide (LPS) (1 mg/kg; i.p.) induced groups with and without urothelium. Contractile responses of KCl, Carbachol, Serotonin, Buspirone Hydrochloride, 1-(3-Chlorophenyl) piperazine, ADP, Epinephrine, Phenylephrine and Norepinephrine were taken on isolated whole bladder with and without urothelium. The data were analyzed using Graph Pad Prism software and statistical significance was determined using student's t-test ($p < 0.05$) and one way ANOVA ($p < 0.05$).

Result: In control rats, removal of urothelium showed a significant increase in contractile response to Epinephrine and decrease in response to 1-(3-Chlorophenyl) piperazine, Phenylephrine and Norepinephrine. While response to KCl, Carbachol, Serotonin, Buspirone Hydrochloride and ADP did not show significant difference. In CYP treated animals, removal of urothelium caused significant decrease in response to KCl, Carbachol, Buspirone Hydrochloride, 1-(3-Chlorophenyl) piperazine, serotonin and ADP. Whereas, responses to Epinephrine, Phenylephrine and Norepinephrine showed no significant change. For LPS treated rats, removal of urothelium caused significant reduction in contractile response to all agonists.

Conclusion: The study revealed that removal of urothelium caused significant alteration in Non Adrenergic Non Cholinergic (NANC) mechanism in CYP induced Interstitial Cystitis model.

Key words: Interstitial Cystitis, Urothelium, Cyclophosphamide, Lipopolysachharide

Poster Station #24

Older Drivers' Driving Patterns and Satisfaction

PRESENTING AUTHOR:

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ABSTRACT:

Background/Objectives. The objective was to examine older drivers' driving patterns, their satisfaction with these patterns, and whether these patterns were associated with health. We hypothesized that driving patterns would be associated with satisfaction, and that health would be associated with both driving patterns and satisfaction.

Method. 137 (64 male, 73 female) licensed older drivers (mean age = 71.4 years) living in an urban area of >100,000 people completed a questionnaire package that included measures of demographic variables, weekly driving patterns (frequency of trips, distance driven), satisfaction with their amount of driving, and health (SF-12).

Results. Driving satisfaction was not associated with driving frequency or weekly distance driven. Regression models that controlled for gender and age showed that health measures were not associated with driving frequency or driving distance. Analysis of variance models showed that, although driving satisfaction was not associated with physical health, satisfaction was associated with mental health ($p < .001$). Older adults who drove less than they would like (mean mental component score = 45.61, $SD = 11.51$) had poorer mental health than other drivers (people who drove as much as they would like: $M = 54.50$, $SD = 7.45$; people who drove more than they would like: $M = 57.51$, $SD = 6.17$).

Conclusion. The discord between driving patterns and satisfaction should be investigated to identify what leads older drivers to drive more or less than they would like. This would enable the development of interventions to minimize the discrepancy between driving patterns and satisfaction. Future research should also investigate the temporality of the association between mental health and driving satisfaction, with the goal of developing interventions to maximize good mental health and satisfaction.

Poster Station #20

Preparing for Driving Cessation: Does Health or Personality Make a Difference?

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ABSTRACT:

Background/Objectives. Preparing in advance for driving cessation may help older drivers with the transition to non-driver status. This project was conducted to determine whether health or personality were associated with older drivers' preparedness or intentions to retire from driving.

Methods. 180 (84 male, 96 female) older drivers (mean age = 71.2 years) completed a questionnaire package that included measures of demographics, health (SF-12), personality (NEO-FFI Neuroticism and Extraversion), intentions to cease driving in the next 2 or 5 years, and whether drivers had thought about how they would get around following driving cessation.

Results. Drivers who were older or in poorer physical health had greater odds of intending to cease driving within 2 years (OR for a 10-year increase in age: 5.48, 95% CI: 2.44-12.32; OR for a 10-point increase in the SF-12 Physical Component Score: 0.50, 95% CI: 0.29-0.85). Age was similarly associated with the intention to cease driving within 5 years (OR: 2.70, 95% CI: 1.60-4.56). Personality measures were associated with preparing for driving cessation; drivers who scored higher in neuroticism and extraversion had increased odds of having thought about how they would get around without a licence (OR for a 5-point increase in neuroticism: 1.49, 95% CI: 1.11-2.02; OR for a 5-point increase in extraversion: 1.46, 95% CI: 1.01-2.10).

Conclusion. Some drivers are more likely to have thought about the effects of driving cessation on their mobility. Because personality affects preparedness for driving cessation, interventions to encourage older drivers to prepare should be tailored to the individual.

Poster Station #21

Comparison of gene expression changes in docetaxel resistant, carboplatin resistant and combined docetaxel and carboplatin resistant ovarian cancer cell lines

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ABSTRACT:

Ovarian cancer is the leading cause of gynaecological cancer mortality in the Western world. One of the persistent problems associated with the use chemotherapy for the treatment of cancer is the development of drug resistance and the subsequent lack of sensitivity of the tumour to the anti-cancer agents. In order to better reflect the clinical situation where a combination of platinating agent and a taxane are administered, a dual drug resistant ovarian cancer cell line (A2780CBNDXL) along with docetaxel resistant (A2780DXL) and carboplatin resistant (A2780CBN) cell lines were developed and characterized. Using microarray analysis, genome wide changes in gene expression in the three resistant cell lines were established; validation was then performed using quantitative polymerase chain reaction (Q-PCR) and immunoblotting. Comparison between the three resistant lines was performed using one way ANOVA. The results obtained indicate that unique gene expression changes occur in all three lines. Of the 16 genes being validation by Q-PCR, 4 were found to be significantly different in A2780CBNDXL, 2 in A2780DXL and 2 in A2780CBN. These results indicate that unique changes in gene expression develop as a result of exposure to combination chemotherapy, indicating that the changes in gene expression associated with dual resistance are not a simple combination of the changes observed in the single agent resistant cell lines. The unique changes associated with the dual resistant cell line indicate the possibility of a novel mechanism of resistance that is not a combination that results from exposure to carboplatin or docetaxel alone.

Poster Station #33

Immunological Basis for Increased Burden of Invasive Bacterial Disease among First Nations in Northern Ontario

PRESENTING AUTHOR:

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ABSTRACT:

Invasive bacterial infections are caused when normally sterile sites of the body such as the blood or meninges are breached. This type of infection can lead to permanent disability or death. The classical pathway of the complement system plays a dominant role in the clearance of invasive Hia infection; as a result effective antibodies are critical. Recent studies have observed a disproportionately high incidence of invasive infection caused by *Haemophilus influenzae* type a (Hia) among Aboriginal people in Northern Ontario. To determine if this phenomenon is caused by a lack of natural protective antibody we are examining two immunological determinants of protection; anti-Hib Immunoglobulin G and antibody functional activity. Antibody functional activity is being assessed by way of a serum bactericidal assay (SBA). Our preliminary SBA results do not indicate a significant difference in antibody functional activity between Aboriginal and non-Aboriginal adults i.e. geometric means of 230, 95% CI (101.2-521.1) and 150 (72.1-310.6) respectively ($p=0.29$). Serum bactericidal activity was below detection limits in 7.6% of Aboriginals and 19% of non-Aboriginals. Although this study is not yet complete, presently it suggests that natural protective antibody is not the predominant factor influencing the unusually high burden of invasive Hia disease in Aboriginal people of Northern Ontario.

Poster Station #10

Retrospective review of outcomes for individuals referred to ADCP with esophageal cancer in 2009 and 2010

PRESENTING AUTHOR:

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ABSTRACT:

Introduction: Esophageal cancer is usually diagnosed at a stage when it is not curable. The overall incidence of esophageal cancer is not increasing but the ratio of adenocarcinoma to squamous cell is changing. The objectives of the study were: to compare the incidence of adenocarcinoma and squamous cell carcinoma of the esophagus in Algoma District Cancer Program (ADCP) patients and to review the outcomes of patients who had esophagectomy and the outcomes of those who received palliative treatment. Methodology: A chart review of twenty-three patients diagnosed with esophageal cancer in 2009 and 2010 was completed. Information collected included: medical history, type of esophageal cancer, age, gender and treatment modalities. Results: Fifteen (65.2%) of the reviewed patients were diagnosed with adenocarcinoma and 8 (34.8%) were diagnosed with squamous cell cancer. Nine (39.1%) had esophagectomy and 14 (60.9%) received palliative treatment. Six (66%) of those who had an esophagectomy at any time in 2009 and 2010 were alive as of August 2011, as were 2 (14.3%) of those who received palliative treatment. Common palliative treatments were radiation which 7 (50%) patients received and 2 (14.3%) received combination chemo/radiation. Sixteen (69.6%) of the 23 patients were male. Fourteen (60.9%) of the patients reviewed were smokers at one point in their life. Five (21.7%) had been diagnosed with GERD. Conclusions: ADCP's patients had higher rates of adenocarcinoma versus squamous cell carcinoma of the esophagus, which is similar to Ontario provincial statistics. The three to one ratio of males to females who are diagnosed with esophageal cancer observed in ADCP is similar to national statistics. Palliative care patients received individualized therapies to improve their quality and quantity of life. Patients who had esophagectomy had varying outcomes including developing metastatic disease and death.

Poster Station #22

Rapid quantification of volatile products of lipid peroxidation using Selected Ion Flow Tube Mass Spectroscopy

PRESENTING AUTHOR:

Brian Ross

AUTHOR(S):

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ABSTRACT:

One class of lipid peroxidation products, saturated aldehydes, possess significant volatility at normal physiological temperatures and are released into the adjacent ambient air, the so-called headspace. Measurement of headspace aldehyde concentrations may therefore offer a means to simply assess lipid peroxidation without disturbing the system being studied. Conventional chromatography-based gas analysis techniques can be cumbersome and slow to perform. Selected Ion Flow Tube Mass Spectrometry (SIFT-MS), a form of 'soft' chemical ionization mass spectrometry, was, however, designed to rapidly quantify trace gases present in humid ambient air in real time. We have utilized SIFT-MS in a variety of situations in which lipid peroxidation is known to occur as a means to assessing the utility of the technique to quantify headspace aldehydes in such 'real world' applications. SIFT-MS analyses of oxidised oil headspace indicated the presence of propanal and hexanal in omega-3 and omega-6 PUFA rich oils respectively, concentrations of which could be decreased by the addition of an anti-oxidant. Similarly, the headspace of omega-3 and omega-6 fatty acid containing foodstuffs also contained propanol and hexanal respectively, concentrations of which increased during storage. Moreover, SIFT-MS analysis strongly suggested the presence of hexanal, and to a lesser extent propanal, in the headspace of cultured cells, the concentrations of which increased following incubation of the cells with hydrogen peroxide. Finally, analysis of the headspace of warmed mouse tissues, including blood plasma, suggested the presence of these and other aldehydes. We conclude that SIFT-MS likely offers a valid means to assay these potential markers in complex headspace mixtures. Our results also suggest that quantification of headspace aldehydes using SIFT-MS may be usefully employed to rapidly, simply and non-invasively investigate lipid peroxidation associated reactions in a variety of *in vitro*, and potentially *in vivo*, applications.

Poster Station #35

The breath concentration of ethane, a volatile marker of lipid peroxidation, is correlated with a measure of fatty acid-dependent signalling in patients with schizophrenia

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Brian Ross

AUTHOR(S):

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ABSTRACT:

In this study we assayed the concentration of ethane (a secondary product of lipid peroxidation) in breath as a non-invasive marker of oxidative stress in order to investigate the mechanism underlying a deficiency in fatty acid-dependent signalling. Topical application of methylnicotinate (MN) results in a localised vasodilatory response, occurring subsequent to catabolism of phospholipids by phospholipase A₂. The released free arachidonic acid is metabolised by cyclooxygenase to form the vasodilator prostaglandin D₂. It is well known that many patients with schizophrenia show reduced MN response although the mechanism at play is unclear. It has been hypothesised that increased oxidative stress in patients with schizophrenia reduces polyunsaturated fatty acids levels and diminishes the MN response. We therefore compared MN response to exhaled concentrations of ethane in healthy volunteers (n=24) and in patients with schizophrenia (n=21). MN response was assessed using three doses of the drug applied to the forearm followed by rating erythema on a 4-point scale over 20 minutes post-application. Breath ethane concentrations were measured by collecting alveolar breath, applying to sorbent tubes and quantifying alkane concentrations using thermal-desorption and gas chromatography mass spectrometry. As expected, mean MN response was significantly ($P < 0.001$) reduced by 55% in patients with schizophrenia, while median breath ethane levels were significantly increased by 250%. Breath ethane and MN response were significantly ($P < 0.01$) correlated ($r_s = 0.70$) in the schizophrenia but not healthy volunteer groups ($r_s = 0.01$). Contrary to our hypothesis, patients with lowest MN response possessed the lowest breath ethane concentrations. We conclude that while MN response and breath ethane concentration appear related, the nature of this relationship is unclear. In particular reduced MN response in schizophrenia is unlikely to be due elevated oxidative stress but may be related to other factors such as fatty acid bioavailability.

Poster Station #36

Effective interventions to promote healthy weights in Aboriginal children and youth-A systematic literature review

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ABSTRACT:

Background: *Curbing Childhood Obesity*, a federal plan for action to promote healthy weights, aims to support change where children live, learn and play, and to effectively target many different sectors including Aboriginal communities. Aboriginal children are at higher risk of being overweight or obese due to numerous factors including poverty, lack of affordable healthy food, insufficient social support, unsafe drinking water and environmental contamination. Effective, culturally appropriate, healthy weight interventions need to be identified but it is unknown if such interventions exist.

Objectives: 1) to identify effective interventions targeting Aboriginal children and youth; 2) to assess their feasibility and generalizability to the Canadian Aboriginal population; and 3) to inform a larger, federally funded (Canadian Institutes of Health Research) study entitled *Predictors of Obesity Among Aboriginal Children –Developing a Culturally Appropriate Framework for Intervention*.

Methods and Preliminary Findings: A systematic review of the primary literature was conducted in January 2012 using MeSH and key search words in PubMed, MEDLINE, Web of Science, Cochrane Database of Systematic Reviews, ERIC and PsychInfo databases. CINALH was not included due to database functionality issues during the review period. Only 23 relevant articles were identified and entered into RefWorks (Version 2.0, 2011). Of the 23 articles, five were published prior 2000; 13 relate to one American intervention program (Pathways) while three articles were from Canadian settings and one from New Zealand. Further relevance and appraisal will take place in winter 2012 using a modified appraisal tool from the National Collaboration Centre for Methods and Tools.

Discussion: This systematic literature review has shown few evaluated and successful interventions have been published in the peer literature. There are numerous research gaps and potential future directions that can be considered for promoting healthy weights in Canadian Aboriginal children and youth.

Poster Station #37

Evaluation of an Interprofessional Educational Initiative

PRESENTING AUTHOR:

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AUTHOR(S):

Dr. Janis Seeley, Shawn Untinen

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ABSTRACT:

The purpose of the study was to examine the elements and partnerships that need to be considered and developed in the design and evaluation of an interprofessional education (IPE) initiative within an academic setting. A mixed methods approach was used to obtain data from three sources: one-on-one interview with one administrator; a focus group with 9 faculty members; and completion of a precourse ($n = 201$, 88.63%) and a postcourse survey ($n = 136$, 58.11%) with the students. Students in the IPE initiative came from 11 disciplines: child and youth worker, dental hygiene, developmental services worker, law and security administration, medical radiography technology, native child and family services, paramedic, police foundation, practical nursing, recreation leadership, and social service worker. Findings identified three major elements in the design of an IPE initiative: organizational commitment, program impact, and positive learning environment. Factors associated with organizational commitment included sustainable funding, endorsement of partnerships within the educational setting and outside with the field or clinical placements and federal and provincial governments, and promotion of the principles of social justice. Program impact requires ongoing professional development activities, adequate resources, an evidence-based curriculum and model of delivery, and a learning environment suitable for small groups. An organization must promote the principles of social justice, endorse partnerships, provide adequate resources and an evidence-based curriculum, and acknowledge different learner styles and needs. A positive learning environment develops teaching methods that are cognizant of the learners' characteristics, learning goals, learning styles, and cultural differences. The success of IPE initiatives relies on the support and commitment of all.

Poster Station #5

Pediatrician or Family Physician: Who is the Most Responsible Provider for Adults with Cerebral Palsy in Northern Ontario Communities?

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ABSTRACT:

Medical advances have extended the life expectancy of children with pediatric-onset disorders, such as Cerebral Palsy (CP), with the majority living well into adulthood. Young adults are required to transfer to the adult health care system between the ages of 18-21 as a result of the expiration of eligible pediatric services. The service gap between pediatric and adult-oriented health care regarding youth with chronic disabilities has been a popular field of research in adolescent health over the past 10-15 years resulting in development of transition programs and policy initiatives. There is currently no way to identify how many adults with CP are being cared for by a family physician. The objective of this study is to identify whether the Most Responsible Provider (MRP) for adults with CP in five northern Ontario communities is a pediatrician or a family physician. This will indicate whether adults with CP in northern Ontario actively transitioning to adult services and are receiving health care by the most appropriate provider, coinciding with the College of Family Physicians of Canada (CFPC) vision to provide all Canadians with a medical home within family practice ensuring comprehensive health care. The participant group for the current study includes all registered pediatricians and family physicians as indicated by the College of Physicians and Surgeons of Ontario (CPSO) in the northern Ontario communities of Sudbury, Sault Ste. Marie, North Bay, Thunder Bay and Timmins. This study is part of an ongoing Master’s research project aimed to examine how many adults with CP are receiving medical services under the adult health care system by a family physician in northern Ontario. Work is progressing to gain support from the CFPC, as the resulting data will aid in developing multiple areas of health care policy.

Poster Station #4

Nursing Needs Assessment to Inform Translating Tobacco Cessation Guidelines into Practice

PRESENTING AUTHOR:

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ABSTRACT:

Purpose. This study was designed as a needs assessment to inform translation of tobacco cessation clinical practice guidelines into acute care nursing practice.

Relevance. Changes within an organization need to address the complexity of multiple stakeholders. At a minimum, input from nurses should precede a plan to translate guidelines into their practice.

Methods. This was a cross-sectional survey with nurses (N=269) in all NW Ontario hospitals. Measures included systems strategies, nurses' intervention beliefs, confidence, and practice based on the 5A protocol (*ask, advise, assess, assist, and arrange*), and inhibitors and facilitators to intervening with tobacco. Data were analyzed using frequency counts and chi square (rural vs. urban) for categorical variables and means, standard deviations, and t-tests for continuous variables.

Results/Significance. The findings overall can be interpreted as a promising professional climate amenable to translating guidelines into practice. The majority of nurses agreed that intervening with tobacco was part of their role, were at least somewhat confident, and had intervened using the 5A's in the last year, even if only seldom—91% asked, 96% advised, 89% assessed, 88% assisted, and 61% arranged post-discharge follow-up, but few performed these steps frequently. Rural nurses had significantly higher confidence, more positive beliefs, and assisted and arranged follow-up more often than urban nurses ($p<.01$). The intervention activities performed most frequently tended to be easier to do (asking, advising, motivating); activities involving prescription pharmacotherapy or that were more complex (e.g., teaching coping skills) were seldom performed. Factors that most encouraged intervening included knowledge of patient benefits, cost-effectiveness, patient motivation, reasonable workloads, and resource supports. Barriers included heavy workloads, and lack of counselling skills, time, and patient motivation. The findings were used to inform the development of an acceptable brief inpatient intervention consistent with the guidelines and the training needed to institutionalize tobacco guidelines into practice.

Poster Station #19

ABUSE AND SMOKING CESSATION IN NURSING PRACTICE

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ABSTRACT:

Background: This paper explores issues of abuse during smoking cessation counselling that surfaced during a nurse case-managed smoking cessation pilot study in primary care. Tobacco best practice guidelines recommend that nurses integrate smoking cessation interventions into daily practice. Issues of abuse, however, might surface during cessation counselling that can hinder a person's ability to quit smoking yet there is little written about how to deal with abuse during cessation counselling.

Method: A literature review and synthesis of abuse and smoking cessation was undertaken to arrive at suggestions for practice.

Results: This paper clarifies a relationship between smoking and abuse and the subsequent implications for smoking cessation interventions, and highlights the importance of addressing abuse and smoking cessation separately in clinical practice, even though they are inter-related problems that may require overlapping interventions. Best practice guidelines for abuse can be applied to cases of abuse that surface during smoking cessation counselling. Guidelines recommend: 1) validate the woman's experience; 2) affirm that she is being abused; 3) ensure that she is safe from her abuser; 4) refer her to specialized healthcare providers to cope with the abuse; and 5) provide support. If the woman wishes to continue with smoking cessation counselling, stress-reducing strategies which may help her cope with abuse and cessation can be integrated into the cessation intervention.

Conclusion: Guidelines for abuse provide clinicians with appropriate initial responses when abuse is disclosed during an unexpected encounter, such as during a smoking cessation intervention. Guidelines address not only care planning but the ethical and legal issues associated with the disclosure of abuse, and provide clinicians with a generalized practical tool for addressing abuse rather than a menu of different ways to work with abuse within a smoking cessation intervention.

Poster Station #23

**Acute Myelogenous Leukemia Secondary to Oxaliplatin and 5-fluorouracil
Chemotherapy for the Treatment of Colorectal Cancer: A Case Report**

PRESENTING AUTHOR:

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AUTHOR(S):

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- 2. Department of Clinical Sciences, Northern Ontario School of Medicine, Sudbury, ON.
- 3. MD candidate, Department of Undergraduate Medical Education, Northern Ontario School of Medicine, Sudbury, ON.

ABSTRACT:

A 60-year-old male gentleman presented with a six-week history of fatigue and pallor. He was investigated and was subsequently diagnosed with acute myelogenous leukemia (AML). Eight months previously he completed a course of oxaliplatin and 5-fluorouracil therapy for a recurrent adenocarcinoma of the sigmoid colon. There is evidence in the literature that alkylating agents cause secondary neoplasms including AML in the pediatric and adolescent population, however there is limited evidence regarding secondary progression in adults. In this discussion we will review the published literature regarding AML secondary to alkylating agent therapy. We suggest that this is a plausible pathophysiologic consequence to the utilization of alkylating agents.

Poster Station #14

Retrospective Review of charts of ADCP Patients diagnosed with Colorectal Cancer

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AUTHOR(S):
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AFFILIATIONS:
Algoma District Cancer Program

ABSTRACT:
Colorectal Cancer is the second leading cause of cancer death overall in Canada, with over 22 000 new cases and over 9 000 deaths per year. Approximately 10 % of colorectal cancer cases represent a genetic predisposition to the disease such as Familial Adenomatous Polyposis syndrome. Other factors which are non genetic may predispose to colorectal cancer.

To better outline possible factors at play for Algoma District Cases, a retrospective charts review was undertaken, looking at basic demographic information, location and staging of patients at presentation, co-morbidities such smoking and alcohol and diabetes, NSAID use as recorded from routine meds at presentation, and lastly, date of surgery as well as whether chemotherapy was utilized.

Data will be presented with a discussion on implications on the care of these patients in the Algoma District.

Poster Station #13

A Case Study of Shingles Presentation in a Cancer Clinic

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ABSTRACT:
Shingles is a viral infection caused by the varicella-zoster virus. This virus can reside quietly in the host for decades and then, activate as an active infection, called shingles. This infection can be mild to severe, depending on various factors within the host such as age, status of the immune system, as well as presence or absence of various drugs and infections.

We will present a Case Study of a patient on active therapy who presents with a de novo diagnosis of Shingles. We will review important and interesting information regarding the infection, its presentation, its course and its after effects. We will review its diagnosis and treatment. We will review practical considerations for patients and staff at a Cancer Clinic.

Poster Station #28

Characterization of Brainstem Phenylethanolamine N-methyltransferase Gene in Fetal Programming of Hypertension

PRESENTING AUTHOR:

Dr. T.C. Tai

AUTHOR(S):

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ABSTRACT:

Hypertension is a complex disease that is affected by a combination of genetic and environmental factors. Epidemiological evidence suggests that an unfavourable environment during pregnancy results in low birth weight offsprings and is correlated with the development of hypertension later in life. This concept of fetal programming proposes that a suboptimal environment along with the production of stress hormones (glucocorticoids) during fetal development leads to alterations in blood pressure regulatory mechanisms. Adrenaline is a neurotransmitter that is involved in the sympathetic control of blood pressure and is elevated in cases of hypertension. Adrenaline is synthesized by the enzyme phenylethanolamine N-methyltransferase (PNMT), and dysregulation of the PNMT gene has been linked to the pathogenesis of hypertension, and is therefore a candidate gene involved in the fetal programming of adult hypertension. Results from the current study demonstrate that Wistar Kyoto (WKY) rats that were subjected to prenatal administration of dexamethasone (10, 50 or 100 µg/kg/day) in the third trimester suffer from elevated blood pressure in adulthood. The elevations in systolic, diastolic and mean arterial pressures are significantly and positively correlated with the increased dose of prenatal dexamethasone administration from weeks 7 to 19 of age. In addition, results from qRT-PCR show that PNMT mRNA levels are upregulated, in a dose dependent manner, in the C1, C2 and C3 adrenergic brainstem regions of prenatally dexamethasone exposed adult rats, compared to the saline control group. Furthermore, analysis by qRT-PCR of transcriptional regulators of the PNMT gene show a dose dependent upregulation in the mRNA of Sp1, EGR-1 and AP2 in the C2 and C3 regions when prenatally exposed to glucocorticoids. The expression of GR mRNA was only increased in the C3 adrenergic brainstem region. Results from the current study suggest prenatal glucocorticoid exposure increases brainstem PNMT gene expression via altered transcriptional regulatory mechanisms.

Poster Station #15

Transgenerational Programming of Hypertension: Role of Phenylethanolamine N-methyltransferase

PRESENTING AUTHOR:

Dr.T.C.Tai

AUTHOR(S):

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ABSTRACT:

Hypertension, affecting 1 in 5 Canadian adults, is the leading risk factor in the development of cardiovascular diseases. Both genetic and environmental factors play a role in the development and pathogenesis of hypertension. The catecholamine neurotransmitter/neurohormone, epinephrine, is critical in blood pressure regulation, with elevated levels reported both in clinical patients and experimental models of hypertension. Additionally, genetic linkage studies have associated the phenylethanolamine N-methyltransferase (PNMT) gene to the development of hypertension, PNMT being the final enzyme in the catecholamine biosynthetic pathway, catalyzing the synthesis of epinephrine. Recent studies show that stress during fetal development may program for the development of hypertension in adult life, partly mediated by exposure to elevated glucocorticoid levels. Further, studies also indicate that these effects may not be limited to a single generation but inheritable through multiple generations. Using a rodent animal model, here we examined whether transgenerational programming of hypertension may be mediated via regulation of the PNMT gene. Pregnant normotensive rats (F_0) were injected with dexamethasone, a potent synthetic glucocorticoid, and blood pressure was measured in F_1 and F_2 generations. Results demonstrate significantly elevated blood pressure in animals that directly experienced (F_1) or whose parent experienced (F_2) in utero stress compared to controls. To determine whether this is possibly due to deregulation of the PNMT gene, changes in mRNA levels of PNMT and its transcriptional regulators, Egr-1, Sp1, GR, and AP-2, were examined. Results show that mRNA of PNMT and its transcriptional regulators are upregulated in the adrenal glands of the F_1 animals, compared to controls. Preliminary data also suggests changes in the transcriptional regulators in the F_2 generation. Altogether this study provides an insight into the consequences of maternal stress as it relates to the role of PNMT in transgenerational programming of essential hypertension.

Poster Station #16

Antimicrobial activity of natural plant products native to Northern Ontario

PRESENTING AUTHOR:

Janique Vandal

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ABSTRACT:

Antimicrobial resistance is presently an increasing public health crisis. In fact, there are few antimicrobials left that can be used against multidrug-resistant bacteria. The main goal of this study was to assess the antimicrobial activity of natural substances extracted from plants originating from Northern Ontario. Twenty-five extracts, 10 fractions and 19 pure compounds were tested against pathogens, namely *Escherichia coli*, *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Candida albicans*. The antimicrobial activity was determined by using the resazurin microtiter assay, by which the minimum inhibitory concentration (MIC) of the substances was calculated. To demonstrate that the antimicrobial activities of the natural products were not limited to a single species, certain pure compounds were tested against secondary microorganisms, including *Streptococcus lactis*, *Mycobacterium phlei* and *Schizosaccharomyces octosporus*. Four plant extracts (*Chimaphila umbellata*, *Betula papyrifera*, *Rhus typhina* and *Fraxinus pennsylvanica*) and six pure compounds (gallic acid, ethyl gallate, caffeic acid, synapic acid, gentisic acid and chlorogenic acid) demonstrated antibacterial or antifungal activity. The results obtained demonstrate the potential use of these products as novel and effective antimicrobials.

Poster Station #7

Vital Sign Score to Predict In-Hospital Mortality

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Fei Wang

AUTHOR(S):

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AFFILIATIONS:

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ABSTRACT:

Logistic regression was applied to model the relationship between vital signs of patients and patient survival status (dead or alive). The vital signs including blood pressure, temperature, pulse, breathing rate, oxygen saturation and the usage of supplemental oxygen were used to calculate the Abbreviated VitalPAC Early Warning Score (ViEWS). We validated that the Abbreviated ViEWS score was a highly discriminative predictor of early in-hospital mortality. The area under the receiver operating characteristic curve (AUROC) was used to measure the performance of the abbreviated ViEWS. The AUROC of this abbreviated ViEWS score for 48 hour mortality for all patients admitted into Thunder Bay Research Health Science Centre (TBRHSC) since 2005 was 93.0%. In order to develop the score to be a good predictor of mortality at any time point during patient hospitalization, we also consider the relationship between the changes of vital signs of patients and patient survival status. The new model did improve the ability to predict in-hospital mortality.

Poster Station #31

Chemotherapy Induced Hypertension Management

PRESENTING AUTHOR:

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ABSTRACT:

Although angiogenesis inhibition has proven to be an effective approach to cancer therapy, angiogenesis inhibitors (AIs) have been found to cause adverse cardiovascular events. This review examined the current literature outlining the mechanism of action of AIs as well as the possible mechanisms leading to hypertension in patients. It also examined current protocols regarding management of AI induced hypertension ultimately leading to the development of an algorithm outlining management of AI induced hypertension at the Algoma District Cancer Program that will be implemented in Sault Ste. Marie Ontario.

Poster Station #12

SIFT-MS for evaluating the dehumidifying and hydrogen sulphide permeating efficiency of some methods in breath analysis

PRESENTING AUTHOR:

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ABSTRACT:

Hydrogen sulphide (H_2S) has gained increasing importance since its discovery as endogenously produced signalling molecule in mammalian cells. H_2S produced in the body from desulfhydration of L-cysteine largely by two enzymes, cystathionine β -synthase and cystathionine γ -lyase is eliminated via exhaled breath and other pathways. Monitoring H_2S in breath samples is a convenient non-invasive approach though its low concentration poses a challenge and necessitates sample enrichment prior to detection by a variety of technologies. Currently, gas chromatography (GC), preceded by sample enrichment methods is the most widely used for detecting H_2S but the high background moisture in breath samples complicates the detection process and requires sample drying. Therefore, a drying material must be placed before sample enrichment and the GC units to remove water vapour without absorbing traces of H_2S in breath samples.

In preparation for breath- H_2S analysis by moisture trapping, pre-concentration, and GC technique, we quantitatively evaluated the moisture removing and H_2S permeating efficiency of solid desiccants ($CaCl_2$, Molecular sieve, Na_2CO_3 , Silica gel), membrane type dryers and cooling of breath samples ($45^\circ C$ to $-20^\circ C$) using the Single Ion Flow Tube – Mass Spectrometry (SIFT-MS) as H_2O and H_2S detector in human breath samples spiked with standard H_2S and humidified with water. The efficiency of Na_2CO_3 varied with its mass; while silica gel and Molecular sieve 4A removed both moisture and H_2S , a finding which makes them unsuitable for our purpose. $CaCl_2$, membrane type dryer (SWG-A01) and sample freezing reduced moisture from 5.3% to 0.4 – 0.7% without affecting H_2S in breath samples. Cartridges containing 0.4 g – 1.6 g $CaCl_2$ as desiccant appear a viable alternative to more expensive membrane dryers for removing moisture in breath samples intended for H_2S analysis by GC. We report the detection of H_2S in human nasal air using $CaCl_2$, H_2S -cold trapping, and thermal desorption followed by SIFT-MS.

Poster Station #2

AUTHOR INDEX

A

Abou-Zaid, Mamdouh	69
Agostino, Adrian	57
Allemano, JA.	40
Antle, D.	13
Appanna, VD.	36, 43
Armstrong, S.	54
Auger, Christopher	36

B

Babay, Slim	24, 50
Baker-Devost, Anne-Marie	39
Baregzay, Boran	37
Bédard, M.	52, 53
Beites, C.	43
Berst, KSM	29
Bertrand, Brendan	65
Bewick, MA	40
Bodnar, Pauline	20
Brigden, Malcolm	17, 65, 66, 71
Buckley, Atheana	38

C

Cameletti, Carol Ann	30, 39
Cheng, Chiachen	16
Chomycz, SE	49
Clark, T.	48
Cobean, K.	18
Coholic, Diana	32
Collins, J.	47
Conlon, Mike	40
Cooke, M.	59
Corby, L.	15
Cormier, Robert T.	22
Côté, J.	13
Cote-Meek, S.	32
Cull, S.	54

D

Delmege, Margaret G.	19, 26
Deroy, K.	13
deRuiter, W.	16
Dorman, S.	31
Dubois, Sacha	42

E

Eibl, J. K.	68
-------------	----

F

Febbraro, Michela	17, 65, 66, 71
Fenton, Robert	20
Fera, Luke A.	64
Ferroni, Garry D.	27, 69
Fraleigh, Nya	13, 31, 41

G

Gauthier, Alain P.	19, 23
Glen, Iain	58
Glinker, Christel	30, 39
Graff, K. J.	68
Grandbois, J.	67, 68

H

Haggarty, John M.	42
Han, Sungwon	43
Hanson, M.	16
Hawdon, Nicole	27
Hendrickson, Stephanie	46
Hill, M. E.	20
Hogenbirk, John C.	19, 23, 26
Hohenadel, Jane	42
Hollingsworth, Amanda	44
Howlett, AL	16
Huang, Wendy	70

J

Jamieson, FB.	28
Jarva, Janelle A.	42
Jones, Kristen	45, 46

K

Kafka, G.	52, 53
Kellett, John	70
Kelley, Mary Lou	46
Kevadiya, A.	51
Khaper, Neelam	37, 57
Khurana, Sandhya	44, 47, 67, 68
Koren, I.	25
Kortes-Miller, Kathy	46
Kovala, Tom A.	48
Kruse, Alexandra	49

L

Lafreniere, Kyle M.	19
Lanner, C.	54
Lapierre, Danielle M.	64
Largaespada, DL	22
Lecours, Maurice	57
Leduc, Leo G.	69
Lee, Sonny	39
Lefebvre, S.	68
Lo, S.	67, 68

M

Maar, M.	29, 33
MacKinnon, Kelsey	38
Malik, Imran	24, 50
Marcoux, T.	38
Martin, Lynn	42
Mason, B.	20
McCready, William G.	27, 55
Mehta, Avani	51
Meigs, ML	40

M (continued)

Meltz, L.	67
Mergler, D.	13
Messing, K.	13
Mian, O.	25
Michael, P.	67
Minore, B.	20
Morra, Crystal	18
Mullen, Nadia	52, 53
Murphy, Megan	21
Mushquash, AR.	49
Mushquash, CJ.	49

N

Nahwegahbow, AJ	29
Narendrula, Rashmi	54
Newhouse, I.	33
Nguyen, P.	67, 68
Nix, Eli B.	27, 55
Nowrouz, Behdin	25

O

O'Sullivan, MG.	22
-----------------	----

P

Parent, L.	13
Parissenti, A.	54
Parmar, S.	51
Payne, George	65
Peltsch, Heather	21
Peng, S.	47
Piche, M.	44
Pintar, J.	29
Proper, Veronica	63
Proulx, J.	56
Puukila, Stephanie	57

R

Randall Simpson, J.	15
Recollet, D.	32
Ritz, Stacey A.	13, 41
Robson, Jordan	21
Ross, Brian M.	24, 41, 50, 57, 58, 72
Ross, G. M.	44
Rossi, L.	48
Rukholm, E.	25
Rysdale, Lee	15, 59

S

Sadeghi-Aval, Pouya	28
Saunders, DP	40
Scott, PM	22
Seeley, Janis	60
Seguin, Chelsea	61
Sellick, Scott M.	62
Shaw, Kathleen	18
Shaw, Nicola	21
Shewciw, Tamara	30
Siesel, Tina	66, 71
Silverstein, K.	22
Smith, Patricia M.	14, 62, 63
Spadafora, Silvana	17, 64, 65, 66, 71
Spadoni, Michelle M.	63
Starr, TK	22
Stewart, Amy	31
Stirpe, S.	18
St-Pierre, J.	13
Suffel, Jaime	56, 66
Suntres, Z.	37

T

Tai, T.C.	44, 47, 67, 68, 69
Tam, A.	54
Tedesco, Alissa	17
Than, BLN.	22
Timony, Patrick E.	19, 23, 26
Toth, Zsolt	33
Towns, C.	59
Trumpler, J.	15
Tsang, Raymond SW.	27, 28

U

Ulanova, Marina	27, 28, 55
Untinen, Shawn	60

V

Vaillancourt, C.	13
Vandal, Janique	69
Venkataraman, K.	47, 67, 68

W

Wang, Fei	70
Wang, R.	72
Wenghofer, Elizabeth F.	19, 23
Wilk, P.	59
Wilson, Mary	66, 71
Wondimu, Taddese	72

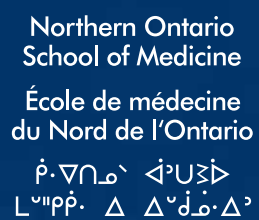
Y

Yates, W. K.	47
--------------	----

Z

Zehbe, Ingeborg	29
Zhao, L.	22

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