

NORTHERN HEALTH  
RESEARCH CONFERENCE 2010



Northern Ontario  
School of Medicine  
École de médecine  
du Nord de l'Ontario  
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**Laurentian**University  
Université**Laurentienne**

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*For information on the Northern Ontario School of Medicine's Research programs, please contact us at [research@normed.ca](mailto:research@normed.ca) or through NOSM's website at [www.nosm.ca](http://www.nosm.ca)*

# Welcome

## Message from the Northern Ontario School of Medicine

On behalf of the Northern Ontario School of Medicine (NOSM), we welcome you to the 2010 Northern Health Research Conference (NHRC). We are pleased to be hosting the fifth annual NHRC at Laurentian University, home of the School's East Campus. There is much to celebrate at Laurentian this year, as the university celebrates its 50th anniversary. Laurentian is Northern Ontario's largest postsecondary institution. With nearly 9,000 students, including over 800 graduate and international students, it offers 141 programs, in English and French, including six Ph.D. programs. We extend our heartfelt congratulations to the University for its many successes over the past 50 years.

We are honoured to welcome our Keynote Speaker, Mr. François Boileau, Ontario's first French Language Services Commissioner. The Commissioner will explore questions regarding French-language health services and will present an overview of many questions that impact Ontario's Francophone

population, according to a new inclusive definition of this population.

This is a timely focus for discussion, as the School has recently undertaken a community consultation, which is summarized in the report entitled "Francophone Community Engagement: Insight | Guidance | Action." The report presents a review of consultations that the School held with Francophone communities across Northern Ontario. It details comments and suggestions from Francophone communities with the aim of helping the medical school to better fulfill its mandate of social accountability and community engagement concerning Francophones, and in partnership with them.

It is an honour to have Dr. Richard Hays as a Special Guest Speaker for our conference dinner. Dr. Hays' interest in educational development and its relationship with health care service delivery, coupled with academic qualifications in medicine, educational

psychology, and medical education, has led to a strong research and publishing record, resulting in 90 research papers, about 100 other academic papers, and six books.

Research at NOSM is reflective of the School's mandate to be socially accountable to the diverse cultures of Northern Ontario. Tackling questions that will help improve the health of people in Northern Ontario is a key mandate for the research program at NOSM, and this conference is one of many initiatives that allow the School to facilitate this objective. Over the next couple of days you will have the opportunity to hear oral presentations and view posters that focus on research specific to the people and communities in Northern Ontario.

Special thanks to everyone who dedicated many hours to ensuring a successful Northern Health Research Conference. Please enjoy the conference and the networking opportunities that it has to offer!



**Dr. Greg Ross**

Associate Dean, Research

**Dr. Roger Strasser**

NOSM Dean

# Greetings

## Message from the President of Laurentian University



It is my pleasure to extend a warm welcome to each of you. We are proud to be hosting the fifth annual Northern Health Research Conference in the same year that Laurentian University celebrates its 50th anniversary.

The Northern Health Research Conference provides the occasion to foster collaboration, communication, and networking opportunities between researchers, health-care professionals, students, residents, and community members. The conference also speaks to the important

role that our School of Medicine places on researching issues related to the health-care of the population of the North.

Best wishes for an enjoyable and informative conference.

### **Mr. Dominic Giroux**

President, Laurentian University and  
Vice-Chair, NOSM Board of Directors

The Northern Ontario School of Medicine congratulates  
Laurentian University on its 50th anniversary!

**Best wishes for the next 50 years!**



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1960 **50** 2010







## Message from the Mayor of Sudbury



As Mayor of the City of Greater Sudbury, I am pleased to welcome participants to the Northern Ontario School of Medicine's (NOSM) fifth Annual Northern Health Research Conference from June 4th to 5th, 2010.

This conference will demonstrate NOSM's commitment to health care and education to the people in Northern Ontario and beyond. It brings together researchers, health care professionals, students and residents and provides opportunities for collaboration and community networking. This conference will be a great learning experience for all who attend.

Many thanks to the organizers – you have put in many hours of work to make this happen. To all who are visiting us from out of town, we hope that you enjoy your stay in our great community. Please take time to tour our many attractions.

On behalf of City Council and the citizens of Greater Sudbury, best wishes for a successful and informative conference!

**Mr. John Rodriguez**

Mayor of Sudbury



# Keynote Speaker

François Boileau is Ontario's first French Language Services Commissioner. He receives complaints from the general public and has the power to make recommendations on matters pertaining to the provision of the French Language Services Act.

Before his nomination in August, 2007, Mr. Boileau fulfilled the role of Legal Counsel with the Office of the Commissioner of Official Languages where he was involved in landmark cases before the Supreme Court of Canada. He also worked with the Fédération des communautés francophones et acadienne (FCFA) of Canada, which he represented before the Ontario Court of Appeal in the Montfort case. Mr. Boileau was also the first executive director of the Court Challenges Program of Canada in Winnipeg.

He is recognized as an expert in linguistic rights and as such has been invited as guest speaker to many conferences.

Since June 2009, Ontario has a more inclusive definition of its Francophone population as a result of the implementation of one of the Commissioner's recommendation of its first annual report. Last January, by adopting the Regulation with Respect to Engagement with the Francophone Community, the Government of Ontario responded positively to another one of his recommendations made in his Special Report on French Language Health Services Planning in Ontario unveiled in May 2009. As a result, the Commissioner resolved over one hundred complaints that were in relation to this regulation.



**Mr. François Boileau**

French Language Services  
Commissioner of Ontario



Me François Boileau est le premier commissaire aux services en français de l'Ontario. Il reçoit les plaintes du public et a un pouvoir d'enquête et de recommandation sur les questions touchant l'application de la Loi sur les services en français.

Avant d'entrer en fonction en août 2007, M. Boileau était conseiller juridique au Commissariat aux langues officielles où il a été impliqué dans de grandes causes devant la Cour suprême du Canada. Il a aussi œuvré à la Fédération des communautés francophones et acadienne du Canada (FCFA), une organisation qu'il a représentée dans l'affaire Montfort devant la Cour d'appel de l'Ontario. De plus, il a été le premier directeur général du Programme de contestation judiciaire du Canada à Winnipeg. Reconnu comme expert en droits linguistiques, il est

souvent appelé à se prononcer à ce sujet à titre de conférencier.

Grâce à la mise en œuvre en juin 2009 de l'une de ses recommandations issue de son premier rapport annuel, l'Ontario possède maintenant une nouvelle définition de la population francophone. En mai 2009, il dévoilait son premier Rapport spécial sur la planification des services de santé en français en Ontario. En janvier dernier, le gouvernement de l'Ontario a répondu favorablement à l'une des recommandations du commissaire dans ce rapport en annonçant l'adoption d'un Règlement sur l'engagement de la collectivité francophone, ce qui a permis au commissaire de régler plus d'une centaine de plaintes en santé à ce sujet.





# Keynote Speaker's Abstract

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## Legislation and Francophone's Health in Ontario; A Challenging Duo

Health has been the very first sector that interested and kept the attention of the French Language Services Commissioner, François Boileau, since his nomination in 2007. In May 2009, he unveiled his Special Report on French Language Health Services Planning in Ontario to identify the obligations and responsibilities of the key players in the health care system with respect to the delivery of French health services.

In Ontario, access to high-quality health services in French is not a separate issue; it must be treated as a factor that has a direct impact on the health of Francophones. This population has specific needs and characteristics that differ from those of the rest of the population, where health is concerned. Language and the lack of human resources are the main obstacles to receiving services in French. The lack of knowledge and research on this specific community are also identified as critical element to deliver services adapted to Francophone's needs.

How to better serve the Francophone population with high-quality health services in French by respecting the French Language Services Act and the Local Health System Integration Act, 2006? How the new Regulation with Respect to Engagement with the Francophone Community will enable a full integration and a better planning of French-language health services to benefit to the community and ultimately improve its health? The Commissioner will explore these questions by presenting an overview of the Ontario's Francophone population, according to the new inclusive definition of this population.



# Guest Speaker

Dr. Richard Hays began his medical career as rural general practitioner in northern Australia. After 10 years of full-time clinical practice, he almost accidentally entered academic life to pursue a career in teaching and education research at both postgraduate and undergraduate levels.

From 1999 to 2005 he guided the development of a new Australian School of Medicine (James Cook University), where there is a focus on regional and rural health care issues. He has recently returned from a four year post as the Head of the new School of Medicine at Keele University in the United Kingdom, with responsibility for guiding the development of a new curriculum, to be Dean of the faculty of Health Sciences & Medicine at Bond University in Australia.

Dr. Hays has also acted as a consultant to the development of several other new medical school developments in Australia, Canada, and Asia, and is an experienced medical education quality assurance surveyor in Australasia, the United Kingdom and Europe.

This interest in educational development and its relationship with health care service delivery, built on academic qualifications in medicine, educational psychology and medical education, has lead to a strong research and publishing record, resulting in 90 research papers, 100 other academic papers, and six books.



**Dr. Richard Hays**

Dean, Faculty of Health Sciences  
& Medicine,  
Bond University





# Accreditation

This program meets the accreditation criteria of The College of Family Physicians of Canada and has been accredited for up to 15.5 Mainpro-M1 credits as approved by the Continuing Education and Professional Development Office at the Northern Ontario School of Medicine. This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification program of The Royal College of Physicians and Surgeons of Canada, approved by the Continuing Education and Professional Development Office at the Northern Ontario School of Medicine for up to 15.5 hours.



## Acknowledgements

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**Greg Ross**

Associate Dean, Research, NOSM

**Special thanks to NOSM Aboriginal Elder, Freda Millard, for providing a blessing at our Welcome BBQ.**

**We would like to thank the following sponsors for their generous support of the Northern Health Research Conference:**



# Agenda

## FRIDAY, JUNE 4, 2010 - School of Education Building

7:30 - 8:30	Registration / Continental Breakfast / Poster Set-Up (Groups #1 and #2)	Session Chair: John Hogenbirk
8:30 - 8:35	Welcome and Opening Remarks from Roger Strasser, Dean, Northern Ontario School of Medicine	
8:35 - 9:00	Welcome Message from Dignitaries and Special Guests	
9:00 - 9:15	Kevin Agostino Analysis of the Presentation of Aboriginal Patients to the Regional Stroke Programs in Northern Ontario	
9:15 - 9:30	Pamela Brunelle and Lee Rysdale Fruit Juice Linked to Childhood Obesity? An Evaluation of Juice Intake and BMI in Ontario Preschoolers	
9:30 - 9:45	Dianne Cameron Towards an IP Certificate at Laurentian	
9:45 - 10:00	Gavin Tansley The UBC Medical Journal: Engaging Dialogue Across the Province	
10:00 - 10:30	Nutrition Break / Poster Viewing (Group #1)	Session Chair: Nancy Young
10:30 - 10:45	Beth Linkewich "Virtual" Home Safety Assessment After Stroke in a Remote Aboriginal Communities	
10:45 - 11:00	Sheila Damore-Petingola The Supportive Care Oncology Network: Moving Forward, Improving the Patient Experience Utilizing Screening for Distress	
11:00 - 11:15	Margaret G. Delmege Demographic Characteristics of NOSM Medical Students Associated with Intended Medical Discipline and Practice Location	
11:15 - 11:30	Nicole Ranger and Anita Dewar Facilitating Sustainability: Delivering Successful Interprofessional Learning Programs to Pre- and Post-Licensure Healthcare Providers in the Clinical Setting	
11:30 - 11:45	Trevor Frise Smith and Karen Lacelle Comprehensive Assessment and Integration of Care Planning Using the InterRAI Palliative Care: Findings From Ontario Community-Based Care	
11:45 - 1:15	Lunch / Open Poster Viewing (Groups #1 and #2)	Session Chair: Patrice Sawyer
1:15 - 1:30	John C. Hogenbirk Economic Contributions of the Northern Ontario School of Medicine to Northern Ontario	
1:30 - 1:45	Donna Kearney Meeting Rural Community Needs Through Integrated Care	
1:45 - 2:30	<b>Keynote Speaker:</b> François Boileau, French Language Services Commissioner of Ontario Legislation and Francophone's Health in Ontario: A Challenging Duo	
2:30 - 2:45	Question and Answer Period	
2:45 - 3:15	Nutrition Break / Poster Viewing (Group #2)	Session Chair: Neelam Khaper
3:15 - 3:30	Lynn Kabaroff The Analysis of a Corporate Physical Activity Intervention: A Group-Mediated Cognitive-Behavioral Case Study	
3:30 - 3:45	Maryam Khan Effectiveness of a Science Outreach Program on Aboriginal Youth in Northern Ontario	
3:45 - 4:00	Mary Jo Wabano and Nancy Young Promoting Resilience and Mental Well-Being Through an Outdoor Adventure Leadership Experience Designed for Aboriginal Youth from Northern Ontario	
4:00 - 4:15	Niki Naponse Manitoulin Anishinabek Research Review Committee's Guidelines for Ethical Aboriginal Research: A Community-Based Aboriginal Ethics Review Process	
4:15 - 5:00	Open Poster Viewing (Groups #1 and #2)	
5:00	Poster Removal (Groups #1 and #2)	
7:00 - 9:30	Dinner / Social Evening (Cash Bar) Ristorante Verdicchio, 1351-D Kelly Lake Road, Sudbury <b>Guest Speaker:</b> Dr. Richard Hays, Dean, Faculty of Health Sciences & Medicine, Bond University	



# Agenda

## SATURDAY, JUNE 5, 2010 - School of Education Building

7:30 - 8:30	Continental Breakfast / Poster Set-Up (Groups #3 and #4)	Session Chair: Tom Kovala
8:30 - 8:45	Sarah White Comparison of the Biological Effects of Sudbury Particulate Matter (SPaM) with Other Particulate Types: Acute and Chronic Studies	
8:45 - 9:00	Jaro Kotalik Aboriginal Health Care Ethics – A Missing Discipline	
9:00 - 9:15	Brian Mitchell Increasing Colorectal Cancer Screening Uptake with a Patient Navigator	
9:15 - 9:30	Phyllis Montgomery, Patricia Bailey, and Sharon Mossey Support and Housing Priorities for Persons with Serious Mental Illnesses Living in Northeastern Ontario	
9:30 - 9:45	Richard Nadeau Sedation and Analgesia Protocols in a Community-Based Intensive Care Unit: Does Daily Tracking Improve Concordance?	
9:45 - 10:15	Nutrition Break / Poster Viewing (Group #3)	Session Chair: Marion Maar
10:15 - 10:30	Amadeo M. Parissenti Reduced Tumour RNA Integrity in Response to Chemotherapy in Breast Cancer Patients	
10:30 - 10:45	Elizabeth Wenghofer A Closer Look at Ontario's Northern and Southern Rural Physicians	
10:45 - 11:00	Meghan Garnett Graduates of the Family Practitioner Anesthesia Residency Program in Northwestern Ontario What are they contributing to anesthesia services in Canada?	
11:00 - 11:15	Karen Rebeiro Gruhl Stuck in the Mud: Experiences of Employment for People with SMI in Northeastern Ontario	
11:15 - 11:30	Arnold Kim and Allison Carroll Coutts Improved IPC Through Shared Documentation and Development of a Medical Domain Specific Language	
11:30 - 1:00	Lunch / Open Poster Viewing (Groups #3 and #4)	Session Chair: David Topps
1:00 - 1:15	Marina Ulanova Risk of Invasive Haemophilus Influenzae and Streptococcus Pneumoniae Diseases in Patients with Chronic Renal Failure: A Call for Vaccination?	
1:15 - 1:30	Marion Maar Beyond Expectations: Why do Aboriginal and Euro-Canadian patients with type 2 diabetes on a rural island in Northern Ontario demonstrate better outcomes for glycemic, blood pressure and lipid management than Canadian comparison populations?	
1:30 - 1:45	Silvana Spadafora, Jane Howard, and Michela Febbraro A Retrospective Study Examining Post Diagnosis BMI Changes in Breast Cancer Patients in the Algoma Region After the Implementation of Wellness Initiatives	
1:45 - 2:00	Line Tremblay The Effect of Parental Perception of their Children's Weight and Exposure to Information Addressing Health and Weight on Parents' Body Size Perception and Their Strategies for Feeding Their Child	
2:00 - 2:15	Chet E. Holterman Ets-1 Promotes Hypoxia Inducible Factor alpha Isoform Target Specificity	
2:15 - 2:45	Nutrition Break / Poster Viewing (Group #4)	Session Chair: Marina Ulanova
2:45 - 3:00	David Topps Secure Patient Information Exchange (SPIE) Project	
3:00 - 3:15	Rachel Ellaway Analysing the Impacts of an Educational Intervention: A Case Study	
3:15 - 3:30	Shelley Watson "It's Like Being on a Rollercoaster": Resiliencies and Challenges of Raising a Child with FASD in Northern Ontario	
3:30 - 3:45	Bruce Weaver A New Rule of Thumb for 2x2 Tables with Low Expected Counts	
3:45 - 4:15	Closing Remarks / Conference Evaluation / Wrap Up	
4:15	Poster Removal (Groups #3 and #4)	

# Posters

Group #1	
Poster Station	Presenter / Title
3	Bobby Chaudhuri Residential School Syndrome: An Unrecognized Indigenous Cultural Mental Health Problem?
5	Munira Mohamed Adjustment in Romantic Relationships and Potential Correlations with Anxiety Sensitivity, Anxiety Severity, and Intolerance of Uncertainty
7	Jeff Chan Evaluation of Prescribing Adherence to Recommended Drug Therapy for Acute Myocardial Infarction Patients Discharged from an Ontario Hospital
9	Emmanuel Abara Sex, Sexuality, Procreation - Challenges in Teen Age and Adult Years in Children born with Complex Lower Urogenital Anomalies
11	Roy Jeffery Public Health Policy and Industrial Wind Turbines: The Role of Family Physicians
13	Malcolm Brigden A Pan Canadian Survey of Carboplatin Dosing-Implications for Clinical Practice and Research
15	Kathleen Anderson Multidisciplinary Interventions for a Rural Primary Care Setting: Supporting Aboriginal and non-Aboriginal patients with type II diabetes in attaining glycemic, blood pressure and lipid control
17	Mary Anne Beith Coordination of Multidisciplinary Cancer Care Rounds to Ensure Quality & Safe Patient Care
19	Julie Bowen Incorporating Molecular Epidemiology Research into Clinical Treatment for Cancer at the Northeastern Ontario Regional Cancer Program of the Hopital regional de Sudbury Regional Hospital: The EPIC study
21	Susan Boyko Evaluation of an Educational Presentation Designed to Increase Healthcare Professionals' Cultural Knowledge at HRSRH
23	Alison Buckner The Effects of Flaxseed Oil on Cell Growth of Malignant vs Non-Malignant Cells
25	Carol Cameletti The Quiet Violence: Findings from Sudbury Ontario Nurse's Association Workshop, May 14, 2009
27	Dianne Cameron Undergraduate Research in Clinical Placement
29	Slim Babay Behavioural Neuropsychopharmacology of Omega-3 PUFA

Group #2	
Poster Station	Presenter / Title
1	Nicole Ranger Recognizing the Power of Branding to Engage New Interprofessional Partners and Strengthen Knowledge Transfer
2	Nicole Ranger Engaging the Academic Family Health Team Through Interprofessional Collaboration
4	Dina Tsirgielis Correlations Between Perfectionism, Coping, and Intolerance of Uncertainty in the Development of Anxiety Disorders
6	Mihaela Dirlea Relationships Between Perfectionism and Coping Strategies as Seen Through Measures of Anxiety Sensitivity, and Intolerance of Uncertainty
8	Sergio Fabris Nitric Oxide Plays an Important Role in Interstitially Mediating Vasodilation During Skeletal Muscle Reperfusion Following Femoral Occlusion
10	Siobhan Farrell Assessment of Attitude Changes in Undergraduate Medical Learners
12	Sherry Fournier Assuring Quality in a Child Welfare Agency Providing Multidisciplinary Programs Throughout Northwestern Ontario: An Integrative Strategy
14	Patricia Lyle The Inhibitory Effects of NAC on Taxol-Induced Cytotoxicity
16	Nicole Hawdon The Role of Innate Immune Responses in the Pathogenesis of Pseudomonas Aeruginosa Infection in Cystic Fibrosis Patients
18	William Hettenhausen Oral Health Evaluation and Diet Pattern Analysis in Medicine
20	Mary Ellen Hill Sometimes it's a Cultural Issue; Sometimes it's a Family Situation: Health Care Providers' Perspective on Compliance Issues Among Aboriginal Clients with Asthma and COPD
22	Kristen Jacklin Translation of Local Knowledge to Improve Care Practices: Patient and Provider Explanatory Models of Type 2 Diabetes Mellitus on the Wikwemikong Unceded Indian Reserve, ON
24	Dominique Ansell Regulation of the Phenylethanolamine N-methyltransferase Gene by Nitric Oxide
26	Stephen Armstrong Development of Carboplatin, Docetaxel, and Combined Carboplatin/Docetaxel Drug Resistant Ovarian Cancer Cell Lines
28	Bruce Weaver The Impact of Opioid Analgesics on Safe Driving
30	Diana Pallen Spirituality and Health: Beyond Faith and Religion



Group #3	
Poster Station	Presenter / Title
1	Kenneth Euler A Community-Based Northern Ontario Opiate Addiction Treatment Program: A Comprehensive Qualitative and Quantitative Analysis
3	Heather Peltsch Regulation of Cardiac Phenylethanolamine N-methyltransferase in the Spontaneously Hypertensive Rat
5	Matthew Piché Protective Effects of Methyl Gallate on H2O2-Induced Apoptosis in PC12 Cells
7	Sean Bryan Toxicity of Titanium Dioxide and Platinum Modified Titanium Dioxide Nanoparticles in Cardiomyocytes
9	David MacLean Interstitial Nitric Oxide Levels Regulate Adenosine Production in Rat Gastrocnemius Muscle
11	Oxana Mian Changes in Practice Locations of Graduates of the Northern Ontario Family Medicine Program: A Comparative Analysis of 1993-2006 Data from Scott's Medical Database
13	Tricia Larose and Phyllis Montgomery Maintaining Housing in Northeastern Communities: The Potential Role of Public Health Inspectors
15	Phong Nguyen Fetal Programming of Adult Hypertension: Role of Adrenal Phenylethanolamine N-methyltransferase
17	Behdin Nowrouzi Workplace Support for Employees with Cancer
19	Lauren Payne Towards the Development of Culturally Safe Birth Models Among Northern First Nations: The Sioux Lookout Meno Ya Win Health Centre Experience
21	Stephanie Puukila Role of Oxidative Stress and Inflammation in Cardiac Iron Overload
23	Sheila Renton Physical Activity Promotion in Sudbury-Area Call Centres: Employers' Perspectives
25	Laura Rossi Regulation of Endothelial Cell Cytokine Gene Expression
27	Lee Rysdale Improving Nutrition Awareness, Knowledge and Referral Processes for Parents of Preschoolers in the Thunder Bay District Using NutriSTEP

Group #4	
Poster Station	Presenter / Title
2	Ashley M. Cerqueira Can N-acetylcysteine Protect Against Pseudomonas Aeruginosa-Induced Lung Epithelial Apoptosis?
4	Panagiotis Mitsopoulos Gene Array Analysis of Paraquat-Induced Cytotoxicity
6	Bobby Chaudhuri How Longitudinal Integrated Clerkships (LIC's) Increase Medical Student Professional Development and Identity
8	Pouya Sadeghi Aval Does Tyrosine Kinase Syk Signaling Mediate Inflammatory Responses in Pulmonary Infections Caused by Pseudomonas Aeruginosa?
10	Jill Sherman Family Health Teams and Mental Health Services in the North: Finding a Niche
12	Lee Shewchuk Integrating Virtual Histology and Radiology Into Distributed Tutorial Sessions
14	Silvana Spadafora and Ian Roney A Review of Thyroid Cancers Referred to the Algoma Regional Cancer Program 2007-2009
16	Adam Tam Identification of Genes Associated with Doxorubicin Resistance in Tumour Cells
18	Maureen Topps Cultivating a Pediatric Residency Program in the Context of Community Based Training
20	Zsolt Toth An Exploration of the Impact of Cultural Beliefs and Attitudes Towards Foods on the Acceptance of Dietary Recommendations for the Management of Type 2 Diabetes Mellitus
22	Tyler Verdun An Unusual Case of Lymphoblastic Transformation of Follicular Lymphoma
24	Christian Walker Alleviating the Symptoms of Carpal Tunnel Syndrome Using a Carpal Therapist Device
26	Kendra Wilkins Patient Satisfaction with Shared Mental Health Care Services
28	Bruce Weaver Fatality Trends for Younger, Middle-Aged, and Older Drivers and Passengers

# Oral Abstracts.

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

**Abstracts have been published exactly as submitted.**



# Analysis of the Presentation of Aboriginal Patients to the Regional Stroke Programs in Northern Ontario

## Presenting Author

K. Agostino

## Authors

K. Agostino, D. Howse, S.T.A. Malik

## Affiliations

Heart and Stroke Foundation of Ontario, Northwest Ontario Regional Stroke Program and Thunder Bay Regional Health Sciences Center, Registry of the Canadian Stroke Network, Northern Ontario School of Medicine

## Abstract

**Background and Purpose**—The traditional risk factors associated with cerebrovascular disease are known to be more prevalent in Aboriginal populations. Limited data exists on the demographics of acute stroke in Aboriginals in Canada.

**Methods**—Data from the Registry of the Canadian Stroke Network (RCSN) from July 1, 2003 to March 31, 2008 was analyzed to determine causes, risk factors, seven-day mortality, Rankin score on discharge, and type of stroke in Aboriginal (n=103) and non Aboriginal patients (n=2618) from three Northern Ontario Stroke hospitals (Thunder Bay, Sudbury, North Bay).

**Results**—The mean age of stroke in Aboriginal males and females was lower compared to non Aboriginals (mean ages in males were 62.5 and 70.3 respectively; in females mean ages were 57.1 and 73.8 respectively ( $p<0.001$ )). 56.3% of the Aboriginal population had diabetes compared with 24.9% of the non Aboriginals. The incidences of valvular heart disease and atrial fibrillation and flutter were higher in the non Aboriginal populations (5.2.% vs 0% and 14.2 vs 6.8%) respectively. The Aboriginal population had more current smokers but fewer lifelong smokers than non Aboriginals. Alcohol use was not significantly different, although there were more Aboriginal patients that reported drinking more than two drinks per day. No significant difference in the incidence of hypertension was noted. 64.1% of the Aboriginal population had an ischemic stroke compared with 60.4% of the other population; 11.6% of the Aboriginal population had a hemorrhagic stroke compared to 9.5% of the other population. TIA's were the presentation for 29.8% of the non Aboriginals versus 22.3% of the Aboriginal population. These differences were not statistically significant. There were no significant differences between the study populations with respect to morbidity and mortality upon discharge.

**Conclusions**—This is the first study to analyze the incidence of cerebrovascular disease and its associations in Northern Ontario. The most striking finding in the study was the lower age at presentation of Aboriginal males and females. Further studies are needed to elucidate whether factors other than diabetes are contributory.

# **Fruit Juice Linked to Childhood Obesity? An Evaluation of Juice Intake and BMI in Ontario Preschoolers.**

## **Presenting Authors**

Pamela Brunelle, Lee Rysdale

## **Authors**

Pamela L. Brunelle, RD, BSc (NODIP) Lee Rysdale, RD, MEd (NODIP) Janis Randall Simpson, PhD, RD, Christopher A. Knee, MSc, Heather H. Keller, PhD, RD

## **Affiliations**

NODIP

## **Abstract**

**Background:** It is recommend that fruit juice intake be evaluated when assessing childhood overweight/obesity yet there is no current information on fruit juice intake or data to suggest body mass index (BMI) associations in Canadian children.

**Objectives:** To describe fruit juice consumption and associated factors for an Ontario preschooler sample; determine potential relationships between intake and BMI; and, provide Canadian fruit juice consumption data for comparative studies and nutrition surveillance.

**Methods:** Secondary data analysis was conducted on growth, dietary and demographic data collected during the validation of NutriSTEP® (Nutrition Screening Tool for Every Preschooler) with 254 preschoolers, aged 3-5 years from diverse populations (including Aboriginal and Francophone) in Greater Sudbury, Manitoulin Island, London and York Region. Dietary data were obtained through parent-completed three-day food intake records. BMI was determined using child weight and height measurements taken by a registered dietitian. Demographic characteristics were gathered with an adapted Statistics Canada standardized questionnaire. Associations with juice intake, BMI category, and child, parental and family characteristics were performed by bivariate analyses.

**Results:** Almost one quarter (23.6%) of the preschoolers were at risk of being overweight or overweight; 73.2% were within the normal range, and 3.1% were underweight. Overall, 88.1% of the children consumed 100% fruit juice during the intake period, with a mean intake of 210 ( $\pm$  183.1) mL/day. Fifty-seven percent consumed more than 125 mL/day and 31.1% consumed more than 250 mL/day (American recommendations limit intake to 125-175 mL/day). No significant differences were seen in fruit juice intake amongst the BMI categories or with selected child, parental or family characteristics.

**Discussion:** Consuming 100% fruit juice does not appear to be associated with preschoolers' BMI but further longitudinal research is needed in larger, more diverse groups to confirm this finding. Meanwhile, increased parent education around appropriate beverage intake including fruit juice is warranted.

# Towards an IP Certificate at Laurentian

## Presenting Author

Dianne Cameron

## Authors

Dianne Cameron

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Laurentian University

## Abstract

The concept of collaborative, team-based, patient-centered interprofessional health care is by no means new. In Ontario, the initiative by Health Force Ontario leading to the publication in July, 2007 of “Interprofessional Care: A Blueprint for Action in Ontario” has been an important incentive for developing implementation strategies leading to the full realization of this essential concept in contemporary health care. It is widely accepted that interprofessional education (IPE) leads to interprofessional care (IPC). There are many valid ideas on how to go about this critical step, and numerous short courses, seminars, workshops, and discussion groups have arisen, many of which attendees at this conference no doubt have participated in. However, much less has been achieved in terms of practical implementations to prepare large numbers of undergraduate students in the many educational programs and disciplines at colleges and universities for fulfillment of interprofessional practice in their professions. As part of the Blueprint’s strategy for building a firm foundation for implementation and sustainability of IPC, curriculum models for IPE must be developed. True incorporation of IPE into undergraduate curricula has been slow, and faces numerous challenges. Most professional development programs are necessarily focused on discipline specific education, and have little room in busy timetables for IP courses training practitioners and caregivers to work together to enhance patient care. This presentation outlines some of the key obstacles and successes in providing undergraduate interprofessional education, and describes an initiative for an evolutionary process leading to a potential certificate program in interprofessional care that could be accessed by different educational programs at both the undergraduate and post-graduate levels.

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# The UBC Medical Journal: Engaging dialogue across the province

## Presenting Author

Ciara Chamberlain

## Authors

Ciara Chamberlain, Suzanna Mitrovic, Gavin Tansley, Diane Wu, and Pam Verma

## Affiliations

UBC Medicine Class of 2012, Vancouver-Fraser, Vancouver Island, and Prince George Northern Medical Programs British Columbia, CANADA

## Abstract

Leaders in rural health have voiced concerns regarding inequities in publishing. A concern for Canadian medical students is the under-representation of publications that disseminate their perspectives and experiences with regards to rural health. UBC is a leader in distributed medical education with training in 3 sites across the province of BC. One student-driven solution is the creation of student-run journals that facilitate interconnectedness between the different sites and other medical schools, and encourages contributions highlighting rural experiences. A newly established peer-reviewed health science student publication at the University of British Columbia established positions for representatives from the two distributed sites situated in Victoria and Prince George. These representatives promoted and recruited articles from their communities. Articles underwent thorough peer-review by faculty experts and student review teams prior to publication. This initiative, including content, management and distribution, was entirely student-generated. Since its inception in 2009, the UBC Medical Journal has engaged more than 200 students, faculty and clinicians as editors, authors and reviewers across the province of British Columbia, including contributions from the distributed sites. In March of 2010, the UBCMJ will be hosting a medical student research conference where students at distributed sites will have funding to travel to Vancouver, or the option to participate in poster presentations using video conferencing and live streaming technology. It is our hope that this forum will inspire not only inclusivity throughout our distributed medical program, but also dialogue on topics unique to the distributed centres. This initiative demonstrates a collaborative approach to foster and maintain student interest and involvement in rural health through a peer-reviewed student publication. With the theme of Rural Health already chosen for the March 2011 edition of the UBCMJ, we hope to enhance the publication and student discourse on rural health and education.

# “Virtual” Home Safety Assessment After Stroke in a Remote Aboriginal Communities

**Presenting Author**

Beth Linkewich

**Authors**

Beth Linkewich, Katie Harrington, Alana Oikonen

**Affiliations**

Muskoka Algonquin Healthcare / Northern Ontario School of Medicine / McMaster University

**Abstract**

**Background:** Following a stroke, changes in functional abilities may impact the survivor’s safe performance of activities of daily living at home. This pilot research explored the clinical utility of using video-streaming technology and standardized tool (SAFER-Home) to complete an occupational therapy home safety assessment for a stroke survivor living in a remote Aboriginal community.

**Methods:** This research was conducted in collaboration with KO-Telemedicine and Keewaytinook Okimakanak Tribal Council. Occupational therapists (OTs) (3) simultaneously completed a virtual home safety assessment using the SAFER-Home. Subsequently, support staff (3), OTs and client completed researcher-designed questionnaires. OTs also participated in a focus group. Content analysis was conducted on qualitative data to identify themes. Quantitative data provided descriptive statistics.

**Results:** All OTs (1-10+ years experience) reported confidence in making recommendations using the SAFER-Home via video-streaming. A need to “sense” the client in a different way was identified. The client and OTs all recommend virtual assessment. Audio quality was problematic.

**Conclusions:** Overall, the SAFER-HOME and video-streaming technology improved access and demonstrated clinical utility for an OT home safety assessment for a client after stroke. Technological challenges indicate the need for supplementary training and support. Additional validity testing of the SAFER-HOME tool for virtual assessment is needed.

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# **The Supportive Care Oncology Network: Moving Forward, Improving the Patient Experience Utilizing Screening for Distress**

## **Presenting Author**

Sheila Damore-Petingola, M.S.W., R.S.W.

## **Authors**

Sheila Damore-Petingola, M.S.W., R.S.W.; Carole Mayer, M.S.W., R.S.W., PhD. (Candidate)

## **Abstract**

Thirty-five percent (n = 5,754) of total chemotherapy treatments are delivered at one of fourteen Community Oncology Clinic Network (COCN) sites, located in community hospitals in Northeastern Ontario, Local Health Integration Network – LHIN 13. Cancer patients have reported that their supportive care needs are not always met. The Supportive Care Oncology Network – NE Region (SCON-NE) was developed to ensure access to supportive care services for cancer patients and their families throughout this region. The SCON-NE is an example of a coordinated regional network which utilizes existing resources, evidence based practice and technology to improve supportive care and psychosocial oncology services for patients and their families in rural Northeastern Ontario. In partnership with the Canadian Partnership Against Cancer, Cancer Journey Action Group, the SCON-NE is implementing distress screening throughout the COCN sites to ensure that patients of the Regional Cancer Program are screened for distress as part of person-centred care, regardless of where a patient is treated. This presentation will: 1. Describe the project entitled 'Expanding Screening for Distress in Northeastern Ontario' as an evolution of the SCON-NE; 2. Review three critical domains of oncology patient screening - physical, practical and psychosocial; 3. Introduce the screening tools – Edmonton Symptom Assessment System Scale (ESAS) and the Canadian Problem Checklist (CPC); and 4. Update conference delegates to the current status of this two year quality improvement project.



# Demographic Characteristics of NOSM Medical Students Associated with Intended Medical Discipline and Practice Location

## Presenting Author

M.G. Delmege

## Authors

M. G. Delmege, J. C. Hogenbirk, R. W. Pong on Behalf of the Research Team

## Affiliations

Centre for Rural and Northern Health Research

## Abstract

The Centre for Rural and Northern Health Research at Laurentian University and the Northern Ontario School of Medicine (NOSM) are collaborators in a multi-year tracking study of NOSM undergraduate students. The study objectives were to assess interest in northern or rural medicine, and intended practice location, intended practice profile, etc., as respondents transition from students to residents to fully qualified physicians. To date, five entry surveys were conducted, one for each of the five cohorts beginning in 2005; as well as four mid-way surveys and one exit survey. In addition, interviews with select students from each cohort have been conducted in their first year. To date, 117 NOSM students have completed both an entry and a midway survey. Approximately 66% of respondents are female, which is highly representative of all students in the first three cohorts (2005, 2006 and 2007). This paper examines the association between demographic characteristics, intended medical discipline and practice location for those students who have completed both an entry and a midway survey. The study also examines if the association between rural background and rural practice intent is consistent with current literature given that many NOSM students originate from Northern Ontario. For instance, results may be compared to a recent model, developed by Stagg and colleagues (2009) which categorises respondents into four different groups: those with a rural background pursuing a rural career path; those with an urban background pursuing rural career path; those with a rural background pursuing an urban career path; and those with an urban background who follow an urban career path. The study will determine how a northern background affects the strength and direction of this association.

# **Facilitating Sustainability: Delivering successful interprofessional learning programs to pre and post-licensure healthcare providers in the clinical setting**

## **Presenting Authors**

Nicole Ranger, Anita Dewar

## **Authors**

Nicole Ranger, Anita Dewar, Holly Rupert, Jackie Hummelbrunner, Gayle Adams-Carpino, Colin Stewart, Lynne Sihvonen, Sue Berry, Shelley Chisholm, Mary Lou Kelley

## **Affiliations**

Hôpital régional de Sudbury Regional Hospital, Thunder Bay Regional Health Sciences Centre, St-Joseph's Care Group, Sault Area Hospital

## **Abstract**

IPE and collaborative practice are supported in Canada by federal (Health Canada, 2003) and provincial (HFO, 2007) governments as strategies to alleviate health system pressures. Significant investments in interprofessional education initiatives are allowing health and social services professionals and health professional learners “to learn with, from, and about each other to improve the quality of care” (CAIPE, 2002). Supported by grants from HFO-ICEF, Facilitating Leadership in Interprofessional Care (FLIC) and Students Partnering in Interprofessional Care and Education (SPICE) were piloted by NOSM in 2008 (Phase 1). In 2009, with a focus on sustainability, new partnerships with four northern institutions have moved both initiatives into Phase 2. As a strategy to increase the capacity of our partner institutions to sustain learning and collaborative practice, a comprehensive IP Facilitator Education Workshop was designed and delivered to health care providers from each institution. FLIC is an 8-session interprofessional learning program delivered on-site to established care teams by a trained IP facilitator with the aim of improving team function and collaborative approaches to patient care (McKinlay and Pullon, 2007). It incorporates an innovative IP clinical learning model, called “Shared Preceptorship”. SPICE allows health care learners already on clinical placement to participate in an interprofessional team guided by a trained IP Facilitator. Student teams gain IP competencies by caring for patients collaboratively. Both projects employ mixed evaluation methods to identify students’ and healthcare providers’ reactions to IP experiences, changes in behaviour and impact on the healthcare environment and patient perceptions of effective collaboration. Qualitative and quantitative data were collected through pre/post surveys, reflective questions, collaborative assessments and focus groups. Phase 1 findings and early results from Phase 2 implementation will be presented.

# **Comprehensive Assessment and Integration of Care Planning using the interRAI Palliative Care: findings from Ontario community-based care**

## **Presenting Authors**

Trevor Frise Smith and Karen Lacelle

## **Authors**

Trevor Frise Smith (1), Karen Lacelle (2)

## **Affiliations**

(1) Nipissing University (2) North East Community Care Access Centre - Sudbury

## **Abstract**

For home care recipients, it is imperative to have an individual-level information system capable of following the client as they receive health and supportive services from a range of providers. The ability to track individual needs over time and to link this longitudinal data among different health care providers is especially important for providing community-based, quality end-of-life care. An individual wishing to die at home will require palliative-based home care services involving a range of providers to assist with both ongoing needs and the emergence of new needs (to assist, for example, with pain control, sleep, restlessness, appetite & nutrition, spiritual and mental health needs, burden and emotional distress among informal supports). In order to facilitate optimal care, among a range of multidisciplinary service providers, it is imperative to have an information system to monitor such needs. In Ontario Canada, pilot testing and evaluation of the interRAI Palliative care assessment instrument began in 2004. Since then, a number of additional home care agencies (including the Sudbury CCAC), providing palliative care have adopted the instrument as part of their routine assessment protocol. This presentation will (1) introduce the interRAI Palliative Care assessment instrument (both paper-based and electronic versions) to the audience and (2) provide examples of how the instrument is used to assist care planning, benchmarking, and quality assessment.



# Economic Contributions of the Northern Ontario School of Medicine to Northern Ontario

## Presenting Author

John C. Hogenbirk

## Authors

John C. Hogenbirk and David R. Robinson, on behalf of the Research Team

## Affiliations

Centre for Rural and Northern Health Research, Laurentian University; Department of Economics, Laurentian University

## Abstract

The “distributed medical education” model of the Northern Ontario School of Medicine (NOSM) has led to the direct participation of over 70 communities across northern Ontario in its teaching and research programs. In addition to providing undergraduate medical education, NOSM coordinates several postgraduate and professional programs, some of which predate the founding of the medical school. This study, commissioned by NOSM with funding from the Ontario Ministry of Health and Long-Term Care, looked at the short-term contributions of all of NOSM’s programs on selected communities and collectively on the economy of northern Ontario. NOSM receives revenue from the provincial government, students, research agencies and other sources. In fiscal year 2007/2008 NOSM received \$38.9 million and had expenses of \$38.2 million (excluding amortization of capital assets). Of that, 95% (\$36.2 million) was spent in northern Ontario. Direct spending by undergraduate medical students, estimated for a full 4-year program, adds another \$1.0 million per year. Economic multipliers, based on population size using the minimum requirements approach, were used to estimate the total economic contribution of all new and inherited programs due to direct, indirect and induced economic effects. This study used two different multiplier formulas to give a range of economic contributions. The \$37.2 million of direct spending in a year generates a total of \$63.0 to \$73.2 million to local economies, based on the sum of the contribution to local communities. However, some of the money spent in these communities will be re-spent elsewhere in the north, so a regional multiplier was used to estimate the total economic contribution to northern Ontario of \$67.1 to \$82.0 million per year. Modelling shows that the economic contribution of NOSM is widespread throughout northern Ontario—a contribution that is expected to grow along with NOSM and its participating communities.

# Meeting Rural Community Needs Through Integrated Care

## Presenting Author

Donna Kearney

## Authors

Donna Kearney BScN, BA Gerontology, RN(EC), MHST

## Affiliations

West Parry Sound Health Centre

## Abstract

**Background:** The West Parry Sound Health Centre operates six nursing stations, staffed with nurse practitioners, located in outlying communities throughout the large rural region of Parry Sound. The nursing stations enhance access to primary health care, support aging at home strategies, decrease emergency room visits, and decrease hospital admissions.

**Methods:** The nursing stations completed a one year data collection process from Feb 2009 to Feb 2010 to determine the demographics of patients using the nursing stations, numbers of patients seen without a doctor, volume of patients seen, types of care provided (preventative, curative, diagnostic, and supportive), and the numbers of referrals to other health care providers, among other parameters. Data from the hospital was used to track admission rates and emergency room usage by postal code to compare communities with nursing stations to those without. We also looked at re-admission rates within thirty days of discharge from hospital to note differences in communities with and without nursing stations.

**Results:** Preliminary data shows the stations see over 25,000 patients per year; with over 90% being managed completely in the community setting. The numbers of 'unattached' patients was variable at each station, from 2 - 45%. Referrals to other health care providers ranged from 5 - 10% of the caseload, and referrals to the emergency room was less than 3%. Patients admitted to hospital from communities with nursing stations was lower than those admitted from other communities, however, re-admission rates were significantly lower at one month after discharge; 33% from nursing station communities, compared to 58% from non-nursing station communities.

**The Presentation:** The presentation will offer a visual summary of the hospital-affiliated nursing station model, and will provided detailed analysis of the study findings, as well as a cost benefits analysis associated with this models' usage by the Parry Sound hospital.

# **The analysis of a corporate physical activity intervention: A group-mediated cognitive-behavioral case study**

## **Presenting Author**

Lynn Kabaroff

## **Authors**

1. Lynn Kabaroff 2. Mark Eys

## **Affiliations**

1. Department of Human Kinetics, Laurentian University 2. Departments of Kinesiology/Physical Education and Psychology, Wilfrid Laurier University

## **Abstract**

The general purpose of the present study was to describe and evaluate the use of a Group Mediated Cognitive Behavioral (GMCB; Brawley et al., 2000) exercise intervention approach within a corporate environment, with an extended focus on the physical activity preferences of the participants. To this end, a multi-method case study approach was adopted to (a) describe the implementation of a pilot GMCB program within a corporate setting and (b) assess the response to and effectiveness of the GMCB program as communicated by the participants and quantitative measures. A multi-method approach was utilized to evaluate the intervention with 20 participants. These included researcher field notes established self-report psychological measures, weekly fitness logs, anthropometric measurements, and end of program focus group sessions. The researchers previously communicated the quantitative results of the present study indicating significant decreases in Body Mass Index, Body Fat Percentage, and Waist Girth, while supplemental descriptive statistics revealed an increase in exercise frequency during the program. The specific objective of the current presentation is to convey the findings from the qualitative portions of the study. Researcher observation, field notes, and focus group comments all contributed to a description of the corporate GMCB program implementation. Further, the response to and effectiveness of the GMCB program were assessed from focus group analyses. These analyses resulted in five general categories: issues pertaining to (a) the context, (b) program positives, (c) program negatives, (d) the corporation, and (e) future directions. Recommendations for intervention improvement were also proposed. The overall results suggested that the GMCB protocol is successful at encouraging physical fitness within a corporate environment and to aid in workplace team building. However, to have significant lasting positive results, appropriate corporate support and some modifications may be required to enable individuals to become long-term self-regulated exercisers.

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# Effectiveness of a Science Outreach Program on Aboriginal Youth in Northern Ontario

## Presenting Author

Maryam Khan

## Authors

Maryam Khan(1), Michelle Zenko(2), Barbara Vanderhyden(2,3)

## Affiliations

Departments of Epidemiology and Community Medicine(1) and Cellular and Molecular Medicine(3), and Science Travels(2), University of Ottawa

## Abstract

**Background:** Science Travels is a University of Ottawa outreach program that provides youth with innovative educational activities to increase their appreciation of science and enhance their opportunities to become future leaders in this field. Emphasis is placed on Aboriginal youth in remote regions of Northern Ontario with limited access to science outreach programs.

**Purpose:** To investigate the effect of the program on Aboriginal youth in Moosonee and Moose Factory, Ontario. Students participated in interactive learning activities about various topics related to health, the environment and technology.

**Methods:** A sample of students answered a survey after participation. We used survey responses to determine the proportion of students whose interest in science improved in each of four domains. For these domains, we used multivariate logistic regression to determine whether level of schooling, sex and baseline interest in science predicted the likelihood of having a greater interest in science after participation.

**Results:** In 2008-2009, the survey was administered to 92 participants, and 98.91% responded. After participation, 43.96% (95% CI = 33.77%, 54.14%) of students were generally more interested in science. 29.67% (95% CI = 20.26%, 39.08%) and 25.27% (95% CI=16.29%, 34.25%) had an increased interest in science as an area of study, or as a career choice, respectively. 45.05% (95% CI=34.86%, 55.24%) of participants had increased knowledge of research and innovation underway in Ontario. Respondents with high interest in science at baseline were 3.5 times more likely to have a generally greater interest in science after participation (OR=3.50; 95% CI = 1.45, 8.42). Other variables did not predict the odds of having a greater interest in science for any domain (all p-values > 0.05).

**Conclusions:** Programs such as Science Travels provide Aboriginal youth positive experiences that can greatly enhance their interest in and consideration of future careers in science.

# **Promoting Resilience and Mental Well-Being through an Outdoor Adventure Leadership Experience Designed for Aboriginal Youth from Northern Ontario**

## **Presenting Authors**

Mary Jo Wabano, Nancy Young

## **Authors**

Stephen D. Ritchie, Assistant Professor and Doctoral Candidate from Laurentian University; Mary Jo Wabano, Health Services Director and Elected Member of Council from Wikwemikong Unceded Indian Reserve; Nancy L. Young, Professor and Canada Research Chair from Laurentian University; Brenda Restoule, Vice Chair of Native Mental Health Association of Canada and Psychologist from Shkagamik-kwe Health Centre in Sudbury; Robert Schinke, Associate Professor and Chair Laurentian University Research Ethics Board; Duke Peltier, Sport and Recreation Coordinator and Elected Member of Council from Wikwemikong Unceded Indian Reserve; Keith Russell, Associate Professor from Western Washington University, USA

## **Affiliations**

Wikwemikong Unceded Indian Reserve and Laurentian University (respectively)

## **Abstract**

**Rationale:** Programs using outdoor adventure and experiential education have proven effective for promoting mental health for youth at risk in mainstream populations. Mental health is a well documented priority for Aboriginal youth in Canada. Yet, there is very little evidence on the efficacy of such outdoor programs for Aboriginal youth populations.

**Purpose:** To evaluate the impact of a 10-day outdoor adventure leadership experience (intervention) on the resilience and mental well-being of Aboriginal youth.

**Methods:** A collaborative research team used a concurrent transformative mixed-method design to develop, implement and evaluate a culturally reflexive short-term outdoor adventure leadership experience (OALE) within one Aboriginal community in northeastern Ontario. This program was implemented and evaluated in a formal research trial during the summer of 2009 with adolescent participants (ages 12 to 18). Fourteen qualitative field interviews were conducted with the youth participants, and a pre-post study design was used to examine the impact of the program on the resilience of the youth using the Resilience Scale-14 (RS-14).

**Results:** A culturally relevant OALE program was refined through a series 20 collaborative meetings and two targeted focus groups with seniors, Elders and mental health workers in the community. The OALE program was designed as a prototype intervention and formal research trial. A total of 43 youth from the Wikwemikong Unceded Indian Reserve participated in six OALE programs (interventions) that were delivered experientially during a canoe excursion homeward in the traditional territory of the community. Complete data was obtained for 35 participants. The baseline scores indicated low levels of resilience (mean = 72.7) and improved by 3.4 points ( $p = 0.028$ ) one month post-intervention. Findings from the qualitative analysis confirmed the improvement and attributed it to the OALE experience.

**Conclusions:** The OALE program appears to be effective in promoting resilience among Aboriginal youth in Wikwemikong.

# Manitoulin Anishinabek Research Review Committee’s Guidelines for Ethical Aboriginal Research: A Community-based Aboriginal Ethics Review Process

**Presenting Author**

Niki Naponse

**Authors**

Lenore Mayers, Niki Naponse

**Affiliations**

Noojmowin Teg Health Centre

**Abstract**

Aboriginal communities are often contacted by researchers who want to conduct research within Aboriginal communities. However, few are prepared for the reality of how to design, implement and complete a successful project. We will discuss how the Manitoulin Anishinabek Research Review Committee (MARRC) initiated the movement to increase community capacity and self-determination in health research.

Noojmowin Teg Health Centre, in partnership with the three other health authorities and seven First Nations communities, took the lead in coordinating the development of a community-based research review committee (MARRC). The function of this committee is to promote ethical health research in First Nations communities in the Manitoulin Island district. The committee researched local Aboriginal views on research ethics and used these Aboriginal values as the foundation for the development of a research manual. The manual provides tools and guidelines to assist communities to make informed decisions about health research and to review and evaluate proposed research projects. They provide concrete strategies to empower communities to maintain ownership and control over research projects and access to research data.

Participants in this session will discuss several key elements involved in the development of research guidelines and implementation of a community-based ethics review process such as; 1) The importance of a community process; 2) an overview of the Guidelines for Ethical Aboriginal Research manual and the ethics review process; and 3) how community-based Traditional Aboriginal values and ethics are incorporated into research. We will also discuss some of the challenges and opportunities that MARRC faces as well as the type of research that is currently being done here on Manitoulin.

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# Comparison of the Biological Effects of Sudbury Particulate Matter (SPaM) with Other Particulate Types: Acute and Chronic Studies

## Presenting Author

Sarah White

## Authors

White, SM, S Khurana, N Fraleigh, KA McCartney, SA Ritz

## Affiliations

Laurentian University, Northern Ontario School of Medicine

## Abstract

Air pollution is an issue of concern for many, but is of special interest in communities in which there are prominent local sources of aerosol emissions: in Sudbury ON, local mining and smelting processes release substantial amounts of airborne contaminants in both particulate and gaseous form. Known effects of inhalation exposure to particulate matter (PM) include aggravation of symptoms of allergy and asthma, and associations with respiratory and cardiovascular disease. In this study, we have compared PM from Sudbury ON (SPaM; Sudbury Particulate Matter) to diesel exhaust particles (DEPs) and ambient PM from Ottawa ON (EHC-93) in both acute and chronic inhalation exposure studies in mice. Compared to DEPs, both SPaM and EHC-93 are relatively high in transition metals. SPaM is particularly rich in nickel, iron, copper, and cobalt, whereas EHC-93 has higher levels of zinc. For acute studies, Balb/c mice were exposed to the PM samples by a single intranasal instillation of PM suspended in PBS. For chronic studies, Balb/c mice were exposed to an aerosolized mist of suspended PM for 15m daily, 5x/week, and groups of mice euthanized after 2, 4, 6, or 8 weeks of exposure. 12h after exposure, a significant respiratory inflammatory response was observed, with significant increases in neutrophils in the bronchoalveolar lavage fluid. There were systemic effects of this exposure as well, as indicated by levels of acute phase proteins in the blood. These studies will enhance our understanding of how PM influences cardiovascular risk pathways, particularly with respect to the role of transition metals in mediating these effects.

# Aboriginal health care ethics – a missing discipline

## Presenting Author

Jaro Kotalik

## Authors

Jaro Kotalik

## Affiliations

Lakehead University Centre for Health Care Ethics and Department of Philosophy; McMaster University  
Department of Medicine

## Abstract

Bioethics is a discipline which over the last few decades examined many health care disciplines, subspecialties and populations. Yet, little attention has been paid so far to ethical aspects of health care involving aboriginal populations. This deficiency needs to be addressed. This is particularly important because the health status of aboriginal people is in most aspect worse than the rest of our population and difficulties are encountered in the provision of health services to aboriginal individuals and communities. An examination of the situation from the perspective of bioethics could provide significant assistance in addressing this issue. Firstly, the situation of First Nations is such that they need to be recognized as a vulnerable group, and hence, the effort to overcome the discrepancy in health status is a moral obligation of Canadians. Secondly, because of a small numbers of aboriginal health professionals, this population receives care mostly from non-aboriginal providers. In such situation, the power imbalance and other moral aspects of patient-professional relationship need careful attention. Thirdly, the aboriginal patient may have a set of values which will differ significantly from those which the professional is used to consider and accommodate. The traditional aboriginal understanding of personal autonomy, role of family and community, disease and health, caring and healing, death and dying is significantly different from the non-aboriginal population. A professional serving aboriginal patients need to be aware of these difference when balancing benefits and risk, seeking consent to medical interventions according to principle of autonomy, or rationing health care resources in keeping with principle of justice. The attention to ethical aspects of care for and among aboriginal population has a potential not only to improve the experience of care and the quality of care for these individuals and communities but also to improve the ethical quality of health care in general.

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# Increasing Colorectal Cancer Screening Uptake with a Patient Navigator

## Presenting Author

Brian Mitchell

## Authors

Brian Mitchell MD FRCSC Paul Ritvo Ph.D.,C.Psych.

## Affiliations

Group Health Centre, Algoma District Medical Group; University of Toronto, Cancer Care Ontario

## Abstract

Colorectal cancer (CRC) screening rates are low in Canada, particularly when compared to cervical and breast screening. Of the Canadian population more than or equal to 50 years of age, 78.4% have never been screened with FOBT and almost 89% have never had a screening colonoscopy. We hypothesize that tailored navigation provided by a registered nurse will increase the number of participants who undergo screening for colorectal cancer. Increasing Colorectal Cancer Screening Uptake with a Patient Navigator is a 2-year study (2010-11) at the Group Health Centre in Sault Ste. Marie. The study is part of a series of investigations undertaken by the CIHR Emerging Team in Colorectal Cancer Screening and supported by Cancer Care Ontario. Average risk men and women age 50 to 74 years who have never been screened or are under-screened for CRC were included in the study. Eligible participants were randomized into immediate and delayed treatment groups. The delayed treatment group received the intervention at 6 months into the study. The immediate intervention group received an invitation letter to meet with the Patient Navigator and a survey in the mail. The purpose of the optional survey was to gather patient perception regarding CRC and screening options to support CCO's interest in finding unique ways that appeal to people, secure their attention on this important health issue and motivate them to significantly reduce their risk. The Patient Navigator explained the study objectives, obtained consent, provided CRC education, reviewed screening options and assessed patient medical history. The Patient Navigator arranged the appropriate screening test according to the patient's preference and medical history. This study was designed to assess an intervention that may augment a more optimal approach to FOBT and colonoscopy screening.

# Support and Housing Priorities for Persons with Serious Mental Illnesses Living in Northeastern Ontario

## Presenting Authors

P. Montgomery, P. Bailey, and S. Mossey

## Authors

P. Montgomery, P. Bailey, S. Mossey, C. Forchuk, D. Rose, C. Duncan and R. Veluri

## Abstract

**Background:** Support and housing services for persons with serious mental illnesses have been evaluated using mixed-methods concurrently in communities within southwestern and northeastern Ontario. The evaluation's purpose was to identify issues and solutions about support and housing concerns as perceived by three stakeholder groups, service users, service providers and decision makers.

**Purpose:** This presentation addresses one aspect of the mixed-method study specific to northeastern participants. More specifically, the three stakeholder groups' rankings of support and housing priorities will be described.

**Design:** Q methodology, an approach that combines features of quantitative and qualitative techniques, was used to understand different participant subgroups' viewpoints about this complex phenomenon.

**Setting:** Each of the three stakeholder groups were conveniently sampled in four northeastern Ontario communities. The total number of participants who ranked the identified support and housing priorities was 96 individuals.

**Sample:** In Q terminology, the Q sample was 39 single-idea statements. These statements were extracted from the study's earlier narrative interview data with service users and service providers. These statements provide a 'gestalt' orientation for identifying unique and shared viewpoints.

**Method:** The 96 participants sorted the statements in a specific distribution from "Most Important" to "Least Important." Centroid factor analysis and varimax rotation were used. **Findings:** Six distinct and statistically significant factors or views for improving support and housing services were identified. The preliminary labels assigned to these six factors were: integration of health and social services; housing stability through diverse social affiliations; recognition of service users' enablement; rendering of choice; intentional efforts contributing to a sense of home, and finally, security.

**Conclusion:** This presentation will conclude with a discussion of the practice and policy recommendations relative to support and housing services that integrate the viewpoints of stakeholders.

# Sedation and Analgesia Protocols in a Community-Based Intensive Care Unit: Does Daily Tracking Improve Concordance?

## Presenting Author

Richard Nadeau

## Authors

Richard Nadeau BMSc (1), David Boyle MD, FRCP (1,2), and Robert Anderson MD, FRCP (1,2)

## Affiliations

1. Northern Ontario School of Medicine, Sudbury, Ontario, Canada. 2. Sudbury Regional Hospital, Department of Anaesthesia and Critical Care, Sudbury, Ontario, Canada.

## Abstract

**INTRODUCTION:** Intensive care unit (ICU) sedation and analgesia protocols have been widely implemented due to their success in decreasing ICU mortality, morbidity and length of stay. However, the success rate of implementation outside of the research setting has been variable. Pharmacists dedicated to the ICU have improved this compliance and bettered patient outcomes. This strategy can be costly, and in resource-constrained community hospitals, can very difficult to implement. The objective of this study is to identify the concordance with a currently implemented protocol, barriers to its implementation and the effect of a daily audit and feedback to the ICU care team.

**METHODS:** This cohort study used a retrospective chart review of 36 community Medical-Surgical ICU patients and a prospective chart audit of 23 patients admitted over a one-month period. Daily feedback to the care team was provided by a non-pharmacist health care worker. The primary outcome for this study was concordance with the ICU sedation protocol. Secondary outcomes included where the protocol was violated, levels of sedation, as well as ICU and hospital length of stay. Qualitative data exploring the implementation barriers was collected via an online survey of the health care team.

**RESULTS:** Protocol concordance for the ICU care team was 11.8% at baseline and 16.7% during the audit. The most significant barriers to proper implementation were sedation titration and documentation (1.1% adherent in controls and 9.3% during intervention), and daily weaning (34.7% control group; 41.9% intervention group).

**CONCLUSIONS:** This study demonstrated poor baseline concordance rates, and the presence of a non-pharmacist auditor did not improve concordance to clinically-relevant significance as a single intervention. There are multiple barriers to effective knowledge translation and effective education strategies, and a dedicated pharmacist may be required to achieve those outcomes seen in research protocols.

# Reduced Tumour RNA Integrity in Response to Chemotherapy in Breast Cancer Patients

## Presenting Author

Amadeo M. Parissenti

## Authors

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## Abstract

RNA degradation has been shown to occur as cells die in response to cytotoxic agents. In the CAN-NCIC-MA22 phase I/II clinical trial, we examined the relationship between tumour RNA quality (integrity) and response to epirubicin/docetaxel chemotherapy in 50 women with locally advanced or inflammatory breast cancer. The drugs were administered in 2 or 3 weekly intervals in sequential cohorts of patients with pegfilgrastim support. In this study, image-guided tumour core biopsies were obtained from each patient pre-, mid-, and post-treatment. Tumor RNA integrity (RIN) and tumor cellularity (extent) were then measured pre-, mid- and post-treatment by capillary electrophoresis and light microscopy after haematoxylin/eosin staining, respectively. Associations between tumor RIN or tumor cellularity with chemotherapy dose level or post-treatment pathologic complete response (pCR) were assessed using a 1-way ANOVA. We observed that low mid-treatment tumor RIN (but not tumor cellularity) was associated with high chemotherapy drug dose level ( $p=0.05$ ) and pathologic complete response (pCR) in these patients ( $p=0.01$ ). Post-treatment, low tumor RIN was found to be associated with low tumor cellularity ( $p=0.004$ ), and low tumor cellularity with a pCR ( $p=0.01$ ). This reduction in RNA integrity was not observed in nucleated blood cells taken from the identical patient population. The specific association of tumor RIN mid-treatment with drug dose level and with pCR suggests that tumour RIN may represent an important new biomarker for monitoring tumor response to chemotherapy in breast cancer patients. This may enable the early identification of non-responding patients during chemotherapy and their quick movement to other or downstream treatment options, such as surgery, radiation therapy, and/or alternative chemotherapy regimens.

# A Closer look at Ontario's Northern and Southern Rural Physicians

## Presenting Author

Elizabeth Wenghofer

## Authors

Elizabeth F. Wenghofer, Raymond W. Pong and Patrick Timony

## Affiliations

School of Rural and Northern Health, Laurentian University; Centre for Rural and Northern Health Research; Northern Ontario School of Medicine

## Abstract

There are several recent descriptive reports that have examined physician services in rural and northern Ontario, however none to date has done so with the explicit purpose of examining differences in the characteristics of rural physicians in northern Ontario and those of rural physicians in southern Ontario. In this study we report on the demographic and practice profiles of physicians in northern and southern Ontario by level of rurality. We analyze the 2007 Annual Membership Survey of the College of Physicians of Surgeons of Ontario and report on 22,688 physicians who have primary practice addresses in Ontario. We report on physician characteristics such as age, gender, certification, international medical graduate status, hours worked per week and patient visits per week by geographic category. Geographic categories are based on the physician's primary practice address. Northern location of practice is indicated by the forward sortation area (FSA) of the postal code (FSA="P"). Further geographic subdivisions indicative of the level of rurality are based on Statistics Canada's rural and small town definition and metropolitan influence zone (MIZ) classification, which categorize areas as urban or one of four zones of rural ranging from "strong" to "no" MIZ, according to the degree of influence metropolitan areas have on them. Our results indicate that although there are some similarities between urban and rural regions across Ontario with respect to physician characteristics, there are distinctive differences in physician demographics and practice patterns between southern rural and northern rural regions. Our results suggest that policies focusing on addressing physician human resource issues in rural regions ought to consider that rural regions in northern Ontario may have different circumstances and requirements than those in southern Ontario, suggesting that a single rural physician policy may be inappropriate.



# **Graduates of the Family Practitioner Anesthesia Residency Program in Northwestern Ontario – What are they contributing to anesthesia services in Canada?**

## **Presenting Author**

Meghan Garnett

## **Authors**

Meghan Garnett, BHSc; James C. Middleton, MD, FRCPC; George Doig, MD, FRCPC

## **Affiliations**

Northern Ontario School of Medicine, Thunder Bay Regional Health Sciences Centre

## **Abstract**

**BACKGROUND:** There are approximately 500 to 700 family practitioner anesthetists (FPA's) that provide many essential medical services to rural and Northern communities across Canada.

**OBJECTIVE:** To determine (1) where and how much anesthesia the Northwestern Ontario FPA graduates are practicing, (2) how well the residency program had prepared them, and (3) how they would improve residency training and rural anesthesia practice.

**METHODS:** Following Research Ethics Board approval, the authors administered an online survey to all graduates of the PGY3 anesthesia program in Northwestern Ontario from the past 20 years. Respondents were invited to participate in a follow-up telephone interview to elaborate on their responses.

**RESULTS:** All the respondents were currently practicing anesthesia in Canada, with 67% working in a community of less than 20,000 people. Thirty-three percent of respondents were working in Northern Ontario. Seventy-three percent were performing more than 20 hours of anesthesia per week and 60% handled more than 20 surgical cases per week. The vast majority were also providing anesthesia for C-sections, epidurals for labour & delivery, assisting with emergency airways, and working in an ICU. Eighty-seven percent felt that the PGY3 training was adequate for their current practice and 80% thought that 12 months was long enough. FPA's face significant barriers to participating in CME events, including difficulty finding locums, strain on colleagues, and geographical location.

**CONCLUSIONS:** FPA's provide a wide range of necessary medical services in rural and Northern communities. Our graduates felt that one year of training was adequate, but could be improved. These results support more funding for PGY3 anesthesia training, the creation of a national PGY3 certification exam, a professional designation for FPA's, and stronger professional support from the Canadian Anesthesiologists' Society.

# **Stuck in the mud: Experiences of employment for people with SMI in Northeastern Ontario.**

## **Presenting Author**

Karen Rebeiro Gruhl

## **Authors**

Karen L Rebeiro Gruhl, MSc.O.T., O.T. Reg (ON)

## **Affiliations**

School of Rural and Northern Health, Laurentian University; Sudbury Regional Hospital, Cedar Street  
Community Mental Health Clinic

## **Abstract**

This paper examines the influence of place on access to employment for persons with serious mental illness (SMI) residing in Northeastern Ontario (NEO). A mixed methods case study was used. A variety of qualitative and quantitative data sources informed the results, including, 46 participants representing decision makers, service providers and people with SMI who reside in urban and rural places in NEO and a secondary data source representing 4112 persons with SMI in NEO who are recipients of the Ontario Disability Support Program (a primary access point for employment). Data analyses yielded a distinct portrayal of access to employment as being stuck in the mud. This conceptualization draws upon all qualitative group and individual interviews, documents and sources of quantitative data. Stuck in the Mud conceptually portrays the overwhelming impression of participants being “stuck”: Whether communities were stuck in old ideas about the employability of persons with SMI; decision makers “stuck” within antiquated legislation that does not encourage innovation; providers being “stuck” within a variety of existing organizational, funding, jurisdictional and program-based tensions; mental health providers being “stuck” with using service providers who didn’t follow similar employment model philosophies; or, mental health users being “stuck” with entry level job opportunities or within a process of “determining readiness”, but never being offered a paying job - - the end results were strikingly similar. People with SMI in NEO experience some of the lowest employment success in the province of Ontario. The sombre reality of employment for persons with SMI in NEO is sufficiently disturbing and calls for the need to raise the bar as well as the expectations for employment for this vulnerable and marginalized population. To achieve this, will require building community and consumer capacity, and above all, changing the thinking about the capacity of persons with SMI.

# Improved IPC through shared documentation and development of a medical domain specific language

## Presenting Authors

Dr. Arnold Kim and Allison Carroll Coutts

## Authors

Dr. Arnold Kim, Dr. Rachid Benlamri, Dr. Richard Khouri, Dr. Ella Goodman, Allison Carroll Coutts, Kris Scott, Luke Dockstader,

## Affiliations

NOSM/ Lakehead University (Software Engineering Department) / Thunder Bay Regional Health Sciences Center

## Abstract

This project (code named “Northern Lights”) is being developed by a team of collaborators from the Lakehead University Software Engineering Department, Thunder Bay Regional Health Sciences Center and NOSM (preceptors and learners). This team is interested in improving interprofessional care and education starting with simple concepts such as electronic documentation sharing of medical records between health team members. This concept borrows from existing text base collaborations ranging from Wikipedia to open source software development. This concept makes sense intuitively to most people permits more precise asynchronous types of collaboration within large team environments. From this platform, an innovative approach to standardization of textual representation of medical records will be created through the development of a domain specific language or DSL. This concept borrows heavily from the text processing principals used by the software industry in it’s extensive use of text to program computers). Such standardization allows for the building of more intelligent text editing systems that help enforce language and syntax compliance. Such a language should be easily readable by humans, but also readable by the IT infrastructure. Readability by the machine opens a multitude of process enhancements at the point of documentation ranging from notifying team members of new issues, to text based order entry, to leaving behind significantly more artifacts useful for data mining. This is a timely project as NOSM has introduced a large number of text savvy learners within the healthcare environment. It is posited that NOSM and associated community health team members is the ideal substrate for collaboratively developing and refining a medical DSL because of it’s intimate size and nascent drives to become a leader in medical academics, inter professional care and education. This presentation will take place in the form of a live demonstration of possible software based collaboration enhancements that have been developed to date.

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# **Risk of invasive *Haemophilus influenzae* and *Streptococcus pneumoniae* diseases in patients with chronic renal failure: a call for vaccination?**

## **Presenting Author**

Marina Ulanova

## **Authors**

Marina Ulanova, Sean Gravelle, Nicole Hawdon, Saleem Malik, Dimitrios Vergidis, and William McCready

## **Affiliations**

Northern Ontario School of Medicine, Thunder Bay Regional Health Sciences Centre

## **Abstract**

Patients with end-stage renal disease undergoing peritoneal or haemodialysis are immunocompromized and therefore at high risk for septicaemia and other severe infections. The paediatric conjugate vaccines against encapsulated bacteria, i.e. *Haemophilus influenzae* type b (Hib) and 7-valent *Streptococcus pneumoniae*, were introduced in Canada in 1991 and 2005, respectively; the population born before that was not immunized. Although the adult formulation, i.e. the 23-valent pneumococcal polysaccharide vaccine is recommended for groups of risk including patients with chronic kidney disease, its use in Canada is not monitored and apparently inconsistent. We have recently found a high incidence of invasive *H. influenzae* disease in the Northwestern Ontario, with disproportional prevalence of Aboriginal people and patients with secondary immunodeficiency. Considering that patients of Aboriginal background represent a significant proportion among those with diabetic nephropathy and chronic renal failure attending Renal Services at TBRHSC, we hypothesized that this group may be at an increased risk of *H. influenzae* and *S. pneumoniae* infections. Because anti-capsular antibodies are the major defence mechanism against encapsulated bacteria, we studied serum levels of IgG against Hib and *S. pneumoniae* polysaccharides included into the 23-valent vaccine, using the standard ELISA technique. The antibody levels in 30 patients with chronic renal failure and type 2 diabetes undergoing peritoneal or haemodialysis were compared to age-matched healthy controls (n=30) and patients with type 2 diabetes mellitus with normal kidney function (n=15). The majority of healthy controls (about 90%) had protective antibody levels against both Hib and *S. pneumoniae*. Among patients with chronic renal failure, only 44% had protective antibodies against Hib and 64% against *S. pneumoniae*. Sixty seven % of patients with diabetes and normal renal function had protective antibodies to Hib and 90% to *S. pneumoniae*. The data indicate that a large proportion of patients with chronic renal failure lack protective antibodies against encapsulated bacteria and may be at risk of invasive diseases. To prevent the infections caused by *S. pneumoniae*, the reinforcement of pneumococcal vaccination policy in the region is warranted. Considering the high efficiency and safety of the paediatric conjugate Hib vaccine, it may be beneficial to immunize adult patients with chronic renal failure with this vaccine.

# **Beyond expectations: Why do Aboriginal and Euro-Canadian patients with type 2 diabetes on a rural island in Northern Ontario demonstrate better outcomes for glycemic, blood pressure and lipid management than Canadian comparison populations?**

## **Presenting Author**

Marion Maar

## **Authors**

Marion Maar, PhD , Danusia Gzik, MHSc., MD., Tricia Larose, B.Sc.

## **Affiliations**

NOSM

## **Abstract**

**OBJECTIVE:** To determine differences in type 2 diabetes (T2DM) screening, control and management of glycemic levels, blood pressure and lipids between Aboriginal and Euro-Canadian residents of a rural island in Ontario, Canada.

**METHOD:** This was a cross-sectional study of T2DM patients (n=909) who seek care in medical clinics in the Manitoulin District. 27.1% were Aboriginal and 72.9 % were Euro-Canadian. We compared screening frequencies, laboratory values and medications between the two groups.

**RESULTS:** While using fewer hypoglycemic agents, Euro-Canadian patients had a higher rate of A1C testing (89.2% vs. 80.3%), better A1C values (7.0% vs. 7.3%) and higher rates of attained glycemic targets (62.9% vs. 50.5%). Aboriginal patients were diagnosed younger (48.2 vs. 56.8 years) and nearly twice as likely (19.4 % vs. 10.9%) to have highly elevated glycemic levels (A1C > 8.5%). However, blood pressure and lipid levels showed only minor variations, with Euro-Canadians showing higher medication levels.

**CONCLUSION:** Compared to previous Canadian studies, both Aboriginal and Euro-Canadian patients demonstrated better control of glycemic and lipid levels, despite their relatively isolated, rural place of residence. Unexpectedly small differences in these physiological measures were observed between the two patient groups. The positive findings are likely a result of high quality, culturally sensitive, interdisciplinary care. Development of interventions is still warranted, particularly a focused intervention with patients with highly elevated glycemic levels.



# A retrospective study examining post diagnosis BMI changes in Breast Cancer Patients in the Algoma Region after the Implementation of Wellness Initiatives

## Presenting Authors

Dr. Silvana Spadafora, Jane Howard, Michela Febbraro

## Authors

Jane Howard, Michela Febbraro, Jasmine Agliani, Dr. Silvana Spadafora

## Affiliations

Algoma Regional Cancer Program, Group Health Centre

## Abstract

Breast Cancer is the most commonly diagnosed cancer among Canadian women. It is the second leading cause of cancer-related death. The majority of breast cancer patients experience significant weight gain after diagnosis. An increased body mass index (BMI) is associated with higher rates of breast cancer recurrence and poorer survival rates and predisposes patients to several other co-morbidities. As a result of this data, the Algoma Regional Cancer Program (ARCP) initiated a five year review examining post diagnosis BMI changes in ARCP breast cancer patients and has implemented a Wellness Class designed to help patients adopt healthy lifestyles. In this class, a physiotherapist, a dietitian, a social worker and nurse collaborate to provide information regarding nutrition and exercise during and post treatment. The aim of this review is to collect ARCP-specific data regarding BMI changes during and post treatment and to determine if the Wellness Class has a positive influence on BMI post diagnosis. Preliminary results show that the first patient cohort, who will be used as a baseline for interpreting the effectiveness of ARCP wellness initiatives, experienced an average gain of 1.27 kg one year post diagnosis. The second cohort experienced a 2 kg loss one year post diagnosis. The third cohort is due to be reviewed within the next 2 months. The review also identified 78% of patients were overweight or obese at diagnosis which is consistent with findings from the literature that women with a BMI greater than 25 are more likely to develop breast cancer. We expect to continue the reviews once yearly for an additional 3 years. It is expected that the next 3 years will show stable or decreased BMI's post diagnosis as patients are encouraged to focus on correcting their poor lifestyle choices present before diagnosis through further development of wellness initiatives.

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# **The Effect of parental perception of their children's weight and Exposure to Information Addressing Health and Weight on Parents' Body Size Perception and Their Strategies for Feeding Their Child**

## **Presenting Author**

Line Tremblay

## **Authors**

Line Tremblay, Tanya Lovsin, Cheryl Zecevic, Stan Koren

## **Affiliations**

Laurentian University, Department of Psychology and Northern Ontario School of Medicine

## **Abstract**

The general objective of this study was to investigate the role of parent's perception of their child's body size and the effect of providing a health oriented message plus information specifying normal weight ranges. This information then was used to gauge strategies used to feed their child, concerns about their child's weight and perception of their own weight. Using a mixed research design combining correlational and experimental methods, 99 parents of 3 to 5-year-old children answered a questionnaire about their socio-demographic characteristics, the child's body composition (Body Mass Index, BMI), body image perception of themselves and their child, and feeding practices. They were then randomly assigned to one of the nine experimental conditions (variables manipulated were information about weight and health and exposure to a child weight model). Results showed that 1) parents misperceived the child's body size with less accuracy found in the group of children who were overweight 2) exposure to information about health changed the perception of parents' body weight in accurate parents but not in inaccurate parents 3) parents' exposed to an overweight child model reported less monitoring of their child's consumption of sweets or other less healthy food than parents assigned to the control group. Our results suggest that exposure to an overweight child model might have an impact on parents' assessment of their child's body size and perception of their feeding practices. We concluded that prevention programs should be implemented in kindergarten and include parents' education about normal body weight as well as information about healthy eating behaviours and effective feeding practices.

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# Ets-1 Promotes Hypoxia Inducible Factor alpha Isoform Target Specificity

## Presenting Author

Chet E. Holterman

## Authors

Chet E. Holterman, Alexandra Franovic, Stephen Lee, and James Uniacke

## Affiliations

University of Ottawa, Faculty of Medicine, Dept of Cellular and Molecular Medicine

## Abstract

Availability of oxygen regulates a variety of biological processes including embryonic development, stem cell maintenance, wound healing, and the manifestation/progression of several disease states. In the context of cancer biology, hypoxia is associated with altered tumour cell metabolism, enhanced proliferation, apoptotic resistance, angiogenesis, and metastasis. Hypoxia Inducible Factors (HIF) are critical regulators of cellular responses to hypoxia. Recent reports demonstrate that HIF1alpha and HIF2alpha exert differential biological effects in response to hypoxia, in part through their ability to activate unique transcriptional targets. While both HIF1alpha and HIF2alpha bind to a common promoter element known as the hypoxia response element (HRE), their ability to transactivate HRE-containing genes appears to be due in part to interactions with unique co-factors. We have recently demonstrated a critical role for Ets-1 in driving expression of transforming growth factor (TGF) alpha, a HIF2alpha specific target gene. Through the use promoter analysis we identified two regions within the TGFalpha promoter that contain adjacent HRE and ETS binding sites (EBS). Dual luciferase assays demonstrate that this region is specifically responsive to HIF2alpha in an Ets-1 dependent manner. Importantly, inhibition of Ets-1 through shRNA blocks expression of endogenous TGFalpha. Furthermore, we demonstrate that HIF2alpha but not HIF1alpha specifically interacts with Ets-1 via co-immunoprecipitation. Finally, we demonstrate that both Ets-1 and HIF2alpha bind directly to the endogenous TGFalpha promoter through chromatin immunoprecipitation. These results reveal a previously unappreciated role for Ets-1 in mediating hypoxic responses through interaction with HIF2alpha. Furthermore, through preliminary co-immunoprecipitation experiments we demonstrate the presence of other potential proteins that associate specifically with HIF2alpha further supporting the notion that target specificity is achieved through interactions with specific co-factors.

# Secure Patient Information Exchange (SPIE) Project

## Presenting Author

David Topps

## Authors

Topps, D; Topps, M; Ellaway, R; Parkkari, M; Ranger, N; Crichton, T; Almond, R.

## Affiliations

NOSM Academic FHT, City of Lakes FHT, Ft William FHT

## Abstract

As primary health care becomes more complex healthcare teams need to be able to communicate and interact effectively and efficiently. An examination of interprofessional teams found that communication within the team was an indicator for positive team working. A recent environmental scan by the North West Local Health Integration Network found that health care professionals reported that communication was a key element to a successful interprofessional team. Effective interprofessional communication in information-intensive environments is critical to achieving optimal patient care. Another recent study examining the perceptions of effective primary health care team determined communication as the “essential factor” While there are now many communications modalities available, there is still a tendency to rely on traditional methods such as telephone and fax even though patient data requires more secure approaches to communication. Little work has been done on how clinicians communicate in an interprofessional environment. This project addresses the following questions: • What communication technologies and methods are being utilized in the family health team setting? • Which technologies and methods are perceived to facilitate and to obstruct interprofessional communication internally and to external service providers? • What are the barriers to incorporating new technologies into the workplace? • Will information and training sessions increase receptivity and adoption of new technological forms? Participants are provided with informational sessions about such methods and supported access to some selected tools and services. The study employs a mixed methods approach, looking in particular at the factors that enable and inhibit the use of communications technology within an academic family health team, with surveys and qualitative semi-structured interviews pre- and post- the informational sessions. Early results and analysis from the project will be presented.

# Analysing the Impacts of an Educational Intervention: a case study

## Presenting Author

Rachel Ellaway

## Authors

Rachel Ellaway, David Topps, Jacques Abourbih, Susan James, Richard Witham, Andrea Smith

## Affiliations

NOSM

## Abstract

Education is both inexact and partial as a science, not least because it has failed to establish causality between intervention and result for the individual learner. Despite this, health professions educational research attempts to follow positivist models by concentrating on just a few measures, in particular educational efficacy measured as improvements in test scores, retention or other forms of performance. This is in large part due to the dominance of positivist medical research and a reluctance to accept anything 'less' than the control/intervention type studies. This paper describes the application of a holistic impact evaluation framework to the execution of the Pathways in Narrative Education (PINE) project which ran from November 2008 to October 2009 and was based around the creation of 60 virtual patient cases covering a range of healthcare topics, all with a northern Ontario flavour. The project has led to the uptake of screen-based simulation for teaching and learning in the pan-Ontario Midwifery program, as well as the more gradual adoption of this educational modality in programs at NOSM and in those of the other partners in the project. The framework that we use models both the positive and negative impacts of interventions in the areas of pedagogy, granularity, freedom, interaction, resources, politics and distal factors. This allows us to consider the construction of meaning and significance around an intervention as well as more granular effects such as economics, shifts in stakeholders perceptions and authority, and changes in pace and form that follow the intervention. We will demonstrate the importance of taking broad and holistic perspectives in evaluating interventions such as the PINE Project and paying attention to non-pedagogical factors in doing so.



# **“It’s Like Being on a Rollercoaster”: Resiliencies and Challenges of Raising a Child with FASD in Northern Ontario**

## **Presenting Author**

Shelley Watson

## **Authors**

Shelley L. Watson, Elisa Radford-Paz

## **Affiliations**

Department of Psychology, Laurentian University

## **Abstract**

Fetal Alcohol Spectrum Disorder (FASD) is an umbrella term used in North America to describe the continuum of effects caused by prenatal exposure to alcohol. FASD has been identified as a major public health concern, with a Canadian incidence of 1 to 6 in 1000 live births (Stade, Ungar, Stevens, Beyene, & Koren, 2006). Each person with FASD has a mother who used alcohol to some extent, but rearing families are very variable (Streissguth et al., 2004). Families play a crucial role in the prevention of secondary disabilities, yet little is known about the experience of raising a child with FASD, whether as a birth parent or adoptive parent. Northern Ontario is considered a high-risk area for FASD and if we can discover how families of children with FASD are dealing with caregiving, supports can be tailored to support families and prevent further challenges. A mixed methods approach was employed in the study, consisting of interviews and standardized questionnaires assessing stressors and resources. Employing a basic interpretive approach (Merriam, 2002), qualitative interviews were conducted with parents of individuals with FASD, including mothers, fathers, adoptive, foster, and birth parents. Data are still being collected and analyzed, but preliminary analyses suggest that families of children with FASD face enormous struggles when trying to access medical, psychiatric, and educational supports for their child. Many individuals with FASD are living in foster or adoptive homes, presenting unique legal issues, as well as the need to deal with further community agencies. Families expressed concern about the illegal behaviours exhibited by their child and felt enormous fear for the future in terms of incarceration. Many families felt anger that FASD is a preventable disability, yet their child has lifelong challenges. Despite the stressors experienced, family members showed extreme resiliency in dealing with multiple challenges.

# A New Rule of Thumb for 2x2 Tables with Low Expected Counts

## Presenting Author

Bruce Weaver

## Authors

Bruce Weaver

## Affiliations

Northern Ontario School of Medicine; Centre for Research on Safe Driving

## Abstract

The 2x2 table is widely used in many areas of science, including health-related research. Pearson's chi-squared test of association is frequently used to analyze the data in 2x2 tables. But it is an approximate test, and only works well under certain conditions. The standard advice regarding use of Pearson's chi-square for 2x2 tables is that: 1) Each observation must be independent of all others; 2) All expected counts must be 5 or greater; and 3) If any expected counts are less than 5, some other test should be used. The most frequently recommended alternative is Fisher's exact test. However, the minimum expected count of 5 mentioned above appears to have been an arbitrary choice, and Cochran (1952) suggested it may need to be modified when new evidence became available. A recent article by Campbell (2007) provides some relevant evidence. Campbell used computationally intense methods to evaluate the performance of seven different tests for 2x2 tables under a wide range of conditions. This presentation focuses on 3 of those tests: Pearson's chi-squared test of association, Fisher's exact test, and the 'N-1' chi-square. Campbell's findings demonstrate quite clearly that for 2x2 tables arising from either comparative trials or cross-sectional studies, 1) Fisher's exact test is too conservative (i.e., the actual proportion of Type I errors is well below the nominal alpha level), and 2) that the 'N-1' chi-square test performs very well when all expected counts are equal to 1 or more. Therefore, Campbell recommends a new rule of thumb for 2x2 tables: If all expected counts are equal to 1 or more, use the 'N-1' chi-square; otherwise, use Fisher's exact test. Adoption of this rule will substantially increase power to detect associations for 2x2 tables with expected counts between 1 and 5.

# Poster Abstracts.

**The research work in the following abstracts are all original and innovative. The poster presentations are available for viewing throughout the conference.**

**Abstracts have been published exactly as submitted.**

# **Sex, Sexuality, Procreation -- Challenges in Teen Age and Adult Years in Children born with Complex Lower Urogenital Anomalies**

## **Presenting Author**

Emmanuel Abara

## **Authors**

Emmanuel O Abara

## **Affiliations**

York Central Hospital, Richmond Hill

## **Abstract**

**INTRODUCTION & OBJECTIVE** Surgeons endeavour to reconstruct lower genitourinary anomalies early in childhood. Considerable success is achieved in restoring functionality but these individuals must make various lifestyle adjustments to cope with numerous challenges. Such patients managed in a Community Urology practice over the past 20 years were studied to identify these challenges and the strategies used in their management. Results of treatment as they affect Sex, Sexuality and Procreation were examined in 4 cases.

**METHOD & MATERIALS.** Records from hospitals and Physicians' offices were reviewed for demographic data, surgical procedures and diagnostic imaging studies performed and follow up patterns. Parents when available were interviewed. For this report, complex anomalies were those who had more than 2 attempts at corrective surgery.

**RESULTS** The 4 cases identified out of 15 and lessons learned are presented (1) Baby born with cloacal anomaly, imperforate hymen and solitary left kidney. After numerous surgeries she got married, conceived twice, 2 living sons delivered by cesarean section. Tubal ligation achieved birth control. At 40, she is happily married and grateful for mother's and family support. (2) Baby boy born with complex hypospadias had numerous surgeries in early life. In his late teens, required further surgeries to correct multiple urethral diverticulae, strictures and stones. Graduated from University, got married. Currently challenged by oligospermia and fertility issues at 26. (3) Baby born with urethral duplication and genital anomaly. With parental consent, baby was raised as a girl. At age 14, she requested for a gender re assignment. With the support of the parents, the urologist and the legal system her request was granted. (4) Baby born with Bladder Exstrophy. Multiple reconstructive surgeries achieved good body image and function. At 25, she is in a sexual relationship, carrying out self catheterization with occasional UTIs.

**CONCLUSION** Complex lower urogenital anomalies can present challenges and long term lifestyle adjustments. Parental support, excellent reconstructive surgeries, ongoing urological/medical care in adulthood can produce good results. Patient co operation and resilience are paramount.

# Multidisciplinary Interventions for a Rural Primary Care Setting: Supporting Aboriginal and non-Aboriginal patients with type II diabetes in attaining glycemic, blood pressure and lipid control

**Presenting Author**

Kathleen Anderson

**Authors**

Kathleen Anderson, Marion Maar PhD, Danusia Gzik MD

**Affiliations**

Northern Ontario School of Medicine

**Abstract**

In the context of a comprehensive chart review that examined diabetes screening, control and management of glycemic levels, blood pressure and lipids of Aboriginal and non-Aboriginal patients with type II diabetes on Manitoulin Island, this study suggests interventions which may further improve these clinical benchmarks. Differences between the Aboriginal and non-Aboriginal groups were found to be significant for glycemic management whereas blood pressure and lipid management demonstrated minor variations. Though results were comparable to – and at times even outperformed - national data, opportunities must be sought to further improve management of type II diabetes in this rural Northern Ontario setting, particularly targeting those patients with highly elevated glucose levels. The aim of this study was to conduct a literature review of quality of care interventions and to determine the feasibility of integrating these interventions into the rural primary care practices on Manitoulin Island. Proven quality of care interventions were discussed with local health care providers and community partners in focus groups. Specifically, the intervention approaches reviewed included expanding the role of each team member, creating office-based diabetes protocols, group session appointments, case management, follow-up patient support systems and treatment initiatives to encourage improved patient self-management. Results indicate, that utilization of a diverse group of health care professionals with the patient at the center of the team, may improve achievements of treatment goals.

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# Regulation of the Phenylethanolamine N-methyltransferase Gene by Nitric Oxide

## Presenting Author

Dominique Ansell

## Authors

Dominique Ansell, James A. G. Crispo, James Dickieson, Aidan Wharton, Dr. D. A MacLean, Dr. T.C. Tai

## Affiliations

Laurentian University Department of Biology, Department of Chemistry & Biochemistry, Northern Ontario School of Medicine, Medical Sciences Division

## Abstract

Nitric oxide (NO) is a highly reactive radical which functions as an intercellular signaling molecule that plays an important role in physiological processes which includes the modulation and synthesis of catecholamines (CAs). In this study, the role of NO in regulating the epinephrine biosynthetic enzyme, phenylethanolamine N-methyltransferase (PNMT), was examined. In addition, the potential of NO in modulating the neural and hormonal regulation of the PNMT gene was also investigated by employing an in vitro cell culture model using PC12 cells. Treatment of PC12 cells transfected with an 893 bp rat PNMT promoter-luciferase reporter gene construct with the NO donor, sodium nitroprusside (SNP), for 6 hours increased PNMT promoter activity approximately 2.5-fold ( $p < 0.001$ ). PNMT promoter analysis showed that stimulation by NO involves DNA sequences between -893 and -60 bp. NO activation of the PNMT promoter appeared to be mediated in part by Egr-1 through its consensus binding element in the PNMT promoter. Egr-1 protein levels were elevated by SNP treatment ( $p < 0.01$ ) and mutation of the -165 bp Egr-1 consensus binding site attenuated SNP promoter activation. The impact of NO on hormonal and neural regulation of the PNMT promoter was also investigated. Simultaneous treatment of transfected cells with SNP and the synthetic glucocorticoid, dexamethasone (DEX) synergistically activated the PNMT promoter approximately 4.0-fold ( $p < 0.001$ ). Additionally, simultaneous treatment of cells with SNP and the cholinergic agonist, carbamylcholine (CCh) further potentiated PNMT promoter activation. Consistent with these results, the GR nuclear protein levels were increased approximately 2.0-fold ( $p < 0.001$ ) under SNP treatment and approximately 5.0-fold ( $p < 0.001$ ) under simultaneous treatment of DEX and NO. This study demonstrates that NO is capable of activating the PNMT gene promoter through activation of Egr-1 and is capable of modulating the glucocorticoid and cholinergic stimulation of the PNMT promoter.

# Development of carboplatin, docetaxel, and combined carboplatin/docetaxel drug resistant ovarian cancer cell lines

## Presenting Author

Stephen Armstrong

## Authors

1Armstrong S., 1,2,3Parissenti A., 3Guo B., 1,2Lannér C

## Affiliations

1=Laurentian University; 2=Northern Ontario School of Medicine; 3=Sudbury Regional Cancer Centre

## Abstract

Carboplatin and docetaxel are two standard chemotherapeutics used to treat ovarian cancer. Patients often exhibit resistance to single agent therapy, and dual agent therapy was developed to overcome this resistance. However, resistance still commonly occurs in dual agent therapy. It is known that gene expression changes occur in single agent resistance, but it is not known whether resistance to combined chemotherapy involves novel gene expression changes or if resistance is only the sum of changes seen in single agent resistant cells. Using the chemotherapy-naïve A2780 ovarian cancer cell line, three resistant cell lines were generated, including A2780CBN (carboplatin resistant), A2780DXL (docetaxel resistant), and A2780CBNDXL (carboplatin and docetaxel resistant) by exposing A2780 cells to increasing concentrations of drug until a dose is reached where no further resistance is achieved. The A2780 parent line was co-cultured alongside selection to control for gene expression changes due to continuous culture. The concentration of drug at which 50% of cells die (IC<sub>50</sub>) was measured for each resistant cell line using a clonogenic assay. The IC<sub>50</sub> was calculated as a 50% survival fraction plotted against the log of drug (M). The IC<sub>50</sub> of A2780CBN is 8x10<sup>-5</sup>M, 13-fold more resistant than the parent line. The IC<sub>50</sub> of A2780DXL is 3x10<sup>-7</sup>M, 5000-fold more resistant. The IC<sub>50</sub> of A2780CBNDXL is 8x10<sup>-6</sup>M for carboplatin and 8x10<sup>-9</sup>M for docetaxel, 12-fold more resistant. Total RNA was isolated from A2780DXL and its co-cultured counterpart and hybridized to Agilent 4x44k total human genome arrays to study gene expression. There were 1827 gene expression changes, with 1061 genes up regulated and 766 genes down regulated in the resistant line. Microarray analysis will also be performed on the A2780CBN and A2780CBNDXL lines. Gene expression changes associated with dual drug resistance may be used to develop clinically relevant biomarkers for carboplatin/docetaxel resistance in ovarian cancer.

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# Behavioural Neuropsychopharmacology of Omega-3 PUFA

## Presenting Author

Slim Babay

## Authors

Slim Babay(1); Imran Malik(1); Brian M. Ross (1, 2)

## Affiliations

(1) Department of Biology, Lakehead University, 955 Oliver Rd, Thunder Bay, Ontario, P7B 5E1; (2) Northern Ontario School of Medicine (NOSM), Lakehead University, 955 Oliver Rd, Thunder Bay, Ontario, P7B 5E1

## 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. Recent 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, liver, and blood was also performed to confirm the uptake of the supplemented omega-3 PUFA.

# Coordination of Multidisciplinary Cancer Care Rounds to Ensure Quality & Safe Patient Care

## Presenting Author

Mary Anne Beith

## Authors

Mary Anne Beith, Dr. Malcolm Brigden, Mary Ellen Clark, Kim Aslett

## Abstract

In a fast paced medical environment, attempts at comprehensive patient care can still result in treatment by segmented departments and programs. The Sault Area Hospital and Algoma District Cancer Program have developed a biweekly comprehensive Multidisciplinary Cancer Care Rounds to bridge the communication gap within the system and provide a comprehensive approach to quality patient care. The meetings are attended locally by surgeons, oncologists, the radiologist, the pathologist, Northern Ontario School of Medicine students, the librarian, nurse managers & nurse educators and a variety of health care professionals in an auditing capacity. Remotely, radiation oncologists from a sister location, 300 kilometers east, join via the Telehealth System to participate in discussion and treatment options available through their facility . At the meetings, case specific educational presentations are provided and visual MRI imaging is available using the Enterprise PAC System facilitated by the Radiologist. In addition, the Pathologist prepares and presents pertinent slides in support of case discussion. An effort is made to have one concise 5 to 10 minute didactic update as part of each multidisciplinary conference. These are subsequently placed in an educational database. The potential value of the MCC Round process includes: 1) educational opportunity for existing health care professionals as well as medical and surgical residents 2) improved communications / networking with various specialties 3) quality comprehensive and safe patient care 4) CME credits for physicians 5) provincial tracking of MCC conferences in a multi LHIN database and 6) specific case management advice. This poster presentation describes the various process components that are ultimately coordinated and integrated in order to create the final product.

# **Incorporating Molecular Epidemiology Research into Clinical Treatment for Cancer at the Northeastern Ontario Regional Cancer Program of the Hôpital régional de Sudbury Regional Hospital: The EPIC study.**

**Presenting Author**

Dr. Julie Bowen

**Authors**

Dr. Julie Bowen; Dr. Randy Bissett; Mary Bewick MSc; Mike Conlon PhD

**Affiliations**

Dr. Julie Bowen and Dr. Randy Bissett- Radiation Oncology, Regional Cancer Program of the Hôpital régional de Sudbury Regional Hospital; Mary Bewick, Mike Conlon- Epidemiology, Outcomes, & Evaluation, Regional Cancer Program of the Hôpital régional de Sudbury Regional Hospital

**Abstract**

Men who are being treated for prostate cancer using External Beam Radiation Therapy (EBRT) at the Regional Cancer Program of the Hôpital régional de Sudbury Regional Hospital are invited to participate in this research project. The project was designed to measure: 1) Health-Related Quality of Life (HRQOL) and 2) the association of Single Nucleotide Polymorphisms (SNPs) with development of toxicity or decreased quality of life, from radiation treatment in men with intermediate to high risk prostate cancer. Participation involves completing the Expanded Prostate Index Composite (EPIC), a valid and reliable tool specifically designed to assess HRQOL in men who receive treatment for prostate cancer, at three time points (prior to treatment, end of treatment, two years post treatment). Men also provide a saliva sample for genetic analyses, that will allow researchers to assess variant genotypes and the association with toxicity from treatment. Nine men (to date) have completed the EPIC prior to treatment and at the end of treatment. The average EPIC- Bowel domain summary score at baseline was 92.5 and had decreased significantly to 79.4 at end of treatment. All genetic samples taken are of sufficient quality for genetic analyses. The potential to determine who may be at risk for development of toxicity or substantially decreased quality of life may help clinicians and patients better determine appropriate treatment strategies.

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# Evaluation of an Educational Presentation Designed to Increase Healthcare Professionals' Cultural Knowledge at HRSRH

## Presenting Author

Susan Boyko

## Authors

Muhammad Ali Sarfraz 1; Susan Boyko 1, 2

## Affiliations

1 Regional Cancer Program; 2 Human Sciences Division - NOSM

## Abstract

Canada, with a population of over thirty three million people, represents more than 200 diverse ethnic origins. Therefore, it is important to recognize our patients' diverse values, beliefs and behaviors, and tailor care delivery to better meet their social, cultural and linguistic needs. From the literature, there is excellent empirical evidence that demonstrates that educating health care professionals in cross-cultural care, improves their knowledge, attitude and skills in dealing with different ethnic patients. Educating health care professionals concerning various cultures creates a health care system and workforce that is capable of delivering the highest-quality care to every patient regardless of race, ethnicity, or culture, as well as enhancing the working environment for health care professionals. The purpose of this research study is to evaluate the effectiveness of an educational intervention to increase the Aboriginal and Francophone cultural knowledge of health care professionals at the Regional Cancer Program (RCP) of the Hôpital Régional de Sudbury Regional Hospital (HRSRH), and ultimately to increase cultural competency at the centre. A questionnaire designed to maintain the anonymity of the respondents will be administered to approximately 100 different health care professional volunteers at the Regional Cancer Program before and after the intervention. The intervention consists of a video based presentation which will provide information about Aboriginal and Francophone cultures through simulated case-based scenarios. The results from the pre and post intervention questionnaires, which consist of both quantitative and qualitative questions on Francophone and Aboriginal cultures, will be used to evaluate the effectiveness of the intervention. The quantitative data will be used to evaluate the effectiveness of the intervention tool, while the qualitative data will be used to determine any improvements that can be made to accommodate our different ethnic patients.

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# The effects of flaxseed oil on cell growth of malignant vs non-malignant cells

## Presenting Author

Alison Buckner

## Authors

Alison Buckner (1), Carly Buckner (1), Mamdouh Abou-Zaid (4), Robert Lafrenie (1,2,3)

## Affiliations

(1) Biomolecular Sciences-Laurentian University, (2) Sudbury Regional Hospital, (3) Northern Ontario School of Medicine, (4) Great Lakes Forestry Centre

## Abstract

Flaxseed oil is widely recognized for its exceptional nutritional value, high concentration of fiber-based lignans and large amounts of omega fatty acids. It is one of a generic group of functional foods often taken by cancer patients as a potential treatment. We have examined the anti-cancer effects of flaxseed oil by studying its direct effects on cancer cell growth in vitro. A total of six different oils, including flaxseed oil (olive, sunflower, canola, sesame and grapeseed), were characterized by HPLC and GC/MS analysis and used to treat cells. Treatment with flaxseed oil was associated with a rapid slowing of growth by the aggressive murine melanoma cell line B16-BL6. Treatment of B16-BL6 with each of the other characterized oils, showed no significant change in cell growth. Interestingly, non-malignant cell lines such as HSG cells, showed an increase in cell growth following flaxseed treatment. Treatment with flaxseed oil inhibited growth of all 6 tested malignant cells in a dose-dependent manner and did not inhibit growth of non-malignant cell lines. DNA laddering and acridine-orange staining showed that the flaxseed treated cells were undergoing apoptosis. These results indicate that flaxseed oil may be a specific agent that can aid in the optimization of cancer treatment regimes. Flaxseed oil has the potential to improve the health of patients and provide a source of anti-cancer drugs.

# **The Quiet Violence – Findings from Sudbury Ontario Nurse’s Association Workshop, May 14, 2009**

## **Presenting Author**

Carol Cameletti

## **Authors**

Carol Cameletti RN; Linda Merters, MertesTechnology

## **Affiliations**

ONA 13, RNAO, Faculty at NOSM

## **Abstract**

In May 2009, a workshop was held in Sudbury relating to the topic of bullying and lack of respect in the workplace. Titled “The Quiet Violence”, the event was facilitated by Carol Cameletti, R.N. and faculty member at NOSM. Sponsored by ONA Local 13, allied health care workers were invited to participate, the majority of the attendees being registered nurses. The guest speaker used Audience Response Technology (ART) to gather statistics from the participants throughout the day and with immediate feedback available, group discussions on the findings ensued. Later that day, the venue was moved to NOSM where the presentation was video-conferenced to interested health care communities in Northern Ontario. The results of the workshop survey confirmed that the problem of bullying in the workplace is very high in contributing to employee stress and burn-out. Everyone had experienced the problem directly or witnessed abusive behaviours. In sharing their experiences, it was revealed that most instances of reporting bullying behaviour were not handled satisfactorily, to the degree that further action was rarely pursued. Healthy, supportive workplaces were felt to be critical to a worker’s well-being and influenced their relationships not only within the health-care organization, but with family and community as well. Participants revealed that it was their own co-workers who were responsible for such negative behaviour, much higher statistically than instances with management or physicians. Another strong opinion was that participants did not feel comfortable or secure in reporting abusive behaviours to their management. Follow-up measures were often ineffectual, or delayed. The health care workers at the workshop indicated strong support for further research and policy development. They also expressed a willingness to share their experiences from a Northern Ontario perspective and the specific challenges they face in that region. Further work to develop and implement such policies is consistent with Ministry of Health and Long Term Care objectives, as it pertains to its mandate to ensure healthy work environments and the front-line wants to contribute to its creation of new policies. Publishing the data as a feedback mechanism to the participants is a logical next step in the process to further understanding and policy development.

# Undergraduate Research in Clinical Placement

## Presenting Author

Dianne Cameron

## Authors

Dianne Cameron

## Affiliations

Laurentian University

## Abstract

Students in the accredited Radiation Therapy education program at Laurentian spend the final year of their 4-year undergraduate program in clinical placement in participating cancer centres. To fulfill their professional requirements, they must demonstrate competencies in research to promote evidence based practice and decision making, including conducting literature reviews, understanding research methodology, data collection and analysis of statistics, and ethical issues involved with research. To this end, each student undertakes a clinical research project culminating in an undergraduate thesis and oral presentation over 6-7 months beginning in Sept. and ending in March. Of the more than 50 projects undertaken in the last 4 years of the program, most have required full or expedited ethics approval by both the Laurentian and local hospital REBs and have been clinically relevant studies which have made positive contributions to patient care and practice in the cancer centres involved. Considering the short time scale available for these projects, their remarkable success is dependent on excellent support in the centres involved, preparation of the students for clinical research, and coordination among participants in multiple centres. This presentation reviews some of the major problems encountered during the evolution of undergraduate student research in the clinical setting, outlines strategies for preparing students for completion of successful and relevant clinical research projects, and highlights some of the outstanding projects undertaken.

# Can N-acetylcysteine protect against *Pseudomonas aeruginosa*-induced lung epithelial apoptosis?

## Presenting Author

Ashley M Cerqueira

## Authors

Ashley M Cerqueira (1), Marina Ulanova (1,2)

## Affiliations

(1) Lakehead University, (2) Northern Ontario School of Medicine

## Abstract

*Pseudomonas aeruginosa* is a common opportunistic pathogen capable of colonizing the airways of immunocompromised individuals. *P. aeruginosa* is the major cause of chronic pulmonary disease in cystic fibrosis (CF) patients. Generation of reactive oxygen species (ROS) in the process of *P. aeruginosa* infection significantly contributes to the disease pathogenesis. Infected cells undergo oxidative stress when cellular antioxidants are unable to effectively scavenge and detoxify ROS. This imbalance between ROS and antioxidants can lead to apoptosis of airway epithelial cells that contributes to lung damage. Our goal was to test the hypothesis that the antioxidant N-acetylcysteine (NAC) can prevent the activation of the caspase cascade initiating the apoptotic pathway in *P. aeruginosa*-infected lung epithelial cells. A549 cells were pre-treated with NAC for 4 h followed by stimulation with either hydrogen peroxide or *P. aeruginosa* reference strain PAK for 2 h. Activation of caspases 3 and 7 was used as an indicator of apoptosis and quantified using a fluorescence-based system. Apoptosis induced by hydrogen peroxide treatment of A549 cells was significantly down-regulated by NAC. In contrast, apoptosis caused by *P. aeruginosa* infection was much higher and not decreased by NAC. The mechanisms involved in apoptosis of *P. aeruginosa*-infected cells are more complex than those caused by hydrogen peroxide and are not limited by the oxidative stress-mediated pathways. As we have previously found that cellular responses to *P. aeruginosa* obtained from CF patients are reduced compared to PAK, we will explore the possibility of using NAC to decrease apoptosis of cells infected with the clinical isolates. Funding: NSERC Discovery Grant, Ontario Lung Association, and NOSM NOSMFA Research Development Award.

# Evaluation of Prescribing Adherence to Recommended Drug Therapy for Acute Myocardial Infarction Patients Discharged from an Ontario Hospital

## Presenting Author

Jeff Chan

## Authors

Jeff Chan

## Affiliations

Thunder Bay Regional Health Sciences Centre; Northern Ontario School of Medicine

## Abstract

Objective: 1. Determine the percentage of acute myocardial infarction (AMI)/acute coronary syndrome (ACS) patients receiving recommended drug therapies on the day of discharge from a hospital. 2. Determine the utility of using a health care data company to identify medication usage patterns in a selected hospital population. Method: Patients 18 years of age or older, admitted from Apr 1, 2009 to September 30, 2009 and whose reason for admission was explicitly described as “acute coronary syndrome”, “ACS”, “acute myocardial infarction”, or “AMI” and were included in the study. We assumed that the medications dispensed to patients on the final day of hospital stay would be prescribed to those patients upon discharge. The data was then compared to benchmarks for use of recommended medication following AMI or ACS. Results: The study cohort included 178 patient visits to the hospital for the treatment of AMI or ACS and met the inclusion criteria. 156 (87.6%) patients received ASA/clopidogrel, 102 (57.3%) received angiotensin converting enzyme inhibitor (ACEI) or angiotensin receptor blocker (ARB), 140 (78.7% received a beta-blocker (BB), and 136 (76.4%) received a statin. 68 (38.2%) patients received all of the target medications, 66 (37.1%) received three of the medications, 27 (15.2%) received two of the medications, 10 (5.6%) received one of the medications and 7 (3.9%) received no target medications. Conclusions: Patients presenting with AMI or ACS do not appear to be fully meeting benchmarks for being prescribed anti-platelet agents, BB or ACEI/ARB upon discharge. Patients do appear to meet benchmarks for being prescribed a statin upon discharge. Less than 40% of patients received all target medications. A healthcare data company was able to provide data to identify medication usage patterns in this hospital population. Further investigation is required to determine the cause for these medications to not be prescribed upon discharge.

# Residential School Syndrome: An Unrecognized Indigenous Cultural Mental Health Problem?

## Presenting Author

Bobby M Chaudhuri

## Authors

Bobby M Chaudhuri MD, Melissa Crawford MED-3

## Abstract

The Policy of Residential Schools created over many generations a forced deconstruction of once proud peoples spread across North America. With the progressive migration of Europeans to this “New World” created problem of equitable co-existence between the Indigenous population and the European settlers. Over the last two centuries in Canada Residential Schools managed to fragment the very heart of the cultural identity of most Native bands by segregating children from parents and only taught children in a Christian format with vocational skills. This assimilation created the beginnings of self doubt in the self identity within these very same children. By the time they left these schools to return to their communities they were having difficulties in readjusting to “Reserve Life” and when they started to have children of their own who were “taken away” they never learned how to parent. This became much more prominent as a problem, residential schools started closing in the mid-1970’s and the first grandparents, parents and children of this generation are experiencing a wide variety of psychological consequences to this lack of parenting skills or true family life where parents are uncertain as to have children, pay attention to children and raise children in the older traditional ways which have become part of the distant memory. Other psychological manifestations of these problems include maladaptive coping mechanisms through drug and alcohol abuse, depression, anxiety disorders and suicide. One can make a compelling comparison between this proposed syndrome and the individuals of the dominate culture who have experienced traumatic events or refugees from a traumatic background. This discussion will focus on the old narratives from indigenous cultures have secret diaries and will also examine possible ways of presenting an alternate model for caring for these individuals.



# How Longitudinal Integrated Clerkships (LICs) Increase Medical Student Professional Development and Identity

## Presenting Author

Bobby M Chaudhuri

## Authors

Bobby M Chaudhuri MD, Anne Robinson, MD

## Abstract

### Background and Purpose

NOSM (Northern Ontario School of Medicine) has been involved in running LICs successfully over the last two years and is running its third iteration this year. At NOSM, they are Community-based LICs (or the Phase 2 year) where twelve different communities are engaged and responsible for the 8-month education of each of the third-year medical students from the two main campuses in Thunder Bay and Sudbury (year one of the NOSM Clerkship).

### Methodology

Phase Two is framed as the Comprehensive Community Clerkship (CCC) that provides each student with experiences in Internal Medicine, Surgery, Women's Health, Child Health, Mental Health and Family Medicine as their core disciplines from the perspective of the Primary Care physician in these under-served, northern, rural communities.

### Results

This service not only fulfills NOSM's social accountability mandate of helping with northern and rural health but also provides students the opportunity to develop independence in caring for patients and developing professional knowledge, skills and attitudes in this transitional year of book work to patient work under the guidance of one or many community preceptors. Each student must complete a presentation at the end of the 8-month period termed a PRRE (Personal Reflection and Research Exercise) which they must pass to continue to 4th year (Phase 3 – a traditional hospital based clerkship model).

### Discussions and Conclusions

The presentation will focus on the PRRE as it pertains to the development of the medical student evolution in progress to a professional identity. Case Studies presented here will demonstrate medical students' grasps of empathy, compassion, advocacy and sense of duty to care.

# Relationships Between Perfectionism and Coping Strategies as Seen Through Measures of Anxiety Sensitivity, and Intolerance of Uncertainty

## Presenting Author

Mihaela Dirlea

## Authors

Mihaela Dirlea<sup>1</sup>, Dina Tsirgielis<sup>1</sup>, Munira Mohamed<sup>1</sup>, Monica Vermani<sup>1,3</sup>, Catherine Cameron<sup>1</sup>, Irvin Epstein<sup>1,2</sup>, Christina Iorio<sup>1,3</sup>, Martin Katzman<sup>1,2,3,4</sup>

## Affiliations

<sup>1</sup> START Clinic for Mood and Anxiety Disorders <sup>2</sup> Department of Psychiatry, University of Toronto <sup>3</sup> Department of Psychology, Lakehead University <sup>4</sup> Northern Ontario School of Medicine

## Abstract

The current study explored potential correlations between the subtypes of perfectionism (MPS scale), the subtypes of coping strategies (CISS scale), the degree of Anxiety Sensitivity (ASI scale), and intolerance to uncertainty (IUS scale). It was hypothesized that those who had greater difficulties with physical symptoms, and also experienced a catastrophic fear of physical symptoms, would score higher in self-oriented perfectionism (setting higher standards for themselves) and also higher on task-oriented coping (responding to stressful events through problem resolution or cognitive reframing) than others. A second hypothesis was that those who scored highly on socially-prescribed perfectionism, (i.e. those who perceive strong pressures from others to personally succeed), would also score highly in emotion-oriented coping; which occurs when individuals respond to stressful events by directing the response to the self rather than to the task at hand. Participants in the current study include patients who were referred to a tertiary care clinic (n=324). The data was collected upon their first visit at the clinic prior to the commencement of any treatment measures. The results fail to support the first hypothesis, as anxiety sensitivity was not found to significantly correlate with either self-oriented perfectionism or task-oriented coping. However, analyses support the second hypothesis that socially-prescribed perfectionism correlates positively with emotion-oriented coping ( $r=.427$ ;  $p<.01$ ). Additionally, intolerance of uncertainty was found to correlate positively with both socially-prescribed perfectionism ( $r=.221$ ;  $p<.01$ ), and emotion-oriented coping ( $r=.374$ ;  $p<.01$ ). These findings suggest potential relationships between factors that underlie the development of the anxiety disorders.

# A Community-Based Northern Ontario Opiate Addiction Treatment Program: A Comprehensive Qualitative and Quantitative Analysis

**Presenting Author**

Mr. Kenneth Euler

**Authors**

Dr. Sandra Stewart, Kenneth Euler, Dr. Ralph Dell'Aquila

**Affiliations**

Northeast Mental Health Centre; Northern Ontario School of Medicine

**Abstract**

The results of a comprehensive qualitative and quantitative review of a community-based program to treat opiate addiction will be presented. A complete description of collected patient demographic and other indicator variables; variables which correlate with long-term retention in the program and a variety of clinically significant outcome measures will be highlighted. Clinical challenges and successes achieved in the operation of this program will also be discussed, in addition to recommendations for future program planning and evaluation of community-based opiate addiction treatment programs.

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# Nitric oxide plays an important role in interstitially mediating vasodilation during skeletal muscle reperfusion following femoral occlusion.

## Presenting Author

Sergio Fabris

## Authors

Sergio Fabris, Ashley Smith, Brittney Parlett and David MacLean

## Affiliations

Laurentian University

## Abstract

The purpose of the present study was to examine the effects of ischemia-reperfusion on the interstitial concentrations of nitric oxide (NO) and adenosine (Ado). Eight anesthetized rats had microdialysis fibers inserted into the gastrocnemius muscle of each leg and perfused with Ringers (control, n = 16 probes) or 500  $\mu$ M AOPCP (5'-ectonucleotidase inhibitor, n = 16 probes) at a rate of 5  $\mu$ L/min. Following baseline collections the femoral artery of both legs were clamped for 60 min (samples collected at 20, 40 and 60 min) and then removed (samples collected after 20 min of reperfusion). During Ringers perfusion there were no increases in interstitial NO from baseline ( $4.2 \pm 0.4$   $\mu$ M) throughout ischemia but NO was elevated ( $P < 0.05$ ) following 20 min of reperfusion ( $5.4 \pm 0.5$   $\mu$ M). AOPCP treatment resulted in an elevation ( $P < 0.05$ ) in NO compared to Ringers from  $4.3 \pm 0.6$   $\mu$ M to  $5.5 \pm 0.5$   $\mu$ M prior to occlusion, but no further increases in NO were observed during ischemia, but NO was further elevated ( $P < 0.05$ ) following 20 min of reperfusion ( $6.5 \pm 0.6$   $\mu$ M). Interstitial NO concentrations were all higher ( $P < 0.05$ ) during AOPCP treatment compared to Ringers at all time points throughout the experiment. There were no changes in interstitial Ado during ischemia or reperfusion. These data clearly show that during femoral occlusion there is no significant elevation in interstitial NO or Ado, but NO is elevated during reperfusion. Additionally, NO is higher during ischemia and reperfusion when Ado production is inhibited. These data suggest that NO plays a primary role in interstitially mediated vasodilation in skeletal muscle during recovery from ischemia as compared to Ado. Supported by NSERC

# Assessment of Attitude Changes in Undergraduate Medical Learners

## Presenting Author

Siobhan Farrell

## Authors

Siobhan Farrell, Dr. Bob Chaudhuri, David Harris

## Abstract

**Background & Purpose of Study:** Community-based learning is a mandatory component of the NOSM medical undergraduate curriculum, incorporating interprofessionalism and distributed community-engaged learning. These sessions are provided in physician, interprofessional, and community sites. Evidence suggests that learners initially underestimate the value of community-based experiences with non-physician health providers. However, over time, learners develop a greater understanding and appreciation of the role and value of other health professionals and social service workers and the importance of interprofessional collaboration as they have greater exposure to a variety of sites and staff. The presentation will provide a description of a survey conducted in the spring/summer of 2009 of learners in all four years of the undergraduate curriculum.

**Methodology:** The presentation will include a brief overview of community learning at NOSM, the purpose of the research, goals of the survey and report on: 1. student perceptions regarding their experiences; 2. how previous health care employment, education or other factors impact on this process 3. how perceptions change over the course of the four years, and what students report regarding trust, conflict resolution and other interprofessional competencies

**Results:** This presentation will report on survey results and focus on significant findings regarding how and when changes occur in student perceptions regarding other health professionals.

**Conclusions and Discussion:** Survey results will be used to provide some preliminary conclusions regarding perceptions of undergraduate medical learners based on their community-based learning. Potential future directions to enhance learning will also be discussed.

# **Assuring Quality in a Child Welfare Agency providing Multidisciplinary Programs throughout Northwestern Ontario: An Integrative Strategy**

## **Presenting Author**

Sherry Fournier

## **Authors**

Sherry Fournier, Carolynn Sheehan, Brien Managhan

## **Affiliations**

Child Care Resources

## **Abstract**

Child Care Resources (CCR) is a non-profit, umbrella organization that provides a wide range of quality services in both official languages to children, families, and professionals to facilitate the quality of life of children in an inclusive community. CCR's services include the: Autism Intervention Program; Autism Clinical Services; School Support; Therapeutic Residential Program; Respite Services; Best Start Hubs; and the Inclusion Support Program. CCR provides services throughout Northwestern Ontario including the regions of Sudbury, Manitoulin, Sault Ste. Marie, Algoma, Thunder Bay, Kenora and Rainy River. CCR is committed to providing quality services that are consistent with its Mission, Vision, Values, and Key Result Areas. CCR has developed a Quality Assurance strategy that: reflects this commitment; recognizes the multidisciplinary nature of programs; and respects the uniqueness of each geographical region. This strategy is comprised of a Theoretical Conceptual Model, a Process Model, a Program Evaluation Guide, and Training Model that together provide a transparent, valid and reliable method to: conduct individual program evaluations; translate results into practical strategies for Continuous Quality Improvement (CQI); evaluate the impact of CQI strategies; and assimilate individual program evaluation results into a reliable method of reporting and ensuring organization-wide Quality Assurance. In 2009 CCR began to implement this Quality Assurance strategy throughout the agency and across the Northwest service delivery region and a positive impact upon individual programs and the agency as a whole has already been observed. A complete description of the Quality Assurance strategy, as well as, successes, challenges and practical recommendations relating to the implementation and application of an integrated Quality Assurance strategy across multidisciplinary programs throughout the Northwestern Ontario will be discussed and future directions proposed.

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# **A Pan Canadian Survey of Carboplatin Dosing-Implications for Clinical Practice and Research**

## **Presenting Author**

Malcolm Brigden

## **Authors**

Elisa Greco, Pharmacy Intern; Malcolm Brigden, M.D.; Clayton Maltby, Pharm D.; Christy Gauthier, Pharm.D.

## **Affiliations**

Algoma District Cancer Program

## **Abstract**

Carboplatin is a chemotherapeutic agent frequently used for treatment of cancers. The myelotoxicity and clinical efficacy of this drug correlate with its renal clearance which in turn is related to the individual patient's glomerular filtration rate (GFR). Rather than traditional dosing based on body surface area (BSA), optimum carboplatin dose has been calculated using the area under the plasma concentrations/time curve (AUC). . The Calvert formula ( $\text{dose} = \text{target AUC} \times [\text{GFR} + 25]$ ) was developed in an attempt to predict the AUC, but originally incorporated a cumbersome radioactive verified GFR measurement. As a substitution, many cancer clinics utilize the Cockcroft-Gault calculation (C&G calculation) to estimate a individual patient's GFR based on serum creatinine, sex and weight. Each variable in these calculations may change the AUC possibly influencing ultimate clinical outcome and toxicity. Questions have arisen regarding the utilization of ideal weight versus actual weight in the obese as well as weight determination for the cachectic state. This study was undertaken to attempt to determine the current status of carboplatin AUC determination in Canada by surveying various cancer programs. Responses were obtained from all provinces. Eighty percent of respondent's based carboplatin dosing solely on the Calvert formula, 6% used BSA only, 7% chose BSA and Calvert, while 7% utilized another method. For determining the GFR to use in the Calvert formula, 53% used the C&G calculation, 14% other calculations, while 33 % also combined a nuclear study in some situations. The majority of centers used the actual body weight in calculations, but a variety of other options were reported including ideal, adjusted, capped, and pharmacist option. This investigation may represent a first step towards achieving a truly national therapeutic consensus on carboplatin dosing.

# The role of innate immune responses in the pathogenesis of *Pseudomonas aeruginosa* infection in cystic fibrosis patients

## Presenting Author

Nicole A. Hawdon

## Authors

Nicole A. Hawdon(1), Pouya Sadeghi Aval(1), Rebecca J. Barnes(1), Sean K. Gravelle(1), Jessica Rosengren(1), Sarah Khan(1), Oana Ciofu(3), Helle Krogh Johansen(2), Niels Høiby(2,3) and M. Ulanova(1)

## Affiliations

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## Abstract

*Pseudomonas aeruginosa* is the major cause of chronic pulmonary disease in cystic fibrosis (CF) patients. During the chronic infection, *P. aeruginosa* lose certain virulence factors, convert to a mucoid phenotype, and develop antibiotic resistance. We hypothesized that these genetic and phenotypic alterations of *P. aeruginosa* affect the innate immune responses in the lungs. Using in vitro infection of lung epithelial cells with 27 isolates of *P. aeruginosa* from CF patients attending the Danish CF Centre during 1988-2003, we have established that cellular responses depend on both the disease stage and presence of bacterial virulence factors. *P. aeruginosa* causing early infections had high abilities to adhere to epithelial cells, become internalized, induce reactive oxygen species production and apoptosis of infected cells, as well as the granulocyte macrophage colony stimulating factor release. These effects likely contribute to the efficient innate and adaptive immune responses, which help the host temporarily eradicate the infection during the period of intermittent colonization. *P. aeruginosa* isolated from CF patients with long-term chronic infection had reduced abilities of adherence and internalization; they induced lower production of reactive oxygen species and apoptosis, but caused high production of pro-inflammatory cytokines and adhesion molecules. Our findings suggest that the loss of bacterial virulence factors results in diminished innate immune responses to *P. aeruginosa* that may contribute to persistent infection. Importantly, over the course of chronic pulmonary infection, *P. aeruginosa* retain high pro-inflammatory capabilities. Continuing stimulation of lung cells by pro-inflammatory mediators, along with escalating tissue damage and developing antibiotic resistance, would eventually lead to exhaustion of host defence mechanisms. New therapeutic strategies directed towards enhancing innate immune responses to *P. aeruginosa* during the early stages of lung infection may prevent the establishment of chronic CF pulmonary disease. Funding: NSERC Discovery Grant and Lakehead University Biotechnology Program

# Oral Health Evaluation and Diet Pattern Analysis in Medicine

## Presenting Author

Dr. William Hettenhausen

## Authors

Dr. William Hettenhausen DDS, FACD, FICD

## Affiliations

Northern Ontario School of Medicine, Your Teeth For a Lifetime Preventive Dentistry Foundation

## Abstract

If certain dietary patterns can be clearly demonstrated to influence a patient's health and resistance to disease over time, then should not some form of nutritional assessment play an important role in everyday medical practice? This abstract introduces a logical clinical approach that links oral diagnosis, diet pattern analysis, medical health assessment and practical nutritional counselling. It provides a model for evidence-based interdisciplinary research to identify and contrast those diet patterns that can be demonstrated to enhance or impair both oral and systemic health. The mouth is the gateway to the human body and everything we eat passes through it. Many subtle nutritional deficiencies and metabolic imbalances first manifest their symptoms in the mouth, and their early or interceptive diagnosis is one of the keys to prevention. From an oral diagnosis perspective, not only can nutritional factors play a critical role in preventing dental caries and chronic periodontal disease, they can also affect the health and well-being of the whole body. "Diet patterns that damage teeth damage health". Although regular exercise is arguably the prime variable in maintaining health and longevity, because it helps address the effects of dietary excesses, it is of little value in addressing nutritional deficiencies. As the patient asks, "How can I have periodontal disease, I jog?" By observing and monitoring gingival and periodontal inflammatory response to the bacterial microflora in common dental plaque/biofilm, it becomes possible to non-invasively assess the status of the body's immune system and to target specific patients for diet pattern analysis research. By analysing and contrasting diet patterns that appear to enhance or impair this immune response, we can learn to more clearly define the primary role that diet and nutrition play in the generation of health and the prevention of disease.

# **“Sometimes it’s a cultural issue; sometimes it’s a family situation:” Health care providers’ perspective on compliance issues among Aboriginal clients with asthma and COPD**

## **Presenting Author**

Mary Ellen Hill

## **Authors**

Minore, B., Hill, M.E., Park, J., Bandoh, G., Page, R., Perry, S. and Tiernan, M.

## **Affiliations**

Centre for Rural and Northern Health Research, Lakehead University

## **Abstract**

There is considerable evidence that Aboriginal children and adults are disproportionately affected by ongoing respiratory conditions. This environmental scan, commissioned by the Ontario Ministry of Health and Long-Term Care, Acute Services Division, was designed to achieve a fuller understanding of the extent to which Ontario’s Aboriginal peoples’ experience asthma and COPD specifically and the factors which facilitate or impede their access to appropriate care. Because of the complexity of the topic, the scan employed a multi-step research strategy, including a review of the literature, an analysis of available statistical data, and in-depth interviews with knowledgeable key informants. This presentation highlights selected findings from the scan, with an emphasis on interview data from 21 health care professionals who deliver respiratory care to Aboriginal peoples in Northern and Southern Ontario. Results suggest that Aboriginal clients’ compliance with recommended care is affected by a complex array of cultural and situational factors. Culturally, limited understanding of respiratory illnesses, absence of Aboriginal-specific information, and linguistic issues were seen as barriers to compliance. Situationally, lack of access to physicians, transportation problems, difficulties accessing medications and environmental issues were also associated with poor adherence to recommended care. Another cause of concern was the lack of community-based education to ensure that people understood the importance of preventive care. Without such supports, individuals experience continuing crises or become discouraged and discontinue treatment altogether. This presentation outlines the challenges that providers face in understanding and addressing factors affecting Aboriginal clients’ compliance with recommended respiratory care.

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# **Translation of Local Knowledge to Improve Care Practices: Patient and Provider Explanatory Models of Type 2 Diabetes Mellitus on the Wikwemikong Unceded Indian Reserve, ON.**

## **Presenting Author**

Kristen Jacklin

## **Authors**

Kristen Jacklin, Lisa Boesch, Wikwemikong Health Centre Diabetes Research Team

## **Affiliations**

Northern Ontario School of Medicine

## **Abstract**

**Background:** Type 2 Diabetes Mellitus (T2DM) was designated as a priority research issue by the Wikwemikong Unceded Indian Reserve (WUIR) in 2005 which lead to a community-academic partnership to begin participatory research concerning diabetes in the community.

**Purpose:** This paper reports on community-based, participatory mixed methods research conducted from 2007-2009 in partnership with the Diabetes Research Team at the Wikwemikong Health Centre (WHC). The research design explored explanatory models of diabetes and examined barriers and enablers to diabetes care (clinical and self-care), prevention and health promotion activities from patient and provider perspectives.

**Methods:** Methods included a chart audit of diabetes care received in Wikwemikong; and, in-depth interviews with 50 community members diagnosed with T2DM and family physicians who provide diabetes care in WUIR.

**Analysis:** Analysis focused on identification of personal, community, and societal level factors which may be influencing patient's ability to follow the advice provided through the WHC health promotion and clinical services and achieve glycemic control. Patient and provider explanations and understandings of diabetes were compared to identify divergent theories, gaps in knowledge, and communication issues that may be affecting effective uptake of diabetes education activities.

**Results:** Preliminary analysis suggests that patient and provider explanations for glycemic outcomes were similar more often than not; however, the underlying understandings of the root cause for the epidemic and the complexity of factors influencing progression to secondary complications and co-morbid conditions was much deeper and more detailed for the patient population.

**Conclusions:** Diabetes prevention, health promotion, and clinical care in First Nations settings may be strengthened by improved understandings of local circumstances, culture and the political-economic realities of life in an Aboriginal community.

# Public Health Policy and Industrial Wind Turbines: The Role of Family Physicians

## Presenting Authors

Roy Jeffery, Carmen Krogh

## Authors

Roy Jeffery MD,FCFP and Carmen Krogh, BScPharm

## Affiliations

NOSM, Society for Wind Vigilance

## Abstract

The governments of Ontario and Canada have a Policy to implement renewable energy including that of industrial wind turbines (IWT). This Policy has been established without conducting 3rd party health studies to determine authoritative guidelines designed to protect health. Government vigilance and long term surveillance programs are absent. Family physicians have an important role in the domain of public health. They can monitor and advocate for victims reporting adverse health effects associated with IWT development. Adverse health effects are being reported in Ontario and globally by clinicians and researchers. The symptoms being reported are consistent world wide. WHO endorses the Precautionary Principle "Where there is a reasonable possibility that public health will be damaged, action should be taken to protect public health without awaiting full scientific proof." WindVOiCe© (Wind Vigilance for Ontario Communities) is a self reporting health survey based on the principles of Health Canada's Canada Vigilance Program. Canada Vigilance is a post-market surveillance program which assesses reports of suspected adverse reactions to prescription, consumer and other products. WindVOiCe© results will be presented. Included will be a brief discussion on the need vigilance and long term surveillance resulting from unanswered questions regarding long term health risks and social consequences. The role of family physicians regarding the integration of vigilance, long term surveillance, and social justice into Public Health Policy for IWT will be discussed. In view of the scientific uncertainty, the precautionary principle should be invoked and IWT development must not proceed until authoritative 3rd party health studies are conducted. Vigilance and long term surveillance must accompany these studies.



# Toxicity of titanium dioxide and platinum modified titanium dioxide nanoparticles in cardiomyocytes

## Presenting Author

Neelam Khaper

## Authors

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## Affiliations

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## Abstract

Modified titanium dioxide (TiO<sub>2</sub>) nanoparticles have promising applications for cardiac imaging and targeted drug delivery. The purpose of this study was to systematically characterize nanoparticle uptake by H9c2 cardiac cells and investigate the mechanism and extent of nanoparticle-induced cell damage, including the involvement of oxidative stress and mitochondrial damage. A novel type of platinum modified (Pt-TiO<sub>2</sub>) nanoparticle was synthesized via the photo-assisted reduction method and characterized through Scanning Electron Microscopy, X-ray diffraction (XRD), and Brunauer Emmett Teller surface area analysis. Commercially available P25 TiO<sub>2</sub> and Pt-TiO<sub>2</sub> nanoparticles were analyzed for cellular nanoparticle uptake through flow cytometric side scatter analysis, oxidative stress through the DCFDA and superoxide dismutase (SOD) assay and mitochondrial membrane potential through the JC-1 assay. Results indicated that the photo-assisted reduction method used to synthesize the Pt-TiO<sub>2</sub> nanoparticle produced a thin layer of platinum on the surface of the TiO<sub>2</sub> that was undetectable through XRD but detectable visually. Pt-TiO<sub>2</sub> had higher cellular uptake at a lower concentration than the P25 TiO<sub>2</sub> nanoparticles. Pt-TiO<sub>2</sub> nanoparticles generated more reactive oxygen species than the P25 TiO<sub>2</sub> nanoparticles. Mitochondrial membrane potential between the Pt-TiO<sub>2</sub> and P25 TiO<sub>2</sub> nanoparticles were at similar levels. Preliminary data for the SOD activity indicate a marked decrease in SOD levels with higher concentration of P25 TiO<sub>2</sub> nanoparticles, suggesting the active scavenging role of SOD and its resultant depletion. Collectively, these results suggest that the difference in the magnitude of particle toxicity could be attributed to surface modification. Given that these nanoparticles are likely to be used in biosensors and targeted drug delivery, understanding of effective means of mitigating their toxic effects while maintaining their functionality are required.

# The inhibitory effects of NAC on taxol-induced cytotoxicity.

## Presenting Author

Patricia Lyle

## Authors

Patricia Lyle (1, 2), Panagiotis Mitsopoulos (3), Zacharias Suntres (2)

## Affiliations

1) Lakehead University, 2) Northern Ontario School of Medicine, 3) University of Western Ontario

## Abstract

Taxol is known to inhibit cell growth and trigger apoptosis in various cancer cells. The primary mechanism of taxol's action involves suppression of spindle microtubule dynamics. It has also been reported that taxol treatment increases the generation of reactive oxygen species (ROS), and specific cellular proteins in various tumour cells. These ROS and cellular proteins have been shown to cause both apoptotic and necrotic cell death. Antioxidants, such as N-acetylcysteine (NAC), are molecules known to prevent the effects of ROS, and down-regulate apoptotic-linked cellular proteins. In this study, A549 cells were treated with 5.0mM NAC, challenged with 1.0  $\mu$ M taxol, or co-incubated with both (NAC and taxol) for a 24 hr incubation period. Exposure of cells with NAC did not have any significant effect on cell viability, proliferation, or apoptosis. Challenge of cells with taxol resulted in time- and concentration-dependent decreases in cell viability, and proliferation, as well as increased cellular apoptosis. NAC was found to hinder the toxicity of taxol on A549 lung carcinoma cells. The inhibitory effects of NAC on taxol-induced cytotoxicity were not due to any direct chemical interaction between NAC and taxol as assessed by high-performance liquid chromatography. Intracellular ROS levels, as measured by 2,7-dichlorofluorescein staining via flow cytometry, were significantly increased following challenge of cells with taxol, which were abrogated by the presence of NAC. TUNEL assay, a method for detecting DNA fragments by labelling the terminal end of nucleic acids, suggested that the decreased viability is due to taxol-induced A549 apoptosis, not necrosis. This data suggests that NAC alters the cytotoxicity of taxol in vitro by preventing the toxic actions of ROS and apoptotic cellular proteins. This work is supported by NSERC.

# Interstitial nitric oxide levels regulate adenosine production in rat gastrocnemius muscle

## Presenting Author

David MacLean

## Authors

David MacLean, Ashley Smith, Sergio Fabris, Lisa Zhao

## Affiliations

Northern Ontario School of Medicine, Laurentian University Biology Department

## Abstract

It is generally accepted that vasodilatation in skeletal muscle is regulated in part by both adenosine (Ado) and nitric oxide (NO). It has previously been shown by our laboratory that perfusion of 60 micromolar of ATP into the interstitial space (via microdialysis) more than doubled the interstitial Ado concentration ( $0.15 \pm 0.02$  to  $0.33 \pm 0.04$  micromolar), mediated predominantly by the 5'-ectonucleotidase. However, a thorough examination of the relationship between NO and Ado production in the interstitial space has yet to be examined. Anesthetized Sprague Dawley rats had microdialysis fibers inserted into the gastrocnemius muscle of each leg and perfused with saline (baseline control) and then with either 10 milimolar L-NAME (NOS inhibitor,  $n = 8$  rats,  $n = 31$  probes) or 10 milimolar L-NAME + 60 micromolar ATP ( $n = 6$  rats,  $n = 14$  probes) for 20 minutes at a rate of 5  $\mu$ l/min. Interestingly, during L-NAME perfusion interstitial Ado levels were decreased ( $P < 0.05$ ) from baseline levels ( $0.20 \pm 0.01$  micomolar) to below HPLC detection limits. The addition of ATP to the perfusate in an effort to promote Ado production via the 5'-ectonucleotidase did not restore interstitial Ado concentrations. These data clearly show that the inhibition of NOS dramatically attenuates Ado production, which cannot be reversed by the addition of ATP. These finding strongly suggest that skeletal muscle interstitial Ado production is regulated by NO and/or NOS activity. Supported by NSERC

# Spirituality and health: Beyond faith and religion

## Presenting Author

Diana Pallen

## Authors

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## Affiliations

Lakehead University School of Nursing

## Abstract

The study presented in this poster was the second of a 2 part study funded by a Regional Research Grant from Lakehead University. The objective of this study was to describe the spiritual care practices of nurses working with patients and families in diverse settings in northwestern Ontario. Given the nature of nursing work, nurses are in a unique position to have a positive influence on the health of patients and families through addressing spiritual needs as part of holistic care. Because nurses provide twenty-four hour holistic care to patients and families across the lifespan, in diverse institutional settings, as well as in the community, they are often in the position of both giving and requiring spiritual care. In addition, nurses often link patients and families with resources, spiritual and otherwise, to promote health and healing. A qualitative study using a semi-structured interview approach was conducted with registered nurses in urban and rural centres of northwestern Ontario. Analysis was conducted using a modified Giorgi's phenomenological approach. The results of this qualitative study provided insight into the holistic roles of nurses and the support nurses provide in meeting spiritual needs in collaboration with other professionals in urban and rural settings. In addition, study results addressed the support that organizations provide in meeting those needs. The themes identified showed the need for openness to better understand and respond to patient and family uniqueness, to find meaning in suffering and to appreciate the connectedness between spirituality and health. The responses also suggested the importance of communication, resources, and interprofessional collaboration in addressing the spiritual needs of patients and families, in urban and rural northwestern Ontario, particularly at the end of life.

# Changes in practice locations of graduates of the Northern Ontario Family Medicine program: a comparative analysis of 1993-2006 data from Scott's Medical Database

## Presenting Author

Oxana Mian

## Authors

Oxana Mian, MA, Research Assistant, John C. Hogenbirk, MSc, Senior Researcher, Raymond W. Pong, PhD, Research Director

## Affiliations

CRaNHR, Laurentian University

## Abstract

The purpose of the study is to examine practice locations of more recent (2003-2005) cohorts of the graduates of the Northern Ontario Family Medicine (NOFM) program in comparison with earlier (1993-2002) cohorts. The analysis is based on data obtained from the Scott's Medical Database (SMDB), a national database that contains information on supply, distribution and migration of Canadian physicians. Differences between recent and earlier cohorts of NOFM graduates with respect to demographic and educational characteristics and practice locations are examined. The analysis shows a slight increase in the NOFM graduates' age and in the number of those who obtained medical degree from universities outside Ontario. No changes found in the later cohorts in terms of sex ratio of graduates in comparison to the earlier cohorts. The results show a growth in the proportion of physicians in the more recent cohorts practicing in northern Ontario, particularly among female physicians. In earlier NOFM cohorts, a proportion of physicians practicing in northern Ontario are greater among male graduates. In more recent cohorts, the proportion is greater among female than male NOFM graduates. This is evident in northern smaller communities and medium-sized cities. The study findings shed light on some shifts occurring in NOFM graduates' choices of practice locations as well as the positive influence of northern medical education on the geographic distribution of physicians in northern and rural areas of Ontario.

# Maintaining Housing in Northeastern Communities: The Potential Role of Public Health Inspectors

## Presenting Authors

T. Larose and P. Montgomery

## Authors

P. Montgomery, I. Michel, S. Lefebvre, C. Warren, C. Kauppi, V. Etches, T. Larose

## Abstract

**Background:** Homelessness, a major health and social issue in northeastern communities, often remains hidden from the ‘public’ eye. Structural features contributing to its invisibility are limited local crisis accommodations, rural poverty, and a pattern of frequent relocations by precariously housed persons. For public health inspectors (PHIs), however, the housing hazards of this vulnerable population are very visible. **Purpose:** The purpose of this study is to understand the potential role of northeastern PHIs in health protection for precariously housed persons.

**Design:** This study uses a multiple case study design guided by participatory action principles. This approach is appropriate since the topic of interest is PHIs’ day-to-day practices in response to challenging housing issues. Further, it allows for the examination of whether or not different PHI approaches are influenced by vulnerable population needs, by a particular area’s infrastructure, by access to local resources, and/or by geography.

**Methods:** This study involves the four communities of North Bay, Sault Saint Marie, Timmins and Sudbury. Purposive sampling invites PHIs with varying years of experience in housing issues to willingly participate. The anticipated total sample size is 20 PHIs. Using a vignette-based interview, PHIs describe their role, their practices, and their decision making in relation to select housing circumstances. The written and pictorial content of this study’s vignette is based on an earlier qualitative study involving persons who identified themselves as precariously housed. In the primary study, participants took photographs and shared stories about what they classified as “substandard” housing conditions. With the assistance of PHIs, the primary data was re-represented for this study to ensure that it reflects PHIs typical requests for home inspections. Data collection, transcription and thematic content analysis are undertaken concurrently. Findings and their implications will be addressed in the presentation.

# Gene array analysis of paraquat-induced cytotoxicity

## Presenting Author

Panagiotis Mitsopoulos

## Authors

Panagiotis Mitsopoulos, Zacharias Suntres

## Affiliations

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## Abstract

Paraquat (PQ), one of the most commonly used herbicides worldwide, is highly toxic to humans and exposure can result in severe clinical situations with no effective treatments available. The primary injury occurs in the lung, where it is able to continuously produce damaging reactive oxygen species (ROS) via redox cycling. Oxidants have been shown to induce the expression of several early response genes and to activate transcription factors, which may contribute to the inflammatory response associated with PQ injury. In order to further elucidate the mechanism(s) of PQ injury, we investigated its effects on the cellular status and gene expression profile of immortalized human alveolar epithelial A549 cells in vitro. Incubation of cells with PQ resulted in time- and concentration-dependent increases in intracellular PQ levels, which correlated with increases in intracellular ROS levels and decreases in intracellular glutathione content, mitochondrial membrane potential, and cell viability. Gene array analysis revealed differential expression in response to PQ exposure over time, particularly increases in: i) the expression of growth arrest and cell cycle-related genes (i.e. CDKN1A, DDIT3, GADD45A, GDF15, MDM2, EGR1, ANXA5) and ii) the expression of pro-inflammatory genes (i.e. IL1A, IL6, IL18), which correlated with increases in the secretion of pro-inflammatory cytokines (i.e. IL-8, IL-6). These data will be important in delineating the mechanism(s) leading to alveolar toxicity induced by PQ. This work is supported by NSERC.



# Adjustment in Romantic Relationships and Potential Correlations with Anxiety Sensitivity, Anxiety Severity, and Intolerance of Uncertainty

## Presenting Author

Munira Mohamed

## Authors

Munira Mohamed<sup>1</sup>, Dina Tsirgielis<sup>1</sup>, Mihaela Dirlea<sup>1</sup>, Monica Vermani<sup>1,3</sup>, Catherine Cameron<sup>1</sup>, Irvin Epstein<sup>1,2</sup>, Christina Iorio<sup>1,3</sup>, Martin Katzman<sup>1,2,3,4</sup>

## Affiliations

1 START Clinic for Mood and Anxiety Disorders 2 Department of Psychiatry, University of Toronto 3 Department of Psychology, Lakehead University 4 Northern Ontario School of Medicine

## Abstract

Recent findings suggest a high degree of distress in romantic relationships in patients suffering from anxiety disorders, specifically related to the challenges of the presentation of anxiety disorders. The current study explored this relationship by examining the correlations between a construct measuring adjustment in romantic relationships (DAS), including its subscales (affectional expression, dyadic consensus, cohesion, and satisfaction), and various scales measuring anxiety, namely the Beck Anxiety Inventory (BAI scale), the Anxiety Sensitivity scale (ASI), and Intolerance of Uncertainty (IUS). It was hypothesized that individuals with a high level of distress in a romantic relationship would have a greater severity of anxiety symptoms as well as greater anxiety sensitivity. Participants included patients who were referred to a tertiary care clinic ( $n=339$ ), and data collection was performed upon their first visit to the clinic prior to the commencement of any treatment procedures. Findings supported the hypothesis suggesting that the inability to adjust well in romantic relationships is correlated with the severity of anxiety symptoms ( $r = -.198$ ;  $p < .05$ ). In addition, a significant negative correlation was found for adjustment distress in romantic relationships and the degree of intolerance of uncertainty ( $r = -.340$ ,  $r < .01$ ). In fact, intolerance of uncertainty correlated negatively with all four subscales of the DAS: dyadic satisfaction ( $r = -.297$ ;  $p < .01$ ); dyadic cohesion ( $r = -.238$ ;  $p < .01$ ); dyadic consensus ( $r = -.237$ ;  $p < .01$ ); and affectional expression ( $r = -.170$ ;  $p < .05$ ). In addition, a significant negative correlation was found for the severity of anxiety and two subscales of the DAS: dyadic cohesion ( $r = -.204$ ;  $p < .01$ ), and dyadic consensus ( $r = -.198$ ;  $p < .01$ ). However, there was no significant correlation found between distress adjustment in romantic relationships and increased anxiety sensitivity. These findings suggest potential influences of anxiety and intolerance of uncertainty on factors that underlie the development of the anxiety disorders.

# Fetal Programming of Adult Hypertension: Role of Adrenal Phenylethanolamine N-methyltransferase

## Presenting Author

Phong Nguyen

## Authors

Phong Nguyen, Heather Peltsch, James Crispo, Jose de Wit, Gino Ubriaco, Dominique Ansell, Vanessa Wall, Joe Eibl, T.C. Tai

## Affiliations

Laurentian University; Northern Ontario School of Medicine

## Abstract

Prenatal exposure to glucocorticoids (GCs) has been shown to program for hypertension later in life. GCs, through interaction with the glucocorticoid receptor (GR), have been shown to regulate phenylethanolamine N-methyltransferase (PNMT), the enzyme involved in the biosynthesis of the catecholamine, epinephrine. Elevated expression of PNMT is correlated with elevated blood pressure in hypertensive rats. Also, elevated levels of epinephrine are correlated with increased activity of the PNMT enzyme, suggesting that increased expression of adrenal PNMT results in the increased adrenergic function associated with hypertension. The mechanism associated with increased PNMT gene expression is not well known, however our lab has previously demonstrated altered activity of transcriptional regulators of the PNMT gene in hypertensive rats, including: Egr-1, Sp1 and GR. The current study examined the mechanism by which dysregulation of the PNMT gene occurs in a fetal programming model of hypertension mediated by prenatal GC exposure. Pregnant WKY rats were subjected to subcutaneous injections of DEX, CORT or saline vehicle during the 3rd trimester. Male offspring were subjected to blood pressure measurements from 4 to 17 weeks of age. Results show that systolic, diastolic and mean arterial blood pressure, as well as heart rate, are elevated in DEX (by 15%) and CORT-treated (12%) male offspring compared to those from saline-treated (SAL) dams as early as 5 weeks of age, and persists until 17 weeks of age, demonstrating that prenatal administration of glucocorticoids increases postnatal blood pressure and cardiac activity. RT-PCR analysis shows that adrenal PNMT mRNA is 1.5-fold higher in DEX and CORT programmed male offspring compared to saline treated offspring, and have increased mRNA levels of transcription factors Egr-1 (2.5-fold), Sp1 (1.5-fold) and GR (2.0-fold). These results suggest that increased PNMT gene expression via altered transcriptional activity is a mechanism by which prenatal GC insult may program for adult hypertension.

# Workplace support for employees with cancer

## Presenting Author

Behdin Nowrouzi

## Authors

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## Affiliations

School of Rural and Northern Health, Laurentian University; Human Sciences Division, Northern Ontario School of Medicine; Master’s of Public Health Program, Lakehead University

## Abstract

The aim of this study was to survey human resources personnel about how their northeastern Ontario workplaces assist employees with cancer. The cross-sectional study was sent to 255 northeastern Ontario workplaces with 25 or more employees between December 2007 to April 2008. There were 101 workplaces that responded (39.6% response rate). Logistic regression modelling was used to identify factors associated with more or less workplace support for employees with cancer. More or less workplace support was defined by provision of paid time to employees with medical appointments, an offer of a return-to-work meeting, and reduced hours for employees with cancer. Factors considered in the model included: organizational size, urban or rural geographic location), and workplace type (i.e., private sector or public sector). Most of the human resources staff who completed the surveys were women (67.4%), and respondents ranged in age from 25 to 70 years (mean: 45.30 ± 8.10 years). Respondents reported working for organizations that ranged in size from 25 to more than 9000 employees. In the logistic regression model, large organizational size [odds ratio (OR): 6.97; 95% confidence interval (CI): 1.34 to 36.2] and public sector (OR: 4.98; 95% CI: 1.16 to 21.3) were associated with employer assistance. Public sector employers provided assistance at a rate 5 times that of private sector employers, and large organizations (>50 employees) provided assistance at a rate 7 times that of smaller organizations. In the population studied, employees with cancer benefitted from working in larger and public sector organizations. A need for further support for employees with cancer in smaller organizations was demonstrated.

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# Towards the Development of Culturally Safe Birth Models Among Northern First Nations: The Sioux Lookout Meno Ya Win Health Centre Experience

**Presenting Author**

Lauren Payne

**Authors**

Lauren Payne, Terry O’Driscoll, Len Kelly, Natalie St. Pierre Hansen, Carol Terry

**Affiliations**

Sioux Lookout Meno Ya Win Health Centre, Simon Fraser University (BC)

**Abstract**

**Background** The Sioux Lookout Meno Ya Win Health Centre serves approximately 30,000 people in Northwestern Ontario, 82% of whom are First Nations. In an effort to improve their quality of maternal and newborn care, the SLMHC has developed the Odotsemag project which aims to create a more culturally safe birth model at the centre. One aspect of this initiative is to develop a greater understanding of First Nations birth meanings, beliefs, and practices.

**Methods** This qualitative study interviewed 13 Elders from 4 different communities in the region. Interviewees were asked about the meanings they ascribe to the birth process, their attitudes and beliefs regarding birth, their opinion of the current system in place, as well as important birth practices. Interviews lasted up to 2 hours, used a semi-structured interview guide and were analyzed and coded for themes.

**Results** Elders stressed the importance of childbirth as a natural process and the importance of promoting and maintaining a traditional lifestyle during pregnancy. Many noted there should be less reliance on biomedicine and technology. In the hospital, steps should be taken to ensure that a woman has the option of assuming a variety of birth positions and to ensure that the umbilical cord and placenta are kept for those who wish it. Mothers are sent home too early and would benefit from more recovery time and more available familial support. An overall concern about the loss of traditional teachings and the consequences of the resulting generational divide was apparent.

**Conclusions** The ongoing Odotsemag initiative is identifying important changes in hospital birthing practices to offer First Nations women more options when they come to give birth. This process could serve as a model framework for similar regional health centres in Canada to provide more culturally appropriate care.

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# Regulation of cardiac phenylethanolamine N-methyltransferase in the spontaneously hypertensive rat

## Presenting Author

Heather Peltsch

## Authors

Heather Peltsch (1,3), C. Bizier (2), P. Nguyen (1,3) and T.C. Tai (1,2,3,4)

## Affiliations

(1) Biology, Laurentian University, (2) Chemistry & Biochemistry, Laurentian University, (3) Biomolecular Sciences, Laurentian University, (4) Medical Sciences Division, Northern Ontario School of Medicine

## Abstract

Phenylethanolamine N-methyltransferase (PNMT) is the enzyme responsible for adrenaline production in the catecholamine biosynthetic pathway. Recent studies have identified cardiac PNMT and endogenous adrenaline in the heart. Adrenaline is involved in the sympathetic control of blood pressure, and it augments cardiac function by increasing stroke volume and cardiac output. Genetic mapping studies have linked the PNMT gene to hypertension, and elevated PNMT levels are associated with higher blood pressure in hypertensive rats. The current study examined the expression of the cardiac PNMT gene in the genetic rodent model of hypertension, and associated changes in transcriptional regulators of the gene. Physiological measurements confirm the hypertensive phenotype of spontaneously hypertensive rats (SHR), with elevated mean arterial blood pressure and heart rate in SHR compared to the normotensive Wistar-Kyoto (WKY) rats. Results show upregulation of PNMT mRNA in all four chambers of the heart in SHR compared to WKY, with the greatest fold increase in the right atrium (RA). The transcription factors Egr-1, Sp1, AP2 and GR have been previously identified as key regulators of PNMT. RT-PCR analyses show significant increases in Egr-1, Sp1, AP2 and GR mRNA levels in all chambers of the SHR heart. Protein levels of Sp1, Egr-1 and GR are increased in the RA of SHR. In addition, AP2 shows increased binding to its cognate promoter sequence in SHR hearts indicating increased activation AP2 in SHR. Plasma levels of corticosterone and the chemokine MCP-1 are significantly elevated in SHR, while the inflammatory cytokines IL-1-beta, IL-12p70, IL-18 and IFN-gamma are significantly lower in SHR compared to WKY. These results show that PNMT gene expression is elevated in SHR, and this elevation is likely mediated by altered transcriptional regulation of PNMT in the heart. Furthermore, SHR display systemic differences from WKY in hypothalamic-pituitary-adrenal (HPA) axis activity and cytokine profiles in circulation.

# Protective effects of methyl gallate on H<sub>2</sub>O<sub>2</sub>-induced apoptosis in PC12 cells

## Presenting Author

Matthew Piche

## Authors

James A Crispo, M.Sc.; Matthew Piche, B.Sc.; Dominique R Ansell, B.Sc.; Joseph K Eibl, M.Sc.; Isabella T Tai, M.D., Ph.D.; Aseem Kumar, Ph.D.; Gregory M Ross, Ph.D.; T.C. Tai, Ph.D.

## Affiliations

Northern Ontario School of Medicine

## Abstract

Neurodegenerative disorders are a class of diseases that have been linked to apoptosis induced by elevated levels of reactive oxygen species (ROS). ROS activates the apoptotic cascade through mitochondrial dysfunction and damage to lipids, proteins and DNA. Recently, fruit and tea-derived polyphenols have been found to be beneficial in decreasing oxidative stress and increasing overall health. Further, polyphenols including epigallocatechin gallate (EGCG) have been reported to inhibit apoptotic signaling and increase neural cell survival. In an effort to better understand the beneficial properties associated with polyphenol consumption, the aim of this study was to explore the neuroprotective effects of EGCG, methyl gallate (MG), gallic acid (GA) and N-acetylcysteine (NAC) on H<sub>2</sub>O<sub>2</sub>-induced apoptosis in PC12 cells and elucidate potential protective mechanisms. Cell viability data demonstrates that MG and NAC pre-treatments significantly increase viability of H<sub>2</sub>O<sub>2</sub>-stressed cells, while pre-treatments with EGCG and GA exacerbates stress. Quantitation of apoptosis and mitochondrial membrane potential shows that MG pre-treatment prevents mitochondria depolarization, however does not inhibit apoptosis and is thus evidence that MG can inhibit mitochondria-mediated apoptosis. Subsequent analysis of DNA degradation and caspase activation reveals that MG inhibits activation of caspase 9 and has a partial inhibitory effect on DNA degradation. These findings confirm the involvement of both intrinsic and extrinsic apoptotic pathways in H<sub>2</sub>O<sub>2</sub>-induced apoptosis and suggest that MG may have potential therapeutic properties against mitochondria-mediated apoptosis.

# Role of oxidative stress and inflammation in cardiac iron overload

## Presenting Author

S. Puukila

## Authors

S. Puukila(1), S. Bryan(1), AM. Soviero(2), N. Khaper(2)

## Affiliations

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## Abstract

Iron overload leads to restrictive cardiomyopathy with predominant diastolic dysfunction. Although recent studies have suggested that altered calcium homeostasis and increase in reactive oxygen species-mediated oxidative stress play a role in iron overload induced cardiac dysfunction, the exact mechanism/s of oxidative stress-mediated cardiac and matrix remodeling is still unclear. We investigated the effects of cardiac iron overload on inflammatory markers such as tumor necrosis factor (TNF)-alpha, interleukin-10 (IL-10), matrix metalloproteinase (MMP)-2 and MMP-9 in H9c2 cardiac cells using real-time quantitative PCR. Apoptosis was assessed by measuring active caspase-3 and caspase-7 by the CaspaTag caspase-3/7 assay. We have demonstrated a modest increase in oxidative stress using the DCFDA assay, which correlated with decreased cell viability and substantially increased apoptosis. Cardiac iron overload resulted in increased expression of MMP-9 with no significant changes in MMP-2 expression. Increased MMP-9 expression also correlated with increased enzymatic activity of MMP-9 in heart tissue as measured by gelatin zymography. Cardiac iron overload also resulted in increased expression of TNF-alpha and IL-10 as compared to the control. Collectively, the results suggest that iron overload-induced oxidative stress leads to cytokine activation resulting in increased MMP expression and activity. Future studies are directed towards studying the role of liposomal antioxidants in modulating oxidative stress and inflammation under these conditions.



# Engaging the Academic Family Health Team through Interprofessional Collaboration

## Presenting Author

Nicole Ranger

## Authors

Shelley Chisholm, Holly Rupert, Sue Berry

## Abstract

Integrating health professionals into a Family Health Team environment requires moving from a referral process to facilitating their authentic involvement with an integrative care approach through IP collaboration and education. Education and dialogue, along with relational learning and trust, are proving essential for creating an academic milieu within a family health team. Shared leadership by the Northern Ontario School of Medicine and an Academic Family Health Team is intended to strengthen staff and patient awareness of interprofessionalism and patient /family-centred approaches to care. Through collaborative work, the project targets development of interprofessional care pathways to enhance chronic disease management. At this practice setting, patients with chronic pain were an identified population with complex needs who require frequent appointments/phone contacts, suffer acute flare ups, encounter mental health issues, and often develop narcotic management/addiction issues. Data collection includes findings from a pre-education self-administered survey to determine the team's level of understanding of Patient and Family Centered Care (PFCC) and Interprofessional Education (IPE). This presentation will report on pertinent preliminary findings and highlight the specific opportunities for new interprofessional collaborations between the AFHT and the Academic Teaching Hospital as well as the established regional chronic pain program to improve PFCC. The plan to create interprofessional learning opportunities within this new partnership will also be described. References: Price, D.(2009) Interprofessional education in academic family medicine teaching units. Canadian family Physician, 55 (Sept), p.901 Financial disclosure: ICEF funding

# Recognizing the power of branding to engage new interprofessional partners and strengthen knowledge transfer

## Presenting Author

Nicole Ranger

## Authors

Holly Rupert, Nicole Ranger, Sue Berry

## Abstract

“If a brand becomes a role model, it must have achieved its objective. It must have etched an emotional niche in the mind of the consumer.” (Korzenny, n.d.). A recognizable brand that models an interprofessional approach to learning is supporting the current delivery of two successful HFO-funded IPE programs: SPICE (Students Partnering in Interprofessional Care and Education) and FLIC (Facilitating Leadership in Interprofessional Care). First delivered by the Northern Ontario School of Medicine (NOSM) in 2008-2009, SPICE allows learners to collaborate with patients/families to provide care while learning about teamwork and professional roles. FLIC is a PD opportunity for professional teams who wish to strengthen collaborative skills in preparation for shared preceptorship of learners. The branding of the facilitation Toolkits and resources for these programs makes them memorable, persuasive and engaging both for facilitators and program participants. The brand models an approach to interprofessional learning and practice that will build IP capacity within our partner institutions. Blending what worked in past delivery with what we know about Social Learning Theory (Bandura, 1977), we tailored our messaging with a recognizable brand for each program. The Toolkit is visual, practical and easy to understand. Laminated facilitation cards put the elements of collaboration – and the brand – in front of program participants in a direct way. The brand provides new institutional partners and facilitators with a persuasive model they can adopt. For participants, the brand facilitates their connection to new knowledge and interprofessional skills. Qualitative findings from the initiatives will be shared. Bandura, A. (1977). Social Learning Theory. General Learning Press. Felipe Korzenny, F. Experience branding: A learning process. Center for Hispanic Marketing Communication, Florida State University, Tallahassee. Retrieved Sept 22, 2009 from, <http://korzenny.comm.fsu.edu/ExperienceBranding.htm>

# Physical Activity Promotion in Sudbury-area Call Centres: Employers' Perspectives

## Presenting Author

Sheila Renton

## Authors

Sheila Renton (1,2), Nancy Lightfoot (1,2,3), Marion Maar (2)

## Affiliations

(1) Master of Public Health Program, Lakehead University, (2) Northern Ontario School of Medicine, (3) School of Rural and Northern Health, Laurentian University

## Abstract

The 2004 Chief Medical Officer of Health Report: Healthy Weights, Healthy Lives identified the workplace as a key setting for the implementation of strategies for the promotion of physical activity to help Ontarians achieve and maintain healthy weights. A concurrent, embedded mixed methods study was conducted to explore the responses of call centres employers within the City of Greater Sudbury to these recommendations. This study determined current practices in call centre workplaces that support physical activity and investigated the motivations of employers to implement physical activity promotion, as well as perceived facilitators and barriers. Face-to-face, semi-structured interviews and quantitative questionnaires were completed between February and July 2009 with fifteen managers in ten of the twelve call centres identified by the Growth and Development Department of the City of Greater Sudbury. Results provided insight into the employers' motivation to implement physical activity promotion initiatives as related to three themes: The Employer Reaps the Benefits, Concern for Employee Well-being, and a sense of The Greater Good. Several internal and external facilitators for the promotion of physical activity were identified. Factors which create barriers to physical activity promotion within call centres were described by three themes: The Nature of Call Centre Work, Concerns of Managers, and Characteristics of the Call Centre. This presentation will provide study highlights and outline six recommendations for action which are expected to promote the health of call centre employees, and possibly other Ontario workers. As many of the resources identified as facilitators for the implementation of recommended strategies are already available, call centre managers need to increase their awareness and use of existing resources. Smaller organizations may require more assistance to promote physical activity than those with a larger number of employees and may benefit from enhanced interaction with available programs and resources.

# Regulation of Endothelial Cell Cytokine Gene Expression

## Presenting Author

Laura Rossi

## Authors

Laura Rossi (1), A. Thomas Kovala (1,2)

## Affiliations

(1) Department of Chemistry and Biochemistry, Laurentian University (2) Division of Medical Sciences, Northern Ontario School of Medicine

## Abstract

Angiogenesis is the expansion of the primary vascular plexus through sprouting and remodeling of existing vasculature. Signaling mechanisms initiated by vascular endothelial growth factor (VEGF) and a potent lipid bioactivator of angiogenesis, sphingosine 1-phosphate (S1P), have been linked in recent studies where S1P signaling was shown to be mediated by the transactivation of VEGF receptors (VEGFRs). In human umbilical vein endothelial cells (HUVECs) stimulated with either VEGF or S1P, Janus kinases (JAKs) become activated and stimulate downstream signal transducers and activators of transcription (STAT) proteins that affect the expression of target genes. Inhibition of VEGFR-2 blocks JAK activation by either stimulus, revealing that VEGFR-2 transactivation is required for S1P signaling to JAKs. Inhibition of JAKs in HUVECs attenuates chemotactic activity, as well as cell differentiation on matrigel; both are fundamental processes in the angiogenic response. Given that VEGF and S1P are strong inducers of angiogenesis and that the JAK/STAT pathway mediates gene expression, Bio-Plex technology was used to screen for the expression of 27 soluble cytokines in S1P- and VEGF-treated cells. Treatment of HUVECs with either VEGF or S1P induced an increase in expression of the proangiogenic and proinflammatory factors IL-6, IL-8 and MCP-1 in a dose-dependent manner. Expression of an additional subset of 13 factors was increased with VEGF treatment alone, while S1P did not induce the expression of any unique genes. Also, integrin activation has been shown to modulate VEGFR signaling, and integrins are responsible for cell interactions with extracellular matrix (ECM). Growth of HUVECs on ECM did not induce the expression of soluble factors alone; specific ECM proteins did enhance the expression levels in treated cells with S1P or VEGF, suggesting integrin modulation of S1P signaling, possibly through VEGFRs. These findings reveal a potential role for JAK/STAT signaling in the angiogenic response.

# Improving nutrition awareness, knowledge and referral processes for parents of preschoolers in the Thunder Bay District using NutriSTEP®

## Presenting Author

Lee Rysdale

## Authors

Kim McGibbon, Lee Rysdale

## Affiliations

Nutrition Resource Centre

## Abstract

Background: NutriSTEP® (Nutrition Screening Tool for Every Preschooler) is a valid and reliable parent-administered nutritional risk questionnaire for children aged 3-5. Nutrition screening can increase nutrition knowledge and promote early identification and intervention of serious nutrition concerns (e.g. anemia, overweight/obesity). Objective: 1). To implement NutriSTEP® within Junior Kindergarten (JK) screening booklets via the Fair Start program. 2). To develop a Thunder Bay District database on preschooler eating and activity habits. Methods: The Thunder Bay District Health Unit Fair Start program implemented NutriSTEP® in 2009 as part of the JK screening in the District of Thunder Bay. Approximately 1100 questionnaires were distributed during kindergarten registration; 664 were returned. Data analysis included SPSS for frequencies and correlations. Results: Most children scored low nutritional risk (84%); 11.6% moderate risk, and 4.2% high risk. The majority of parents were comfortable with their child's growth (98.3%) and weight (94.9%). Fast food intake was common, with one in five (21%) consuming at least once a week; 42% a few times in a month. High risk children were more likely to eat fast food often, have food insecurity, and eat fewer foods from three of four food groups. Financial barriers to feeding children were reported by 7.2% of parents. Most parents (90.1%) felt their preschooler was getting enough physical activity. Yet, 33.5% report their preschooler spends three or more hours a day as screen time while more than 40% spend at least two hours a day; which is above what is recommended. Conclusion: The majority of preschoolers are eating well according to their parents. Areas of concern to target future nutrition initiatives include: increasing meat and alternatives and vegetable consumption; decreasing fast food and high caloric beverage intakes; increasing physical activity and decreasing screen time; and increase advocacy efforts to improve food insecurity.

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# Does tyrosine kinase Syk signaling mediate inflammatory responses in pulmonary infections caused by *Pseudomonas aeruginosa*?

## Presenting Author

Pouya Sadeghi Aval

## Authors

Pouya Sadeghi Aval 1, Jeff Werner 1, Nicole Hawdon 1, Marina Ulanova 2

## Affiliations

1 NOSM West/Lakehead University. 2 Associate Professor, NOSM Medical Sciences Division

## Abstract

*Pseudomonas aeruginosa*, an environmentally ubiquitous bacterium, can act as a serious human pathogen, causing ventilator-associated pneumonia and systemic infections in immunocompromised individuals. Tyrosine kinase Syk (Syk) is a critical component of immunoreceptor signalling in hematopoietic cells. Its activation in leukocytes is instrumental for phagocytosis and the development of B- and T- lymphocytes. Interestingly, Syk is also expressed in lung epithelial cells (LEC), which are the body's first line of defense against airborne pathogens. Although the function of Syk in these cells is still poorly understood, its role in the regulation of LEC inflammatory responses has been demonstrated. Based on preliminary results in our laboratory, we hypothesize that Syk is involved in orchestrating inflammatory responses during pulmonary infections caused by *P. aeruginosa*. In vitro experiments were conducted using both A549 (Syk negative) and H292 (Syk positive) LEC, which were infected with *P. aeruginosa*. Using the H2DCFDA assay, we have demonstrated that both H292 and A549 cells produce high levels of ROS after infection with *P. aeruginosa*. However, H292 cells pretreated with the Syk chemical inhibitor piceatannol had reduced abilities to produce ROS. This suggests that Syk may be regulating the cell's redox machinery. Immunostaining and subsequent flow cytometry has revealed a rapid increase in the surface expression of the pro-inflammatory marker ICAM-1 in both cell lines following infection. Similar to ROS production, piceatannol pretreated H292 cells had reduced abilities to express this marker. To further confirm our findings, we will be using small interfering RNA against Syk. We will also analyze the effect of Syk inhibition on pro-inflammatory cytokine production using Bio-Plex technology. The anticipated finding may elucidate the role of tyrosine kinase Syk in mediating host responses during pulmonary infections caused by *P. aeruginosa* and may provide some basis for the use of Syk as a therapeutic target. Funding: NSERC Discovery Grant, Ontario Lung Association, NOSM Faculty Association Research Development Award.

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# Family Health Teams and Mental Health Services in the North: Finding a Niche

## Presenting Author

Jill Sherman

## Authors

Jill E. Sherman, Robert J. Swenson, Raymond Pong, Robert Cooke, Abraham Rudnick, Margaret Delmege

## Affiliations

Centre for Rural and Northern Health Research (CRaNHR) and the Ontario Psychiatric Outreach Programs (OPOP)

## Abstract

One of the original mandates of Family Health Teams was to integrate mental health services within the delivery of primary health care. As part of a larger project studying access to mental health services in northern Ontario, the Ontario Psychiatric Outreach Programs and the Centre for Rural and Northern Health research collaborated on a survey of family health teams that focused on the integration of mental health services. Semi-structured interviews were conducted by telephone between September and December 2008. Participants were representatives from 14 of 19 eligible Family Health Teams located outside of northern urban referral centres. A thematic analysis identified a concern among the FHTs' dedicated mental health professionals about their "niche" within the broader constellation of community mental health services. Three niches were identified: "everything else," "alternative choice," and "specialist" niches. The articulation of these niches revealed that, in northern underserved communities, the desire to avoid "duplication of services" was in tension with some aspects of the FHT philosophy of patient-centered care.



# Integrating virtual histology & radiology into distributed tutorial sessions

## Presenting Author

Lee Shewchuk

## Authors

Lee Shewchuk, Donna Newhouse

## Affiliations

Northern Ontario School of Medicine

## Abstract

Histo-pathology is a core lab component at the Northern Ontario School of Medicine in Theme 4 of all 11 modules (systems). During the first two years in NOSMs' undergraduate medical education involves three Integrated Community Experience (ICE) placements that provides students an opportunity to experience the delivery of health care in a rural community. This poses a problem of how to learn histo-pathology of the module they are studying without access to a high quality microscope and slides. In the past the students learned the histo-path in a distributed tutorial session (DTS) by looking at pre-taken micrographs at various magnifications that were embedded in a PowerPoint presentation. Students were given online access to the virtual slides along with a copy of them on their laptop hard drives. After the placement they were asked to fill out a survey on how the slides worked for them. Virtual slides have been shown to deliver an experience very close to as being on campus. Further development within in the laboratory curriculum in the future includes supplementing the on campus labs to include a virtual component as well as enhancing the diagnostic imaging labs with digital radiology and through PACS.

# **A Review of Thyroid Cancers Referred to the Algoma Regional Cancer Program 2007-2009**

## **Presenting Authors**

Kathleen Gregory, Lauren Davies, Matthew Miller, Ian Roney, Silvana Spadafora

## **Authors**

Kathleen Gregory, Lauren Davies, Matthew Miller, Ian Roney, Silvana Spadafora

## **Affiliations**

Algoma Regional Cancer Program, Group Health Centre

## **Abstract**

In Canada, Thyroid Cancer incidence is increasing at a rate of 5.5% in men, and 10.1% in women per year since 1997. Similar increases have been noted in Europe and the United States. Mortality rates have remained stable. Thyroid Cancer is the third most common cancer in young adults, age 20-44 years old. The incidence in young women appears to be increasing the most rapidly. To illustrate, the 2008 incidence/ 100 000 population in females in Canada is 19: Ontario has the highest incidence of 26 amongst the provinces and Prince Edward Island the lowest at 6 amongst the provinces. The reasons for the variability seen are unclear. Literature review suggests that papillary thyroid cancer represents 70- 75 % of lesions resected. Other data including patient characteristics and demographics were accumulated. Thyroid cancer referrals at the Algoma Regional Cancer Program was reviewed for 2007-2009. We characterize the predominant pathology, the presenting complaint and stage as well as patient characteristics and demographics. This data will be reviewed and compared to North East Ontario and Canadian data in our presentation. Further specific data as to possible causes unique to our Region will be presented.

# Identification of genes associated with doxorubicin resistance in tumour cells

## Presenting Author

Adam Tam

## Authors

Adam Tam, Carita Lanner, Amadeo Parissenti

## Abstract

Acquired resistance to DNA damaging agents, such as doxorubicin, drastically reduces the effectiveness of anticancer chemotherapy. Doxorubicin is a cytotoxic anthracycline known to intercalate with DNA, preventing DNA replication. It is mainly used in the treatment of breast cancer but can also be used to treat ovarian and uterine cancers. Breast, ovarian, and uterine cancer cell lines have been grown in vitro with confirmed resistance to doxorubicin using clonogenic assays. These cell types are expected to have differing mechanisms of doxorubicin resistance. Gene profiling using microarray analysis has revealed changes in expression level for specific genes when compared to doxorubicin-sensitive. Any commonalities discovered in genes associated with doxorubicin resistance may ultimately lead to the discovery of new approaches to combat doxorubicin resistance across cancer types.

# Cultivating a Pediatric Residency Program in the Context of Community Based Training

## Presenting Author

Dr. Maureen Topps

## Authors

Dr. Maureen Topps, Dr. Burke Baird

## Affiliations

NOSM

## Abstract

Introduction: The Northern Ontario School of Medicine (NOSM) offers community based residency training in Pediatrics. The Royal College of Physicians and Surgeons of Canada determines the training standards and requires “6 months or equivalent longitudinal community/rural pediatrics” in a four year program. The balance of training to date has generally been in specialized tertiary care environments. However, the majority of pediatricians work in community based practice. The Accreditation Council of Graduate Medical Education has a policy statement and the American Academy of Pediatrics has labeled community pediatrics as integral to the role of all pediatricians. However, there is limited information on types and acuity of clinical encounters in community settings. Method Quantitative tracking of clinical encounters with comparison of tertiary and regional environments is underway with the anticipated outcome being to demonstrate that residents training in community practices encounter similar case mixes to those training in tertiary environments. Evaluation of clinical encounters in Northern Ontario is necessary to guarantee the quality of educational opportunities and demonstrate enhanced opportunities for skill development. Results Analysis is underway and preliminary findings will be presented at the conference Discussion To “improve child health at a community level, pediatricians require knowledge and skills that have not been traditionally included in residency training” (1). Furthermore, it has been found that “evaluations of some programs suggest that community pediatrics training of this caliber will cultivate a cadre of pediatricians ... who understand child health in the context of community and have the leadership and collaborative skills to improve the health of children in their communities”. Exploring this is critical for NOSM’s mandate of social accountability and the ongoing development of pediatric residency training in the community. (1) Shipley Stelzner Zenni et al. (2005) Pediatrics. Apr; 115(4 Suppl):1150-7

# An exploration of the impact of cultural beliefs and attitudes towards foods on the acceptance of dietary recommendations for the management of Type 2 Diabetes Mellitus.

**Presenting Author**

Zsolt Toth

**Authors**

Zsolt Toth, RD, MPH (candidate)

**Affiliations**

Lakehead University, M'Chigeeng First Nation Health Services, Noojmowin Teg Aboriginal Health Access Center

**Abstract**

**Objectives:** To discover culturally shared local beliefs and attitudes towards foods that may impact glycemic control. In addition to determine the most commonly consumed foods amongst Ojibwe with Type 2 diabetes.

**Methods:** Culturally-appropriate grounded theory research using the a combination of qualitative and quantitative data collection methods of 1) focus group discussions with Ojibwe community members with Type 2 Diabetes Mellitus residing in M'Chigeeng First Nation in the Manitoulin District Ontario, 2) food frequency analyses.

**Results, Conclusion:** Project in progress.

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# Correlations Between Perfectionism, Coping, and Intolerance of Uncertainty in the Development of Anxiety Disorders

## Presenting Author

Dina Tsirgielis

## Authors

Dina Tsirgielis<sup>1</sup>, Mihaela Dirlea<sup>1</sup>, Munira Mohamed<sup>1</sup>, Monica Vermani<sup>1,3</sup>, Catherine Cameron<sup>1</sup>, Irvin Epstein<sup>1,2</sup>, Christina Iorio<sup>1,3</sup>, Martin Katzman<sup>1,2,3,4</sup>

## Affiliations

1 START Clinic for Mood and Anxiety Disorders 2 Department of Psychiatry, University of Toronto 3 Department of Psychology, Lakehead University 4 Northern Ontario School of Medicine

## Abstract

The current study examined potential correlations between three constructs relevant in anxiety disorders, these include the subtypes of perfectionism (MPS scale), the subtypes of coping strategies (CISS scale), and the degree of intolerance of uncertainty (IUS scale). It was hypothesized that those who had a higher intolerance of uncertainty would score higher in self-oriented perfectionism (i.e. setting higher standards for themselves) and on task-oriented coping, which entails responding to a stressful event through problem resolution or cognitive reframing. A second hypothesis posed that those who scored highly on socially-prescribed perfectionism (i.e. those who perceive strong pressures from others to succeed personally), would also score highly in emotion-oriented coping, in which individuals respond to a stressful event by directing the response to the self rather than to the task. Participants included patients who were referred to a tertiary care clinic (n=324), data collection was performed upon their first visit at the clinic prior to the commencement of any treatment procedures. Findings support both hypotheses, and thus suggest that intolerance of uncertainty correlates positively with self-oriented perfectionism ( $r=.14$ ;  $p<.05$ ), but negatively with task-oriented coping ( $r=-.218$ ;  $p<.01$ ). Furthermore, analysis suggests that socially-prescribed perfectionism correlates positively with emotion-oriented coping ( $r=.427$ ;  $p<.01$ ). In addition, it was found that intolerance of uncertainty correlates positively with both socially-prescribed perfectionism ( $r=.373$ ;  $p<.01$ ), and emotion-oriented coping ( $r=.620$ ;  $p<.01$ ). These findings suggest potential relationships between factors that underlie the development of the anxiety disorders.

# An unusual case of lymphoblastic transformation of follicular lymphoma

## Presenting Author

Tyler Verdun, MD candidate, E2007, NOSM

## Authors

Tyler Verdun (1), Kulwant Gill (1,2,3), Colin Germond (1,3), Bruce Patterson (1,2), Michael Rutherford (1,2).

## Affiliations

(1) Northern Ontario School of Medicine, Sudbury, Ontario; (2) Hôpital Régional de Sudbury Regional Hospital; (3) Regional Cancer Program, Sudbury Regional Hospital, Sudbury, Ontario

## Abstract

Follicular lymphoma (FL) represents about 20-25% of non-Hodgkin lymphoma in North America. It is a tumour of germinal center B lymphocytes and is highly associated with the translocation t(14;18) in which the coding region of the oncogene bcl-2 is juxtaposed with immunoglobulin (Ig) heavy chain joining region (JH). The disease course is usually indolent to begin with but most patients relapse after treatment and eventually experience treatment-refractory disease or transformation, most often to diffuse large B-cell lymphoma or, very rarely, to lymphoblastic lymphoma/leukemia (ALL). Here we report clinical, morphologic, flow cytometric and molecular genetic features of an unusual case of transformation of FL to B-ALL. A lymph node biopsy in 2001 showed low-grade FL with surface kappa Ig light chain restriction. After chlorambucil therapy the patient was in remission until 2007 when she developed B-ALL with surface lambda Ig light chain restriction. The patient responded well to an ALL chemotherapy regimen and was again in remission until 2009 when the B-ALL relapsed, this time showing no surface Ig light chain expression. The patient died two months later. Qualitative PCR for BCL2 3'MBR-JH and amplicon sequencing showed the same t(14;18) translocation breakpoint for the samples from 2001, 2007 and 2009 demonstrating that these serial tumours were clonally related, despite switching or complete loss of surface Ig light chains. Transformation in follicular lymphomagenesis is not well understood; possible explanations include clonal evolution, emergence of an aggressive sub-clone, divergent evolution from a more immature common progenitor cell or some combination thereof. The surface lambda-expressing 2007 cells in this case may have emerged from a small subpopulation of lambda-chain restricted lymphoma cells detected in the 2001 biopsy by immunostaining.

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# Alleviating the Symptoms of Carpal Tunnel Syndrome Using a Carpal Therapist Device

## Presenting Author

Christian Walker

## Authors

Christian Walker, Ph.D.

## Affiliations

Geneva Medical Devices, Inc. and The Hand Pain Society

## Abstract

**Background:** The Carpal Therapist is a wearable electromechanical device that automatically manipulates the soft tissues over the anterior wrist and distal forearm. Such manipulation is intended to alter the soft tissues within the carpal tunnel in order to obtain symptomatic relief from carpal tunnel syndrome (CTS). This study endeavored to determine the extent to which subjects with moderate or severe CTS could obtain symptomatic relief using this device.

**Methods:** Twelve subjects with advanced CTS were assessed using a self-administered expanded version of the McGill Pain Questionnaire (MPQ). Each subject was personally instructed on using the Carpal Therapist twice daily for ten days. Subjects were given a Daily Diary to track compliance and assess efficacy. MPQ's obtained at baseline were then compared to those obtained after ten days of treatment. Relative changes were determined in scores for hand pain quality using the severity scale of 1) none, 2) mild, 3) moderate, 4) severe. Pain determinations based on severity over 24hours as well as measures of Activities of Daily Living (ADL) were also assessed.

**Results:** The results showed that after ten days of treatment, every subject achieved significant relief from hand pain. Nine of eleven subjects had decreased pain sensations by two severity scale points, while two subjects decreased pain by one severity scale point. These results were nearly identically mirrored in the 24 hour severity and ADL measures.

**Conclusion:** It is concluded that the Carpal Therapist can provide significant symptomatic relief from CTS quite rapidly. Other studies are underway to assess its long term therapeutic effects.

# Fatality Trends for Younger, Middle-Aged, and Older Drivers and Passengers

## Presenting Author

Bruce Weaver

## Authors

Nadia Mullen, Ph.D.; Sacha Dubois, MPH; & Michel Bédard, Ph.D.

## Affiliations

Centre for Research on Safe Driving, Lakehead University; St. Joseph's Care Group

## Abstract

**Background/Objectives:** Using data from the United State's Fatality Analysis Reporting System (FARS), Bédard et al. (2001) examined fatality trends from 1975 through 1998 and projected future trends to 2015. The present project included FARS data from 1975 through 2008 to examine the accuracy of Bédard et al.'s projections and to project future trends to 2025. It was hypothesized that, as Bédard et al. projected, 1) the number of fatalities involving younger drivers and passengers (<30 years) would decrease from 1999 to 2008, while the number of fatalities involving middle-aged (30-64 years) and older (65< years) drivers and passengers would increase; and 2) fatalities among older women (65< years) would increase from 1999 to 2008 at a faster rate than that of older men.

**Method:** Using FARS data from 1975 through 2008, the number of driver and passenger fatalities was examined. The data were stratified by age (<30 years, 30-64 years, 65< years) before fitting least squares regression models. These models were used to perform fatality projections to 2025. The fatality data for older drivers and passengers (65< years) were also examined by gender.

**Results:** From 1999-2008, fatality rates decreased for younger (<30 years) drivers and passengers, and increased for middle-aged (30-64 years) adults. Unexpectedly, fatality rates decreased for older (65< years) drivers and passengers; fatalities decreased at a faster rate for females. From 1997 onwards, fatality rates of middle-aged drivers and passengers exceeded those of younger individuals. If these trends continue, by 2025 fatalities for middle-aged drivers and passengers will be approximately twice as high as fatalities for drivers and passengers aged <30 or 65< years.

**Conclusion:** More attention may need to be directed towards decreasing fatalities among middle-aged drivers and passengers.

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# The Impact of Opioid Analgesics on Safe Driving

## Presenting Author

Bruce Weaver

## Authors

Sacha Dubois(1,2), Michel Bédard(1,2,3), Bruce Weaver (2,3)

## Affiliations

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## Abstract

**Background/Objectives:** Currently, most epidemiological research into the impact of opioid analgesics on road safety has focused on the association between opioid use and traffic crash occurrence. Yet, the role of opioid analgesics on crash responsibility is still not properly understood. Therefore, we examined the association between opioid analgesics and unsafe driving actions preceding fatal crashes.

**Methods:** We examined the impact of opioid analgesics on all drivers (confirmed BAC=0) involved in fatal crashes (1993-2006) using a case-control design based on U.S. data from the Fatality Analysis Reporting System. Cases had one or more crash-related unsafe driving actions (UDA) recorded; controls had none. We calculated adjusted odds ratios (ORs) of any UDA by medication exposure after controlling for age, sex, other medications, and driving record. A second, validation analysis, was performed excluding all cases that tested positive for medications/drugs other than opioid analgesics.

**Results:** Compared to drivers who tested negative for opioid analgesics, female drivers who tested positive demonstrated increased odds of performing an UDA from ages 25 (OR: 1.35; 95% CI: 1.05, 1.74) to 55 (OR: 1.30; 95% CI: 1.07; 1.58). For male drivers this was true from ages 25 (OR: 1.66; 95% CI: 1.32; 2.09) to 65 (OR: 1.39; 95% CI: 1.17;1.67). The detection of opioid analgesics was not associated with greater risk of an UDA for older drivers. The validation analysis was confirmatory.

**Conclusion:** Given the potential impact of these medications on driver safety, further research is necessary to examine why these age differences exist, and if possible, to ensure that opioid analgesics do not contribute to crashes.

# Patient satisfaction with shared mental health care services

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## Abstract

**Objectives:** Shared mental health care (SMHC) is a service that delivers outpatient mental health services in the patient's primary health care setting. Co-location of mental health and primary health services has been initiated in several communities across Canada with the goal of improving access to mental health services for patients, increasing the range of mental health interventions available in primary care, and strengthening the collaboration and support between primary care physicians and mental health specialists. This study evaluates patient satisfaction with shared mental health care (SMHC) services in clinics (that are supported by two different funding models: fee for service and capitation).

**Methods:** Patients seeking mental health care from two different family medicine clinics in Thunder Bay, Ontario with integrated SMHC services were evaluated; upon initiation of SMHC services, patients filled out a Visit Satisfaction Questionnaire (VSQ) and upon completion of a course of care (3 or more visits) patients filled out a Client Satisfaction Questionnaire (CSQ).

**Results:** Patients expressed high levels of satisfaction with the SMHC services at both clinics. CSQ mean was 29.7 (93%) SD=2.85 and on VSQ over 80% of patients rated services as "very good" or "excellent" on the majority of variables. Patients receiving care at the clinic supported by capitation payment physicians reported significantly higher levels of satisfaction on both the VSQ ( $F(1,566)=44.18$ ,  $p<0.001$ ) and CSQ ( $F(1,440)=7.48$ ,  $p<0.01$ ).

**Conclusions:** This study suggests that SMHC services are perceived as positive and beneficial to patients in need of mental health services. It further indicates that the capitation payment family health care team funding environment may have benefits above fee a for service environment in delivering SMHC services as shown by increased patient satisfaction with services.

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