
NORTHERN HEALTH / NBRHC RESEARCH **CONFERENCE**

June 7 - 8, 2013
North Bay, Ontario

North Bay Regional
Health Centre



Centre régional
de santé de North Bay



Northern Ontario
School of Medicine
École de médecine
du Nord de l'Ontario
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NORTH BAY REGIONAL HEALTH CENTRE WELCOME



Paul Heinrich
CEO, North Bay Regional
Health Centre

*Chair, North East Academic
Health Science Network*



It is my pleasure to extend a warm welcome to each of you on behalf of the North East Academic Health Science Network (NE AHSN) and the North Bay Regional Health Centre (NBRHC). We are very excited to be able to host our Annual Research Conference this year in conjunction with the Northern Ontario School of Medicine's (NOSM) Northern Health Research Conference (NHRC).

The conference objectives – to create collaboration and networking opportunities among researchers, health-care professionals and Northern Ontario communities, and to recognize the importance of employing research uptake in health-care practices – are especially appropriate as we celebrate the announcement of the North East Academic Health Science Network. Our vision for this network is to improve the health of Northern Ontarians through collaboration in research and education. Academic and health-care institutions have joined from all over North East Ontario to participate as partners in this network with the commitment of working together to ensure that Northern Ontarians are experiencing the benefits of innovation and improvement to the quality of their health.

I trust you will thoroughly enjoy this collaborative Research Conference and the opportunities available for developing partnerships, community networking and achieving greater insight into the active Northern research enterprise.



A MESSAGE FROM THE MAYOR



Al McDonald
Mayor
City of North Bay



On behalf of City Council, I am delighted to extend a warm welcome to the participants of the 2013 Northern Health / NBRHC Research Conference on June 7-8, 2013.

The Northern Ontario School of Medicine (NOSM) and the North Bay Regional Health Centre (NBRHC) will be combining their conferences (Northern Health Research Conference, and the NBRHC Research Conference) into a single event. The two organizations share a common commitment to improving health care for Northern Ontarians which will grow through this collaboration. The theme for the conference this year is "From Research to Practice – Forging the Link." It is a great initiative, and potentially very valuable to North Bay's research development in the upcoming years.

For those of you from out of town, we hope that you will take some time to enjoy our city's sights and hospitality. Here in the City of North Bay, we feel very fortunate to have the best of culture, entertainment, shopping, dining and accommodation that make this city – a great city! We hope that your stay with us will be an enjoyable and memorable one.

Best wishes to all for a successful conference.



WELCOME FROM THE MPP



Vic Fedeli
*Member of Provincial Parliament
Nipissing*

On behalf of the Province of Ontario, please accept my warmest welcome to the more than 120 attendees taking part in this year's Northern Health/North Bay Regional Health Centre Research Conference.

For our visitors to Nipissing, we're so pleased to have you here. It's my hope you'll have a chance to enjoy our local hospitality and see first-hand some of the wonderful sights and amenities we have to offer here.

It's my hope that your conference will shine a light on the great work being done in Northern health research, and the importance of networking and collaboration among Northern communities and health professionals.

Let me also take this opportunity to thank Dr. Sandra Stewart and Dr. Greg Ross for leadership in planning the conference and to all of the hard-working committee members whose dedication makes a special event like this possible.

Please accept my best wishes for continued growth in health research in Nipissing and Northern Ontario!



WELCOME FROM THE MP



Jay Aspin
Member of Parliament
Nipissing-Timiskaming

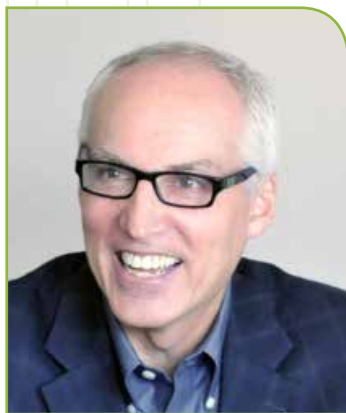
On behalf of the Government of Canada, I wish to extend a warm welcome to the organizers and participants in the 8th Annual Northern Health Research Conference. I would like to thank the hosting organizations, the Northern School of Medicine and the North Bay Regional Health Centre as well as the Organizing Committee for choosing our beautiful region to hold this very important event.

As the Member of Parliament for Nipissing-Timiskaming, I am particularly enthused that the conference will assist with your ongoing efforts to enhance and develop vibrant health research in the region. I am a strong advocate for the establishment of Northeastern Ontario as a major contributor to the global health research sector and therefore a strong advocate of your goals. In this regard, I am confident this event will provide greater appreciation and knowledge of Northern Research, productive collaborative and networking opportunities among researchers, success in identifying the importance of employing research uptake in health-care practices and additional success in understanding how these activities will contribute to a vibrant health research industry in Northern Ontario.

June is a wonderful time of the year to enjoy our beautiful region. I hope you may be able to take advantage of the many amenities the City of North Bay and surrounding areas have at this time of year.

I wish your conference every success in meeting its goals. I commend your commitment and dedication to improving health care for the people of Northern Ontario.

KEYNOTE SPEAKER



Professor Franco J. Vaccarino

Before assuming the role of Principal at the University of Toronto (U of T) Scarborough and Vice-President, U of T in July 2007, Professor Vaccarino was Chair of the Department of Psychology at U of T. He is also the past Head of the Neuroscience Program in the Department of Psychiatry at U of T, and past Executive Vice-President, Programs, and Vice President, Research at the Centre for Addiction and Mental Health.

The extensively published professor and researcher has received major awards from leading research and scientific organizations, including the Medical Research Council of Canada (MRC), Canadian Institutes of Health Research (CIHR) and Canadian College of Neuropsychopharmacology (CCNP). His major research focus in the area of neurobiology of stress, addiction and motivation is considered a model for bridging basic and applied neuroscience. Professor Vaccarino's prominence in the field was recognized by the World Health Organization (WHO) in his role as the Principal Editor of the Neuroscience of Substance Dependence report published in 2004.

Professor Vaccarino is an active member of numerous boards and advisory councils, and has been instrumental in helping to advance the academic research agendas at the provincial, national and international levels.

CONFERENCE AGENDA

Thursday, June 6, 2013		
6:00 p.m. – 8:00 p.m.	“Meet and Greet” BBQ	Canadore College Courtyard
Friday, June 7, 2013		
8:00 a.m. – 9:00 a.m.	Registration / Poster Setup / Open Poster Viewing	Canadore College Room B201
9:00 a.m. – 9:30 a.m.	Welcome and Opening Remarks from Dignitaries and Special Guests	
9:30 a.m. – 10:30 a.m.	Keynote Speaker Dr. Franco Vaccarino, Vice-President & Principal, University of Toronto Neuroscience and Discovery Research: Implications for our Understanding of Substance Use Disorders	
10:30 a.m. – 11:00 a.m.	Nutrition Break / Poster Viewing (Group #1)	Entrance Hallway
11:00 a.m. – 11:15 a.m.	Phyllis Montgomery The Community Reintegration Stories of Stroke Survivors Using Stroke Navigation Services	Session Chair: Lee Rysdale
11:15 a.m. – 11:30 a.m.	Lorraine Carter Interprofessional Teams: Working Together for Quality Programs	
11:30 a.m. – 11:45 a.m.	Mike Conlon Smoking Cessation in Patients with Cancer	
11:45 a.m. – 12:00 p.m.	Bruce Weaver Silly or Pointless Things People do When Analyzing Data: 2. Using the Wilcoxon-Mann-Whitney Test to Deal with Heterogeneity of Variance	
12:00 p.m. – 12:15 p.m.	Odwa Atari Ambient Air Pollution and Odour Annoyance in Sarnia, Ontario	
12:15 p.m. – 1:45 p.m.	Lunch / Open Poster Viewing (Groups #1 and #2) Canadore College Room B201 Entrance Hallway	
1:45 p.m. – 2:00 p.m.	Cindy Peltier The Lived Experience of Anishinaabe People with Cancer: A Focus on Indigenous Healing, Non-Indigenous Medicine and Minobimaadiziwin	Session Chair: Darren Campbell
2:00 p.m. – 2:15 p.m.	Megan Woolner Lymphedema Following Breast Cancer Therapy	
2:15 p.m. – 2:30 p.m.	Nicole Gauthier Influences of Gender and Practice Location on Ontario's International Medical Graduates Practice Patterns	
2:30 p.m. – 2:45 p.m.	Nelson Eng Characterization of Northern Ontario <i>Helicobacter pylori</i> Isolates to Support the Development of a Vaccine Candidate	
2:45 p.m. – 3:00 p.m.	Nichola Hoffman Emotional Prosody and Working Memory in Speech Processing	
3:00 p.m. – 3:30 p.m.	Nutrition Break / Poster Viewing (Group #2)	Entrance Hallway
3:30 p.m. – 3:45 p.m.	Harmony Driver The Distracting Influence of Emotional Speech Spoken Emotionally in Younger and Older Adults	Session Chair: Joe Persi
3:45 p.m. – 4:00 p.m.	Lee Rysdale Teaching Aboriginal and Francophone Culture and Health and Videoconference Telepractice Skills: Health Sciences Preceptor Readiness and Professional Development Needs	
4:00 p.m. – 4:15 p.m.	Amanda Giunti Nurse Navigation and the Transition to Cancer Survivorship: A Review of Determinants Essential to Program Success	
4:15 p.m. – 4:30 p.m.	Zaida Rahaman Population and Public Health: Exploring the Roles and Challenges of Nurses Working within Rural and Remote Northern Canadian Communities	
4:30 p.m. – 4:45 p.m.	Hoang-Thanh Le Intranasal Nicotine Vaccine	
7:00 p.m. – 10:00 p.m.	Dinner / Social Evening – Chief Commanda II Cruise (2.5 hr Callander Bay Sunset Cruise)	

Saturday, June 8, 2013		
8:00 a.m. – 9:00 a.m.	Open Poster Viewing	Entrance Hallway Canadore College Room B201
9:00 a.m. – 9:15 a.m.	Joe Persi The State of Child and Adolescent Psychiatric Inpatient Settings in Ontario	Session Chair: Bruce Weaver
9:15 a.m. – 9:30 a.m.	Daniel Jarvis The Numerate and Critical Thinking Nurse: A Comparison of Final Year Nursing Students' and Practicing Nurses' Perceptions of Workplace Mathematics and Technology Demands	
9:30 a.m. – 9:45 a.m.	Nicholas Jeeves Wilderness & Survival Medicine as an Inter-Professional Education Innovation	
9:45 a.m. – 10:00 a.m.	Darren Campbell Neural Correlates of Funny and Non-Funny Comics: The Importance of a Third Option - <i>Is it a Joke, but not Funny?</i>	
10:00 a.m. – 10:15 a.m.	Emmanuel Abara Collaborative Care of Urologic Cancer Patients Through Telemedicine in Rural Northeastern Ontario	
10:15 a.m. – 10:45 a.m.	Nutrition Break / Poster Viewing (Group #2)	Entrance Hallway
10:45 a.m. – 11:00 a.m.	Marion Maar Assessing Community Readiness for the Implementation of DREAM-GLOBAL, a Cell Phone Based Monitoring and Reporting System for Hypertension Management	Session Chair: Ralph Dell'Aquila
11:00 a.m. – 11:15 a.m.	Marina Ulanova Immunoepidemiology of Invasive <i>Haemophilus influenzae</i> Type A Disease in Northern Ontario	
11:15 a.m. – 11:30 a.m.	Jeff Curran Emergency Response in Sachigo Lake First Nation: A Locally-Tailored Medical Training Program	
11:30 a.m. – 11:45 a.m.	Sarah Barnett What Characteristics Predict Intended Future Practice Location of NOSM Undergraduates?	
11:45 a.m. – 1:15 p.m.	Lunch / Open Poster Viewing (Groups #1 and #2)	Canadore College Room B201 Entrance Hallway
1:15 p.m. – 1:30 p.m.	Breanna May The Effects of Age, Hearing Loss and Temporal Delay on a Central Auditory Integration Mechanism	Session Chair: Marina Ulanova
1:30 p.m. – 1:45 p.m.	Alain Gauthier Preliminary Findings from the <i>Laurentian University Smoking Behaviour Survey</i> : Implications for Professional Practice and Policy Recommendations	
1:45 p.m. – 2:00 p.m.	Eli Nix Natural Antibody Against <i>Haemophilus influenzae</i> Type A among First Nations with Chronic Renal Failure	
2:00 p.m. – 2:15 p.m.	Brenda Bruner A Mixed Methods Approach to Understanding Food Skills and Dietary Habits Among Emerging Adults Living in a Campus Environment	
2:15 p.m. – 2:45 p.m.	Nutrition Break / Poster Viewing (Group #1)	Entrance Hallway
2:45 p.m. – 3:00 p.m.	Derek Bos Knowledge, Attitudes, and Practice Patterns among Health Care Providers in the Prevention of Recurrent Kidney Stones in Northern Ontario	Session Chair: Sandra Stewart
3:00 p.m. – 3:15 p.m.	Behdin Nowrouzi Recruitment and Retention of Rural and Northern Physicians: A Population-Based Cross-Sectional Study	
3:15 p.m. – 3:30 p.m.	Patrick Timony From Behind the Stethoscope: Exploring Family Physicians Perspective of Health Services in Ontario's French Speaking Communities	
3:30 p.m. – 3:45 p.m.	Jill Sherman Knowledge, Attitudes, and Practices of ED Physicians Related to the Triage and Transfer of Major Trauma Patients	
3:45 p.m. – 4:00 p.m.	Conference Evaluation and Wrap Up	Canadore College Room B201

POSTER AGENDA

Group # 1	
Station #	Presenter/Poster Title
1	Nitin Bhardwaj Immunogenicity of Recombinant KatA Protein Against <i>Campylobacter</i> Jejuni in Mice
3	Alain Carlson The Beck Depression Inventory Should Include Positive Emotion Responses
5	Pamela Chenard A Comparison of Doxorubicin and Doxorubicinor Concentrations in Rat Heart and Liver Tissue Following Anthracycline Administration
7	Jason Corcoran The Use of Stressors to Enhance Production of Microalgal Lipids that could be used in Health Beneficial Nutraceuticals
9	Christina DeRoche From Point of Entry to Point of Care: One Organization's Experience in using the RAI-MH and OCAN
11	Jessica Sarvas High Fat Diet, Exercise, and the IL-6 Paradox
13	Michelle Gates Youth Physical Activity and fitness in remote Northern First Nations: A Case Study from Kashechewan Ontario
15	Kristen Jacklin Recentring Relationships in Diabetes Care Indigenous Health Medical Education for Practicing Family Physicians
17	Sally Lindsay Exploring the roles of Canadian winter on the participation and inclusion of youth with physical disabilities
19	Aroha Page Vigilance-Harmonizing for Health Protective Practices-Paradoxes for Pandemic Flu Preparations among Nipissing University Students
21	Justo Perez Isolation and characterization of clostridium difficile isolates from patient fecal samples at health Sciences North (HSN). Relationship between hospital and community acquired Clostridium difficile infection (CDI) in Northern Ontario
23	Lee Rysdale Teaching Aboriginal and Francophone Culture and Health and Videoconference Telepractice Skills: Health Sciences Preceptor Readiness and Professional Development Needs
25	Sergio Fabris The differential accumulation of doxorubicin in the soleus and gastrocnemius muscle of the rat
27	Sergio Fabris Intramuscular and interstitial nitric oxide concentrations following doxorubicin administration in nude mice
29	Bruce Weaver Assessing Fitness-to-Drive: Practical tips on choosing the right screening tools for your practice
31	Bruce Weaver Examining the Association of Combined Effects of Alcohol and Cannabis on Unsafe Driving
33	Andrew Weeks Fear Conditioning is Associated with Fewer Synapses in the lateral amygdaloid nuclei of the rat

Group # 2	
Station #	Presenter/Poster Title
2	Badruz Zaman Photoluminescence near-infrared quantum dots: novel tools for whole animal imaging
4	Ashley Cerqueira Continued Surveillance of invasive Haemophilus influenzae disease in Northwestern Ontario
6	Joshua Choi Activation of Innate Immune Response by Haemophilus Influenzae Lipooligosaccharide
8	Christina DeRoche Labels, Stigma and the Sick Role in a Therapeutic Culture: The Case of Developmental Coordination Disorder
10	Sandra Stewart Neuropsychological Effects of Opiate Replacement Treatment: Methadone Vs. Suboxone in Prescription Opiate Addiction
12	Joe Eibl Identification of Novel Pyrazoloquinazolinecarboxylate Analogues to Inhibit Nerve Growth Factor <i>in vitro</i>
14	Judith Horrigan Exploring Nurses' Quality of Work Life and Health in Northeastern Ontario Urban, Rural and Remote Hospital Settings
16	Karina Kachur Antibacterial Properties of Ginseng Extracts
18	Reza Nokhbeh Disruption of mRNA Processing GW Bodies by Viruses
20	Marlena Pearson Effects of Lexical Neighborhood Density on Identifying Words in a Binocular Rivalry Task
22	Stephanie Puukila Modification of high dose radiation-induced cardiac inflammation and fibrosis by low dose computed tomography (CT) or positron emission tomography (PET) scans in Trp53 Heterozygous Mice
24	Mayra Rodriguez Use of accelerated hydrogen peroxide (AHP) -based formulations in the control of antibiotic-resistant contaminants
26	Gerusa Senherinho Investigating Antimicrobial activity of wild microalgae
28	Wayne Warry Improving Health Equity for Northern Ontarians: Applied Health Research with Vulnerable Populations
30	Bruce Weaver Aggressive Driving Behavior in Young Drivers (Aged 16 through 25) Involved in Fatal Crashes
32	Bruce Weaver Decreasing Driver Speeding on a Simulated Drive with Feedback and Reinforcement



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ORAL ABSTRACTS



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

Abstracts have been published as submitted.

The oral abstracts are in order by presenting author.

The Community Reintegration Stories of Stroke Survivors Using Stroke Navigation Services

PRESENTING AUTHORS:

P. Montgomery

AUTHORS:

S. Mossey¹, P. Bailey¹, P. Montgomery¹, D. Jermyn², P. Nangia¹, M. Egan³, S. Verrilli²

AFFILIATIONS:

1. Laurentian University, 2. Health Sciences North, 3. University of Ottawa

ABSTRACT:

Approximately 1,000 individuals are discharged home following an acute stroke hospitalization in northeastern Ontario on an annual basis. The purpose of this study, a component of a larger participatory action initiative, is to describe stroke survivors’ stories of community reintegration following hospital discharge. The study’s ethnographic design and structural narrative analysis allowed for focused examination of survivors’ experiences of transition. The survivors told over 300 stories regarding reintegration within the context of pre- and post-stroke realities. All survivors shared stories about their stroke event and post-stroke experiences. Establishing a “new normal” required a network of collaborative relations inclusive of stroke navigation. Navigation services offered opportunities to facilitate the survivors’ passage through significant life transitions through partnering to support novel ways of well-being and mobilizing appropriate community resources. Within the continuum of care, these findings reveal that community reintegration is support through stroke navigation, a service valued by survivors.

Interprofessional Teams: Working Together For Quality Programs

PRESENTING AUTHORS:

Lorraine Carter

AUTHOR(S):

Carter, L. (1), Beattie, B. (2) & Caswell, W. (2)

AFFILIATIONS:

(1) Center for Flexible Teaching & Learning & School of Nursing, Nipissing University, North Bay

(2) School of Nursing, Nipissing University, North Bay

ABSTRACT:

Over the last ten years, interprofessional team functioning has generated considerable attention in the health education domain and the rapidly developing field of technology-enabled education including online learning. This study examines another interprofessional team—the interprofessional team that facilitates the development and delivery of the RPN to BScN Blended Learning Program at Nipissing University. The purpose of this descriptive mixed methods study is to gather and explore the perceptions and recommendations of the interprofessional team responsible for the development and delivery of this program. The overall goal is strengthened team functioning and a sustained high quality program. The study will involve a purposive sample composed of staff and instructors from the School of Nursing and staff in the Centre for Flexible Teaching and Learning, all of whom have involvement in the RPN to BScN Blended learning program. The project includes two major parts: completion of an online survey called the Interprofessional Team Functioning Survey tool (ITFS) and participation in focus group work. Findings from this study will also inform the work of other stakeholders in both nursing and education about interprofessional team functioning. The presenters will share the progress of the research including data collected to date.

Smoking Cessation in Patients With Cancer

PRESENTING AUTHOR:

Mike Conlon

AUTHOR(S):

Conlon, MS (1,2,3), Saunders, DP (1,2), Bewick, MA (1), Meigs, ML (1), Allemano, JA (1)

AFFILIATIONS:

- (1) Northeast Cancer Centre, Health Sciences North
- (2) Northern Ontario School of Medicine
- (3) Laurentian University School of Nursing

ABSTRACT:

Successful smoking cessation may offer a treatment and survival benefit for cancer patients. This ongoing prospective study was designed to assess baseline smoking characteristics, intention to quit, smoking cessation rates, and the role of genetic variants in nicotine dependence and cessation in a cohort of patients with head and neck cancer. Patients who were classified as “ever smokers” and attended the dental oncology clinic within the Northeast Cancer Centre for treatment-related assessments were invited to participate. Participation involved completing a questionnaire that assessed baseline smoking-related behaviours, including nicotine dependence using the Fagerström Test for Nicotine Dependence (FTND), and intention to quit smoking. Participants were also asked for consent to provide a saliva sample for genetic analyses and for future contact to assess smoking cessation and other health-related outcomes. Personalized smoking cessation counselling, by trained staff, was offered. There are 277 ever smoker (ex and current smokers) participants enrolled in study. Most (79%; n=218) are male, with a median age at enrolment of 65 years (range 35-93 years). More than one-third of the cohort (37%; n=102) had high nicotine dependence levels (FTND score of 6 or higher); assessment using the related HSI defined a quarter of the cohort as heavy smokers (25%; n=70). Both measures were associated with current smoking status at enrolment. Ninety-five participants (34%) were current smokers. Most current smokers had previously tried quitting (84%; n=80), and were presently interested in quitting smoking (83%; n=79) and receiving personalized counselling for cessation. This study demonstrates the need to support cessation efforts in this population of cancer patients, and highlights the role of nicotine dependence and smoking behaviour. Future research into the success of smoking cessation methods, including the role of genetic variants in nicotine dependence and cessation may help us better address smoking behaviours in cancer patients.

Silly or Pointless Things People Do When Analyzing Data: 2. Using the Wilcoxon-Mann-Whitney Test to Deal with Heterogeneity of Variance

PRESENTING AUTHOR:

Bruce Weaver

AUTHOR(S):

Weaver, B (1)

AFFILIATIONS:

(1) Human Sciences Division, Northern Ontario School of Medicine, Thunder Bay, ON

ABSTRACT:

Parametric statistical tests such as the independent groups *t*-test and analysis of variance (ANOVA) assume that the scores are sampled randomly from normally distributed populations with equal variances. Rank-based nonparametric tests do not require normally distributed populations. Therefore, they are often described as “distribution-free” tests. It is important to note, however, that distribution-free does not mean assumption-free. For example, when it is used as a nonparametric analog to the independent groups *t*-test, the Wilcoxon-Mann-Whitney test assumes that the two populations are identical apart from a possible shift in location. One way populations can differ is in the amount of spread. It has been known for some time that the Wilcoxon-Mann-Whitney test is adversely affected by heterogeneity of variance when the sample sizes are not equal. Zimmerman (2003) used computer simulations to examine the impact of heterogeneity of variance on the large-sample Wilcoxon-Mann-Whitney test when sample sizes are equal. Zimmerman’s simulations demonstrated that even when sample sizes are equal, very small differences between the population variances cause the large-sample Wilcoxon-Mann-Whitney test to become too liberal, sometimes severely so, depending on the shape of the underlying populations. At the same time, the independent samples *t*-test performed very well, even with non-normal populations. These findings serve as a reminder that distribution-free does not mean assumption-free, and demonstrate that in some circumstances, parametric tests may be far more robust to violations of their assumptions than are the corresponding nonparametric tests.

Ambient Air Pollution and Odour Annoyance in Sarnia, Ontario

PRESENTING AUTHOR:

Odwa Atari

AUTHOR:

Odwa Atari

AFFILIATIONS:

Department of Geography, Nipissing University, North Bay, ON

ABSTRACT:

Industrial annoyance has been shown to considerably impact general health and well-being of people by affecting their psychosocial status. This study examines the associations between industrial odour annoyance and ambient air pollutants including Nitrogen dioxide (NO₂), Sulphur dioxide (SO₂), and Volatile Organic Compounds (VOC) in Sarnia, Ontario, Canada. Sarnia, also known as 'Chemical Valley', has one of the largest concentrations of chemical industries in Canada and is located within the St. Clair River 'Area of Concern' (AOC) – a Health Canada designation based on a hypothesis that environmental pollution adversely impacts human health. However, in spite of increased public and government political interest in the environmental problems facing designated AOCs, there has been limited scientific research to study the determinants of health in such regions.

Annoyance scores were extracted from a community health survey; and exposure to pollution was estimated from respondents' 6-digit alphanumeric postal codes using land use regression (LUR) models. Univariate, bivariate and multivariate analyses were used to explore the relationships between odour annoyance and modelled pollutants.

The results indicate that odour annoyance is strongly associated with the modelled pollutants. When compared, the analysis indicates that Sarnia residents respond to considerably lower pollution concentrations than the allowable "safe" levels in the Province of Ontario. In general, the results exhibit a dose-response gradient with annoyance score increasing with rising modelled NO₂, SO₂ and VOC pollutant concentrations.

These findings suggest odour annoyance might be a function of true exposure and there is need for local health policy that moves beyond the focus on technological measures to reduce emissions to address the psychosocial concerns of residents in Sarnia.

Keywords: land use regression; odour annoyance; pollution; nitrogen dioxide; sulphur dioxide; Volatile Organic Compounds; Sarnia; Ontario

The Lived Experience of Anishinaabe People with Cancer: A Focus on Indigenous Healing, Non-Indigenous Medicine and Minobimaadiziwin

PRESENTING AUTHOR:

Cindy Peltier

AUTHOR(S):

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(1) School of Rural and Northern Health, Laurentian University, Sudbury, ON, (2) Northern Ontario School of Medicine, Sudbury, ON, (3) School of Rural and Northern Health, Laurentian University, Sudbury, ON, (4) School of Midwifery, Laurentian University, Sudbury, ON

ABSTRACT:

Cancer is a leading cause of death in Aboriginal people and the incidence is increasing. Despite reported successes of integrating Indigenous healing and conventional, western medicine in the treatment of addictions, domestic violence, mental health, palliative care and chronic illness, there is a dearth of such information for cancer. Studies have highlighted the need for awareness for policy makers and physicians of the contribution of Indigenous healing to cancer care, as well as the need for more culturally competent and sensitive cancer care.

This narrative study examines potential benefits and challenges of including Indigenous healing in cancer care. Using a participatory approach, it investigates how the cancer experience is affected when Anishinaabe people include both Indigenous and western medicine in treatment and when they do not. This study also examines whether the inclusion of Indigenous healing and western treatment assists in achieving Minobimaadiziwin, an Anishinaabe understanding of physical, mental, emotional and spiritual balance.

Interviews were conducted with 12 adults diagnosed with cancer from five First Nation communities on Manitoulin Island. 19 key informant interviews were conducted with those working from Indigenous and western health perspectives in various northeastern Ontario communities, Michigan and Minnesota. Participant observation provides the necessary context for all conversations. A qualitative, narrative methodology was selected to respect that storytelling is congruent with the oral Anishinaabe tradition. Data analysis involves a conceptual model which honours Anishinaabe teachings and western thought, framed as “two-eyed seeing”. Dissemination of results takes two forms: a collective, teaching story for the Anishinaabe people concerning cancer and healing and publications concerning potential benefits of and challenges with pluralistic medicine for Anishinaabe cancer care. By adding to a growing body of evidence of the effectiveness of Indigenous healing, this study has the potential to influence policies concerning access to Indigenous healing methods for cancer care.

Lymphedema Following Breast Cancer Therapy

PRESENTING AUTHOR:

Megan Woolner

AUTHOR(S):

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ABSTRACT:

Lymphedema is one of the most feared complications of breast cancer treatment; it can be very detrimental to cancer survivor’s quality of life as it can cause significant limb swelling and without effective treatment the condition generally worsens with time. As the population of breast cancer survivors increases, more scrutiny and resources have gone into developing effective methods of managing this common sequela of breast cancer treatment. In order to conduct the literature review, internet searches were conducted involving the key words lymphedema, post breast cancer lymphedema, and lymphedema management using PubMed, the National Library of Medicine (NLM), the National Cancer Institute (NCI), and Google Scholar. The review focuses on comparing and contrasting the current literature regarding management techniques and discusses interventions for prevention and therapy.

The project focused on compiling information regarding risk factors and preventative measures as well as the efficacy of therapies currently available. It is evident that lymphedema screening, education and prevention are an essential part of comprehensive cancer care. Raising awareness of the prevalence of this condition post cancer therapy, specifically in breast cancer patients, and attempting to make treatment options more readily available will be vital steps in reducing morbidity due to lymphedema. The shortage of adequately trained lymphedema therapists is a major impediment for patients seeking lymphedema decongestion in rural and small communities. At present multimodal therapies such as CDT are the standard of care which can be not only expensive but time consuming. Although this therapy is currently the most supported by health professionals weighing the comparative benefits of different therapies is important for every individual. Advances in technology and medicine used to treat cancer have lead to increasing number of breast cancer survivors, and the high prevalence of the disease will continue to make lymphedema a significant detriment for the quality of life of survivors.

Influences of Gender and Practice Location on Ontario's International Medical Graduates Practice Patterns

PRESENTING AUTHOR:

Nicole Gauthier (1)

AUTHORS:

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ABSTRACT:

Background: Integrating International Medical Graduates (IMGs) into Ontario's medical system is among the strategies used to address physician shortages, especially in underserved communities. Understanding how gender influences where and how IMGs practice in Ontario will help determine how IMGs can be best recruited and retained.

Methodology: This study employed a secondary data analysis of the 25,436 physicians in Ontario. Specifically, IMGs who were certified Family Physicians (FP) by the College of Family Physicians of Canada (CFPC) or General Practitioners (GP) were examined. Data was extracted from the College of Physicians and Surgeons of Ontario's 2011 Annual Membership Renewal Survey and Physician Registry. Physician demographics and practice patterns were compared among male and female IMGs by practice location.

Results: Among Ontario physicians, 2679 were identified as FP/GP IMGs; 60.8% of which were male. Male IMGs were on average older (\bar{x} =57.9yrs) than female IMGs (\bar{x} =50.9 yrs). The majority of male and female IMGs were practicing in southern-urban areas of the province (90.5%; 94.2%) and preferred clinical group settings (73.9%; 75.4%). There were gender differences regarding hospital privileges, hours worked/week and patient volumes. Of male IMGs, 54% had hospital privileges, were more likely to work 41+ hours/week (57.1%) and reported higher patient volumes (70%), compared to female counterparts (38.4%, 40.4%, 62.9%).

Conclusion: Findings are consistent with existing literature among the general physician population. Differences in practice patterns exist when male and female IMGs in Ontario were compared, however such differences are similar to what is observed between male and female Canadian/US Medical Graduates. Ontario must continue to explore effective recruitment strategies designed for both male and female FP/GPs and consider applying these strategies to IMGs. Despite Ontario's efforts to attract FP/GP IMGs to underserved areas, our findings indicate that the majority remain in southern-urban communities. New strategies are needed to supplement Ontario's supply of doctors in northern-rural areas.

Characterization of Northern Ontario *Helicobacter pylori* Isolates to Support the Development of a Vaccine Candidate

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ABSTRACT:

Helicobacter pylori is a bacterium that causes peptic ulcers and could result in gastric carcinomas. It has also been associated with other forms of cancer including lung and liver cancer. The bacteria infect more than 50% of the world's population. For example, infection rates are disproportionately high among First Nations people where factors such as poor socioeconomic status, crowded living conditions, limited access to running water may hinder the ability to control these infections. Currently, there are no vaccines against *H. pylori* nor is there any epidemiological data concerning this bacteria for Northern Ontario. As such, our goals are to establish a collection of *H. pylori* clinical samples from residents of Northern Ontario, and to use the data collected to facilitate the generation of a novel efficacious vaccine. The aims of this project are to 1) enroll patients admitted to Health Sciences North for gastroscopy as recommended by their physicians, 2) build a collection of *H. pylori* isolates and to characterize their antimicrobial susceptibility profile, phenotype and genotype, 3) to validate applicability of a vaccine candidate to local phenotypic and genotypic variations. This study is important to learn about patterns of *H. pylori* distribution, and will aid in the design of the best vaccine candidate to protect susceptible populations. Since epidemiology, culturing and antimicrobial susceptibility testing studies are not well established in Northern Ontario, this study provides an excellent opportunity to expand clinical programs and fulfill the need for a solid disease surveillance program in the region. Also, the outcomes from this study may assist in updating health care professionals on more suitable region-specific prevention strategies and treatments for patients with such infections.

Emotional Prosody and Working Memory in Speech Processing

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ABSTRACT:

Emotional prosody refers to cues including tones and stress patterns in speech, playing a part in how our verbal messages are processed. Working memory is the active component of memory which allows an individual to actively process/manipulate information for immediate or future use and is affected by emotion. An inability to inhibit emotional prosody and focus on meaning may affect our ability to attend effectively. The present study used an auditory recall task to determine how prosodic cues interact with working memory capacity (WMC) in speech processing. Decreased WMC is proposed as a factor associated with age-related differences in ability to attend to target speech. The current study examined the impact of emotional valence through prosodic cues, and attempted to determine any age-related differences and whether those differences are mediated by WMC.

Participants completed a test of WMC for analysis as a potential moderator of age-related effects on selective attention. Older and younger participants were presented with sentence blocks in positive, negative, and neutral emotional tones and required to recall and repeat the last word of each sentence in the order presented. Working memory load was increased over the course of the experiment by increasing the number of sentences presented, requiring the participant to keep an increasing number of target words in working memory while attending to later sentences. The measure was the number of target words correctly recalled. Both emotional prosody and WMC had a significant effect on recall: fewer sentences in angry tones were recalled compared to neutral tones among younger adults; older adults recalled more sentences in happy tones compared to angry tones; the average WMC group remembered significantly fewer words in angry tones than in neutral tones; and the high WMC group showed no significant difference in recall across emotion.

The Distracting Influence of Emotional Speech Spoken Emotionally in Younger and Older Adults

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ABSTRACT:

A prominent theory of cognitive aging is the inhibitory deficit hypothesis of aging which posits that older adults have more difficulty than younger adults ignoring irrelevant background information. While this theory would predict that older adults completing a visual cognitive task should be more distracted by background irrelevant speech, previous research has failed to support this expectation. In most irrelevant speech studies, younger and older adults appear to be equally susceptible to the distracting influence of irrelevant speech. However, none of the previous studies of irrelevant speech have used speech providing emotional cues based on the speech's prosody (the intonation and inflection of the speech). In the present research, younger and older adults completed a visual task (counting asterisks on a computer screen) while ignoring irrelevant background speech. This background speech included numbers and sentences conveying emotionality through prosodic cues. The emotional content of the sentences included happy intonation, neutral intonation, and angry intonation. Participants were required to count the asterisks presented randomly on the screen beginning with a presented number and (ignored) numbers and sentences of one prosodic emotional type for each 20 trial block. Reaction times to count the stimulus on the screen were measured as a function of prosodic condition. Both younger and older adults demonstrated the typical irrelevant speech effect in that they were significantly slower to complete the visual task in the presence of irrelevant speech compared to their performance in quiet. Emotional prosody also had a significant effect in that both younger and older adults were significantly slower in the angry irrelevant speech condition than in the happy condition. This difference was similar across the two age groups. When it comes to irrelevant speech, how the speech is said may be more important than what is said.

Teaching Aboriginal and Francophone Culture and Health and Videoconference Telepractice Skills: Health Sciences Preceptor Readiness and Professional Development Needs

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ABSTRACT:

The Northern Ontario School of Medicine (NOSM) Health Sciences Unit coordinates student placements throughout 43 different Northern Ontario communities for physiotherapy, occupational therapy, speech language pathology, dietetics and physician assistant. There are key differences in scopes of practice amongst these professions as well as stages of training including the length of placements for learners. With the focus on NOSM's social accountability mandate, this research is an ongoing process to advance and integrate three key competencies into the Health Sciences education curricula related to:

- Aboriginal Health and Culture
- Francophone Health and Culture
- Videoconference Telepractice

Objectives: To gauge preceptor attitudes, perceived importance and professional development needs related to these competencies within their own professional practice and as a preceptor. This added knowledge will inform the design, implementation and evaluation of curriculum, resources and processes for an integrated approach to enhancing learner and preceptor competencies for programs within the Health Sciences Unit.

Methods: A needs assessment will be conducted with approximately 900 Health Sciences non-medical preceptors from Northwestern and Northeastern Ontario using a 43-item online survey (Fluid Surveys[®]) distributed through the Rehabilitative Studies and the Northern Ontario Dietetic Internship Program of NOSM. Data will be analyzed using Microsoft[®] Excel[®] version 14.2.4, 2011 and will focus on quantitative data analysis using frequencies and pivot tables.

Results: Pending data collection, March 2013.

Implications: Refinement of these competencies can enhance the practice of Northern Ontario health care practitioners. Learners and preceptors with enhanced knowledge and skills in Aboriginal and Francophone Culture and Health will be better able to serve these populations. Advanced telepractice competencies can improve practices and services, particularly to rural and remote populations through videoconference technology. Preceptor readiness will guide future development in Health Sciences. There is also potential to share and collaborate with other key stakeholders within NOSM as well as provincially and nationally.

Nurse Navigation and the Transition to Cancer Survivorship: A Review of Determinants Essential to Program Success

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ABSTRACT:

Background: Nurse navigation programs are becoming prominent in the field of cancer care. As a newly emerging field, nurse navigation employs nurses and other health care professionals who assist patients in overcoming barriers throughout the cancer continuum. The concept of nurse navigation is being extended to focus on survivorship, which is described as the period following active cancer treatment where patients often encounter barriers affecting their care and quality of life. By utilizing specific skills and modalities, including education, communication, and coordination, survivorship navigators are able to assist in reducing disparities such as knowledge and communication inadequacies, thus facilitating optimal access to survivorship care.

Objective: The objective of this review project was to identify the key characteristics of a successful nurse navigation program. These characteristics will be used to grow and continually improve a newly developed nurse navigation program at a local northern Ontario cancer centre.

Methods: A literature search was conducted using the terms “cancer survivorship,” “[survivorship] nurse navigator,” “nurse navigation program,” and “survivorship care plan” to identify essential determinants of a successful survivorship navigation program. PubMed was utilized and online grey literature was searched including documents from various cancer care organizations and national and regional cancer agencies such as the Canadian Cancer Society, the Canadian Partnership Against Cancer, and the Ottawa Regional Cancer Foundation.

Conclusion: Navigation programs with a strong focus on education, communication, and coordination assist cancer survivors in overcoming social, medical, and psychological barriers following treatment. With the number of cancer survivors rising, the role of survivorship navigators will become increasingly influential as they improve patients’ quality of life and facilitate access to survivorship care.

Population and Public Health: Exploring the Roles and Challenges of Nurses Working Within Rural and Remote Northern Canadian Communities

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ABSTRACT:

Objective: The purpose of the study is to: explore what are the roles and challenges of nurses working within rural and remote Northern Aboriginal communities; and, what resources can help support or impede nurses' efforts in working towards addressing health inequities within these vulnerable communities.

Methods: Semi-structured interviews were conducted with 25 participants including front-line nurses and key informants within a rural community-based hospital and remote nursing stations in Northern Canada. Participants described their skills, knowledge, and experiences of providing primary health care throughout their practice within rural and remote contexts.

Results: Many participants spoke about the responsibility and value of providing preventive care to a population where various chronic and communicable diseases are preventable. Participants offered that the responsibility of primary health care delivery falls within their scope of practice including areas of: emergency, acute care, home care, community health, public health, and mental health nursing.

Discussion: Collaborative effort of moving towards transformative change requires community inclusivity from nurses and community stakeholders. Suggested recommendations include strengthening relationships across programs and jurisdictions in working towards health promotion and prevention of illnesses.

Conclusion: Chronic diseases and illnesses among Aboriginal people is a growing concern at a local to national level that is leaning towards crisis health intervention. Health care policies which identify nurses' roles and challenges will have relevance across populations, and will promote a high standard of health care delivery services tailored to meeting community health and cultural needs at a localized level of care within isolated Northern Canadian communities.

Intranasal Nicotine Vaccine

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ABSTRACT:

Introduction: this project aims to develop new platform of vaccine for the treatment or prevention of nicotine dependence. The high affinity antibodies generated by this vaccine platform will bind and sequester nicotine in serum, therefore reduce the nicotine distribution to brain, and block or attenuate a variety of nicotine-induced behaviors that are relevant to nicotine dependence.

Methods: the novel vaccine, prepared at AMRIC facilities, uses an adjuvant nanoparticle platform to convert nicotine into an immunogenic compound that can be administered intranasal or by intra-muscular injection.

Results: the efficacy of vaccine will be evaluated by a new application of an advanced nuclear medicine imaging technique.

Conclusion: the success of this project confirms our proof-of-concept and allows our research to enter the clinical trials phase. It also demonstrates the potential to extend this vaccine platform to other drug addiction treatment vaccines.

The State of Child and Adolescent Psychiatric Inpatient Settings in Ontario

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ABSTRACT:

Ontario's child and adolescent psychiatric inpatient settings, though important and present across most parts of Ontario, have not been well described or studied. The presentation provides an initial description of the state of Ontario's settings including their locations, exclusion criteria for admission, patient characteristics, staffing, involuntary admission patterns, occupancy, assessment and treatment procedures, reasons for referral, and outcome evaluation measures. This description is based upon a survey of all 27 inpatient settings with mental health beds operating in Ontario hospitals during April 1 2009 to March 31 2010. The presentation introduces key concepts and issues, and summarizes important research on inpatient care in Northern Ontario, Ontario, and internationally as a context from which to better understand the survey findings. The survey findings support the view that inpatient settings care for youth with more severe problems such as imminent risk of suicide, serious mental illness such as depression, and that indicators of services provided by settings in Ontario are generally comparable to international benchmarks for median numbers of beds per setting, beds per population, front-line staffing and occupancy. The findings however are also consistent with those of international research in showing concerning cross-setting variation in accessibility, psychiatric and interdisciplinary staffing, types of assessment and psychosocial treatments provided, use of involuntary mechanisms, diagnoses, and use of outcome evaluation. Questions arising from the findings and consideration of how to best manage inter-setting variation are discussed. The potential benefits of provincial planning and inpatient standards and integrative structures such as the Ontario Network of Child and Adolescent Inpatient Psychiatry Services are considered.

The Numerate and Critical Thinking Nurse: A Comparison of Final Year Nursing Students' and Practicing Nurses' Perceptions of Workplace Mathematics and Technology Demands

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Abstract:

Nursing in the contemporary context has become an increasingly complex profession. At a time when the aging North American demographic is moving into the latter stages of life—stages that require increased healthcare support at home and in hospital—it comes as no surprise that well-prepared nurses are in high demand across the country. The Canadian Nurses Association (2009) predicted that by 2022, there would be a shortage of 60,000 registered nurses in Canada. Canadian society will not only need a large number of nurses over the next decade, but will also benefit from ensuring that each newly-qualified nurse graduate has the requisite level of numeracy (proficiency with mental and worked arithmetic), technology-based skills (computer hard- and software, digital equipment), and critical thinking (ability to solve problems often under stressful and/or novel conditions) that will permit nursing professionals to provide safe and effective care in hospitals and other healthcare contexts. To better understand the fit between existing nursing education programs and the actual demands of the workplace—particularly those relating to mathematical literacy, technological competence, and critical thinking—a mixed methods pilot study was conducted with 4th-year nursing students and 1st-year practicing nurses. Findings from the online survey and subsequent participant interviews will be shared, as will researcher recommendations pertaining to nursing curriculum and future related research needs.

Wilderness & Survival Medicine as an Inter-professional Education Innovation

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ABSTRACT:

Background/Rationale: Collaborative practice is often seen as an answer to some problems that beset modern healthcare systems, yet Inter-professional Educational (IPE) initiatives face many barriers. These challenges include the lack of value by regulators placed on continuing professional development for improved communication and commitment to the inter-professional team (Bainbridge 2008), finding authentic learning opportunities for IPE, resistance to curricular change, and a lack of consensus regarding provision of inter-professional tools to learners. Traditional methods of team-building break down differences between members; IPE promotes collaboration through exploration and clarification of skill sets and roles, and building mutual support. A local wilderness medicine education event includes activities that foster inter-professional education (IPE): survival, navigational and medical skill lectures and workshops, a Forum Theatre from a First Nations storytelling company, and simulated patient scenarios in a wilderness setting.

Methods/Methodology: Adult learners had the opportunity to work in Inter-professional teams, and to do self-reflective activities both during and following the conference. The expectation was that learning together, in a non-traditional setting, employing areas of study outside the practitioners' usual areas of expertise could enhance the six primary IPE competencies. Specifically, inter-professional communication, collaborative leadership, role clarification, patient/family-centred approach, conflict resolution and team function were examined. Tools used include the ICCAS – Inter-professional Collaborative Competencies Attainment Survey (MacDonald et al 2009), and audio diaries during the race day. Surveys and reflections were collected immediately and six months following the conference.

Results: Preliminary findings suggest that IPE learning occurs, but that improvements may be made by more directly incorporating IPE as a theme. We will use the statistical T-test ("repeated measures" T-test) to determine if observed differences in responses over time measured are significant.

Conclusions: Wilderness medicine offers a potentially exciting route to enhance IPE skills.

Neural Correlates of funny and Non-Funny Comics: The Importance of a Third Option - *Is it a Joke, But Not Funny?*

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ABSTRACT:

Introduction: Various psychiatric populations show humour processing deficits, and individual differences in humour tendencies are associated positively with physical health, social competence, and interpersonal interactions in healthy populations. We build on the extant neuroimaging humour literature with a refined method for differentiating the neural correlates of humour comprehension and humour appreciation. Until recently studies have relied upon dichotomous humour judgements (funny versus not funny or joke versus non-joke) which potentially mix humour comprehension and humour appreciation processes. To differentiate these processes, we applied a novel, trichotomous humour evaluation design based on “not a joke” (NJ), a “non-funny joke” (NFJ), or a “funny joke” (FJ) response options during the functional magnetic resonance imaging (fMRI) of neural responses. Based on the literature, we hypothesized humour comprehension-related activation in the left inferior frontal gyrus (IFG) and bilateral temporo-parietal junctions (TPJs) and additional humour appreciation-related activation in reward-related neural centres (e.g., nucleus accumbens, amygdala, and midbrain).

Method: Twenty-four adults rated 120 comics (90 original and 30 modified to reduce funniness) using our trichotomous response options. A 3T functional MRI scanner provided blood oxygen level dependent (BOLD) neural estimates of humour comprehension based on NFJ trials relative to NJ trials and additive humour appreciation neural responses based on FJ trials relative to NFJ trials. We performed cluster-based analyses on the regions of interests with small-volume-correction and whole-brain exploratory analyses.

Results: As hypothesized, we found significant neural activation in the left IFG and bilateral TPJs during humour-comprehension (NFJ minus NJ). We found partial support for reward-related neural responses during humour-appreciation (FJ minus NFJ).

Discussion: Our novel study design differentiates between humour comprehension and humour appreciation neural responses and supports previous fMRI and lesion studies. This trichotomous design offers interpretational clarity for future basic and clinical investigations of humour processing.

Collaborative Care of Urologic Cancer Patients Through Telemedicine in Rural Northeastern Ontario

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ABSTRACT:

Introduction and Aim: Collaborative care of patients has occurred by the traditional consultant-primary health care provider dialogue by letter(mailed, faxed or EMR). Sometimes telephone dialogue may clarify issues of care and expectations of patients and primary care provider.

Assessing Community Readiness for the Implementation of DREAM-GLOBAL, a Cell-Phone Based Monitoring and Reporting System for Hypertension Management

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ABSTRACT:

Health inequalities result in excessive complications from uncontrolled hypertension in Aboriginal communities in Canadian and populations in low income countries. Barriers in health care systems are a contributing factor, especially implementation gaps - the gap between the development of effective health solutions and the capacity to implement them. DREAM-GLOBAL is an international research project designed to address this gap by (1) determining community readiness and key areas of action to launch a hypertension control program; (2) developing policy interventions to address high sodium content in diet through food procurement practices; (3) implementing a community hypertension detection and management program using novel cell-phone based technologies; and (4) evaluating the effectiveness and generalizability of these approaches in Aboriginal communities in Canada and high risk communities in Tanzania using trial methodology.

Our research approach recognizes that communities must be engaged partners in community interventions. It honors relationship building and transparency between community and researchers, and a focus on knowledge exchange to identify resources, strengths and barriers to change in order to facilitate sustainable community-based change. For this purpose we have developed a First Nations community readiness assessment tool.

The tool is based on the following underlying premises:

- (1) First Nations communities are at different stages of readiness for dealing with hypertension,
- (2) The stage of readiness can be determined through collaborative dialogue with Key Stakeholders in the First Nations community and the research team,
- (3) Communities have local strengths and resources that can address hypertension,
- (4) Communities can be supported through a series of stages to develop, implement, maintain, and improve effective programs, and
- (5) It is critical to identify the stage of readiness because interventions differ for each stage of readiness.

The tool can serve as a model for readiness assessment for other chronic illness management interventions.

Immunoepidemiology of Invasive *Haemophilus influenzae* Type A Disease in Northern Ontario

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ABSTRACT:

Our recent studies have found a high incidence of severe community-acquired acute infections caused by *Haemophilus influenzae* type a (Hia) among the Aboriginal population in Northern Ontario. Worldwide, this infection is rare and it has only been previously reported in the North American Arctic and among some American and Australian indigenous populations. Invasive Hia disease, which mainly affects young children, adults with severe underlying conditions, and immunocompromised subjects, often manifests as meningitis, septicemia, or bacteremic pneumonia. The severity and outcomes of Hia infections are similar to those caused by *H. influenzae* serotype b (Hib) prior to the introduction of a highly effective universal pediatric immunization program against Hib in the early 1990s. In an attempt to understand the reasons for an increased susceptibility of Aboriginal people to invasive Hia disease, we studied natural immunity against this pathogen. Unexpectedly, the bactericidal antibody titers against Hia in healthy Aboriginal adults residing in Northern Ontario were significantly higher compared to Caucasian individuals of the similar age. These findings suggest that circulation of Hia among Aboriginal communities may induce protective immunity in healthy adult individuals. Lack of anti-Hia antibody in young children and in adults with some immunocompromising conditions is the likely reason for cases of invasive Hia disease in this population. Based on the success of the Hib vaccine, pediatric immunization against Hia may be a solution to reduce incidence and possibly eradicate Hia disease in Canadian Aboriginal communities.

Emergency Response in Sachigo Lake First Nation: A Locally-Tailored Medical Training Program

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ABSTRACT:

Alarming rates of traumatic injury and mortality have been reported among Aboriginal peoples in Canada. In Ontario, many First Nations communities also experience elevated rates of chronic conditions, such as heart and breathing problems, compared to the rest of the provincial population. Many First Nations communities are in remote areas, only accessible by air or winter road, which presents a major challenge for people to receive timely medical care in emergency situations. Sachigo Lake is one of many remote communities that only have a local nursing station and no paramedic service. The Sachigo Lake Wilderness Emergency Response Education Initiative (SLWEREI) is a local first response training program aimed at building community capacity through instructing community members in practical emergency management techniques. The purpose of this study was to work with the community to develop the program while exploring how the program: (1) met the locally specific needs of Sachigo Lake; and (2) helped build emergency response capacity and resilience. The concurrent formative evaluation process followed a community-based participatory research (CBPR) approach that adhered to principles of partnership and collaboration between the community and the research team. The methodological framework of this study also utilized principles of Realist Evaluation to complement the CBPR approach. The research and training components were interwoven through all phases of the project. Data was collected and analyzed from multiple sources including individual and group interviews, as well as observational and document analyses. Preliminary results will be presented as themes regarding how the SLWEREI was tailored for the community and helped build resilience and community capacity.

What Characteristics Predict Intended Future Practice Location of NOSM Undergraduates?

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ABSTRACT:

The shortage of health professionals and the challenges of recruitment and retention in rural and Northern Ontario have been well documented. This has led to provincial action such as the HealthForceOntario Northern and Rural Recruitment and Retention Initiative, which offers financial incentives to physicians who locate and practise full-time in an eligible rural community. However, these initiatives are not always successful in retaining physicians. Understanding the characteristics of those who choose to practice long-term in rural Northern Ontario is an important step to improving recruitment and retention.

In collaboration with the Northern Ontario School of Medicine (NOSM), the Centre for Rural and Northern Health Research has been conducting a multi-year tracking study of NOSM students and graduates since 2005 when the charter class began their medical education. Here we focus on student intentions, which is among the best predictors of a physician's future practice location. Our goal is twofold: first to identify the number of students with a strong intention toward a rural and Northern practice at graduation; and second to identify characteristics at entry into medical school which best predict this intention. Our analysis makes use of data from the first five undergraduate cohorts.

Preliminary findings suggest that older women with a northern background are more likely to have strong intentions to practice in Northern Ontario. Moreover, older, married, unilingual Anglophones with a rural background tend to demonstrate stronger intentions for rural practice. Further analysis will verify the predictive value of these relationships. We will also test the predictive value of: preferred medical specialty, spouse's and/or parents' level of education, attitudes toward aspects of rural practice, as well as other lifestyle, family and practice preferences. Results from this study will help medical schools select students who are most likely to practice in rural and Northern communities.

The Effects of Age, Hearing Loss and Temporal Delay on a Central Auditory Integration Mechanism

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ABSTRACT:

Previous research has demonstrated that younger adults and adults with normal hearing can effectively combine filtered speech signals presented in separate ears into a coherent speech stream that is much easier to understand than either of the filtered speech samples presented alone. However, older adults with impaired hearing could not combine the separate information from the two ears in the same way. Thus, there appears to be a central auditory mechanism responsible for combining the signals from the different ears and hearing loss in aging may compromise this mechanism. The current investigation sought to further investigate the characteristics of this central integration mechanism and to determine its temporal characteristics. In this study, sentences were band pass filtered to leave a narrow one-octave band of spectral information. Two different filters were used including one with the one-octave band centered at 500 Hz and the other with this band centered at 4000 Hz. On each trial, a single filtered sentence was presented with the version filtered using the 500 Hz band presented in one ear and the version filtered using the 4000 Hz band presented in the other ear. In addition, a time delay (either 0, 4, 8, 16, or 32 ms) was introduced between the onset of each version of the sentence. High and low context filtered sentences were presented and participants were required to identify the final word of each presented sentence. The two normal hearing groups achieved similar levels of accuracy, but the hearing impaired group performed significantly more poorly than the normal hearing groups. The time delay affected identification accuracy for all participants in that accuracy decreased as the time between sentences increased. This delay effect was similar for the all of the groups.

Preliminary Findings from the *Laurentian University Smoking Behaviour Survey*: Implications for Professional Practice and Policy Recommendations

PRESENTING AUTHOR:

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AUTHOR(S):

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ABSTRACT:

In Ontario, smoking is currently prohibited under the 'Smoke-Free Ontario Act' (SFOA) in enclosed public spaces and within 9 meters of any public entrance or exit. Despite this, many Ontarians continue to report being exposed to second-hand smoke in public spaces. Post-secondary institutions are often at the forefront of social change and smoking interventions on campus are often more aggressive than other in community settings. Laurentian University's non-smoking policy was last revised in May of 2006. Thus, the purpose of this study was twofold. First, we conducted a province-wide non-smoking 'policy scan' to identify the different types of policies that have been implemented in other academic institutions across Ontario. Second, we administered a campus-wide survey to: a) gain a better sense of the prevalence of smoking and exposure to second-hand smoke at Laurentian University; and b) identify, via collaborative input, prevention / education / protection strategies from which the Laurentian University community could benefit. Results from the policy scan showed that no university in Ontario employed a completely smoke-free policy, six universities employed 'Outdoor Designated Smoking Areas' (ODSAs) and many universities (n=8/19) (including Laurentian University), had non-smoking policies that reflected the SFOA. A total of 1282 persons completed the first cycle of the *Laurentian University Smoking Behaviour Survey* in the Fall of 2012. Nearly 80% of respondents said that they were exposed to second-hand smoke in the past month on campus and the majority of respondents felt that smoking should only be allowed in ODSAs (51.5%); including 35.2% of daily smokers and 41.5% of occasional smokers. We conclude that Laurentian University should revise its Non-Smoking policy to create ODSAs, which would parallel the more aggressive efforts of other Ontario Universities. At the same time, the University needs to increase the advertisement and utilization of existing cessation services offered on campus.

Natural Antibody Against *Haemophilus influenzae* type a Among First Nations With Chronic Renal Failure

PRESENTING AUTHOR:

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ABSTRACT:

Prior to the development of a conjugate vaccine against *Haemophilus influenzae* type b (Hib) in the early 1990's Hib was a major cause of invasive bacterial infections such as meningitis and sepsis in children. In the wake of a successful vaccination campaign, other non-type b strains have emerged as important etiological agents of invasive disease. *H. influenzae* type a (Hia) is a significant problem in northwestern Ontario where it has a disproportionately high impact on First Nations compared to the rest of the population. Incidence rates in our region have reached levels observed for the type b strain prior to the vaccine introduction. The majority of individuals affected have some medical conditions known to negatively impact the immune system. If a lack of natural protective antibodies against Hia is the cause of disease then a new vaccine may help protect vulnerable individuals. We studied chronic renal failure patients on haemodialysis as a representative condition which results in secondary immunodeficiency. Patients were categorized as either First Nations or non-First Nations and compared to healthy controls of corresponding ethnic background. Preliminary results suggest that both First Nations groups possess significantly more bactericidal anti-Hia antibodies than the corresponding non-First Nations groups. These findings may reflect an immune boosting effect due to more frequent exposure to the bacteria among the First Nations groups. The determination of asymptomatic carriage rates within First Nations communities could be important to understanding the current Hia epidemiology in our region.

A Mixed Methods Approach to Understanding Food Skills and Dietary Habits Among Emerging Adults Living in a Campus Environment

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ABSTRACT:

Purpose: 'Normal' eating patterns now consist of pre-prepared, fast foods that are nutrient-poor, contributing to poor health and decay of, 'from scratch' food skills. University students are vulnerable to falling prey to convenience and fast foods. While campus initiatives promote healthy eating, there is an underlying assumption of adequate food skills. Therefore, the aims of this study were to: (1) characterize the food skills and dietary habits of emerging adults living in campus residence, and (2) explore how to effectively improve the food skills in this population. **Methods:** A total of 199 university students (18% M and 82% F; mean age 19.4 ± 1.65 years; 57% freshman students) living in campus housing completed an on-line survey assessing food skills and fast food intake. Twenty students (8 males and 12 females) participated in focus groups exploring perceptions of food skills, food skill self-efficacy, and barriers and motivators to preparing meals from scratch. **Results:** Over half (58%) the sample reported a high level of skill to prepare pre-packaged foods (e.g. boxed macaroni and cheese, muffins), but only 24% reported the same level of skill to prepare similar foods from scratch. While students reported perceived skills to prepare food, only 11% prepared the majority of their meals at least partly from scratch. Over half (54%) the sample ate fast food weekly, 50% did not eat breakfast daily, and only one third were confident in eating the recommended daily servings of fruit and vegetables. Challenges to prepare meals from scratch included time, cost and low self-efficacy. **Conclusions:** The results suggest a lack of skill and confidence to cook 'from scratch' and reliance on convenience/packaged foods. Given the current food environment promotes relatively inexpensive yet unhealthy convenience foods, there is a need for innovative initiatives to improve the food skills in this population.

Knowledge, Attitudes, and Practice Patterns Among Health Care Providers in the Prevention of Recurrent Kidney Stones in Northern Ontario

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ABSTRACT:

Introduction and Objectives: Kidney stone recurrence is common. Preventive measures can lead to improved quality of life and costs savings to the individual and health care system. Guidelines to prevent recurrent kidney stones are published by various urological societies. Adherence to guidelines amongst healthcare professionals in general is poor, while adherence to preventive management guidelines regarding stone disease is unknown. To understand this issue, we conducted an online study to assess the knowledge, attitudes, and practice patterns of health care practitioners in Northern Ontario.

Methods: We utilized the database of health care providers affiliated with the Northern Ontario School of Medicine. We designed the survey based on current best practice guidelines for the management of recurrent kidney stones. Questions covered three domains: (1) knowledge, (2) attitudes and (3) practice patterns. Demographic data was also collected. The survey was distributed electronically to all participants.

Results: A total of 68 health care providers completed the survey; of these, the majority were primary care physicians (72%) and to keep uniformity we analyzed the data of this homogenous group. A total of 70% of the respondents were aware of the current guidelines; however, only 43% applied their knowledge in clinical practice. The majority of participants lacked confidence while answering most items in the attitude domain.

Conclusions: The majority of primary care physician respondents are aware of the appropriate preventative measures for prevention of recurrent kidney stones, however do not appear to apply this knowledge effectively in clinical practice. Low response rate is a limitation of our study. Further studies involving a larger sample size may lead to information sharing and collaborative care amongst health care providers, translating into better quality of care and cost-savings to the patient and the health care system.

Recruitment and Retention of Rural and Northern Physicians: A Population-Based Cross-Sectional Study

PRESENTING AUTHOR:

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ABSTRACT:

Objective: We explored factors physicians intent to leave (ITL) their current position, using data from a survey of clinical faculty and residents affiliated with the Northern Ontario School of Medicine. Potential factors of ITL were related to the individual physician, the workplace, the community context, and satisfaction related to both the workplace and the community(s) within which the physician worked and lived.

Methods: This is a population-based study, conducted in Northern Ontario in 2012. A questionnaire was developed and sent out to 973 physicians who are NOSM clinical faculty. A total of 225 (23.1%) physicians provided their demographic details and answered questions about rural practice and occupational profile. Multiple logistic regression analyzes considered: 1) occupation profile; and 2) rural origin and community engagement.

Results: In the occupational profile model, physicians' age (OR, 0.95; 95% CI, 0.92-0.98) was significant, however, limited job opportunities elsewhere, educational opportunities, type of work setting, place of residence, employment status and years of clinical experience were not significant. In the rural and community engagement model, experience working in a rural setting was also important in retaining physicians in a rural setting (OR, 1.65; 95% CI, 1.08-2.54). Preference to work as part of an interdisciplinary team (OR, 1.14; 95% CI, 0.24-0.96) also was a retaining factor of rural practitioner. Physicians were more likely to leave a region if they did not feel as part of the community (OR, 0.39; 95% CI, 0.17-0.94).

Conclusion: The selection of community and rural factors of ITL makes this approach uniquely relevant to the rural health context. These results may be used to guide policy makers and institutions in developing retention and recruitment strategies for physicians.

From Behind the Stethoscope: Exploring Family Physicians Perspective of Health Services in Ontario’s French Speaking Communities

PRESENTING AUTHOR:

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ABSTRACT:

It has been suggested that difficulties in accessing French-language medical care may contribute to the poorer health of Francophones in Ontario. Previous studies by members of this research team have found inferior ratios of French-speaking physicians to Francophones in rural and northern areas of the province. In fact, most French speaking physicians have located their practice in communities virtually uninhabited by Francophones. We concluded that issues related to access to French language health services in Ontario may not be a question of quantity of services available, but rather an issue of regional misdistribution. The objective of the current study is to examine the quality of service received by patients living in Ontario’s French speaking communities from the perspective of the family physician, a topic which remains largely unexplored. Semi-structured interviews are currently being conducted with both French speaking and non-French speaking physicians who have located their practice in communities where at least 25% of the population speaks French. We are particularly interested in the physician’s perception of: a) their client’s desire for French language services; b) their ability to meet their clients’ linguistic needs; and c) the barriers they experience when treating French clients. Preliminary results suggest that both French speaking and non-French speaking physicians are aware of the importance of receiving health services in your preferred language. Furthermore, non-French speaking physicians tend to acknowledge that there exists language barriers which may influence proper diagnoses and patient compliance. Results from this study will serve to inform the professional practice of physicians working in Ontario’s Francophone communities. As well, our preliminary findings seem to support the benefit of having the opportunity to communicate with your physician in your preferred language. Thus, increased efforts to attract French speaking physicians to Ontario’s Francophone communities are much needed.

Knowledge, Attitudes, and Practices of ED Physicians Related to the Triage and Transfer of Major Trauma Patients

PRESENTING AUTHOR:

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ABSTRACT:

Severely injured patients have better outcomes when they receive treatment at a specialist trauma centre. Outside of major cities, however, patients are usually transported first to the nearest ED, where the ED physician must assess the patient and determine whether to initiate transfer to a trauma centre. Thus, understanding ED physicians' response to major trauma may help identify opportunities to reduce trauma-related mortality and morbidity, and enhance the overall effectiveness of trauma systems.

As part of a larger study on trauma systems in Canada, a survey of ED physicians in select provinces (including Ontario) was conducted to describe their knowledge, attitudes, and practices related to major trauma. Physicians working in emergency departments greater than 50 km (approximately 30 minutes travel time) from a Level I or Level II trauma center were included in the study. We used geographic context (urban vs. rural location) and level of certification (EM-certified vs. Other) to group physicians into four classes (Urban-Certified, Urban-Other, Rural-Certified, Rural-Other) for comparison. In addition to eliciting data on background, hospital resources, and training and support needs, the survey asked ED physicians how they would respond to three hypothetical scenarios meeting the criteria of major trauma (as established in the Advanced Trauma Life Support (ATLS) course). Responses from Rural-Other physicians were the most consistent with ATLS standards. The paper concludes with implications for trauma systems enhancement.

POSTER ABSTRACTS



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

Abstracts have been published as submitted.

The poster abstracts are in alphabetical order by presenting author.

Immunogenicity of Recombinant KatA Protein Against *Campylobacter jejuni* in Mice

PRESENTING AUTHOR:

Nitin Bhardwaj

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ABSTRACT:

Introduction- *Campylobacter jejuni* (*C. jejuni*) is one of the most common causes of human gastroenteritis cases in the world. Food poisoning associated with *Campylobacter* infection range from watery diarrhea to severe dysentery. Currently, we do not have a commercial licensed vaccine to prevent *Campylobacter* infection.

Methodology- To address this, we constructed a recombinant *C. jejuni* vaccine using KatA protein (catalase) as our vaccine antigen. KatA contributes to the resistance of *C. jejuni* to oxidative stress and is essential for persistence and growth of *C. jejuni* in macrophages. Recombinant KatA protein was administered with alum and or monophosphoryl lipid A (MPL) adjuvants via intramuscular injections in groups of 8-10 weeks old female BALB/c mice at weeks 0, 3 and 6. Two weeks after last vaccination, sera was harvested from mice and assayed for development of anti-KatA antibodies by ELISA.

Results- Sera from mice immunized with KatA alone had mean anti-KatA IgG end point titers of 1.9×10^6 and the immune response was primarily antibody mediated as reflected by the Th2 bias. Mean ELISA titers were comparable, 3.9×10^6 and 3.8×10^6 in mice immunized with KatA in conjunction with alum and MPL respectively. Mice immunized with benchmark vaccine (formalin inactivated *C. jejuni*) had mean end point ELISA titers of 2.5×10^6 with a Th2 bias. Highest titers (5.6×10^6) were observed in sera from mice immunized with KatA and a combination of both adjuvants (alum+MPL). Furthermore, a balanced Th1 and Th2 responses were observed in those mice.

Conclusion and Public health significance- Initial finding from our animal studies are encouraging with KatA+Alum+MPL group emerging as the best candidate. Ongoing experiments looking at the bacteria-neutralizing ability of different vaccine candidates will provide a strong basis for selecting the best vaccination approach and help develop an effective countermeasure against this public health threat.

The Beck Depression Inventory Should Include Positive Emotion Responses

PRESENTING AUTHOR:

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ABSTRACT:

The Beck Depression Inventory (BDI-II) is one of the most widely used measures for depression symptoms. However, the BDI-II focuses exclusively on measuring the presence or absence of depression symptoms. Through this approach, the BDI-II ignores positive emotions that may help to offset depression symptoms. The BDI-II's focus on depression symptoms raises an interesting question: How does the BDI-II compare to a revised version with positive emotion responses (BDI-IIR)? Although this question has not been investigated extensively, the use of the BDI-IIR is strongly supported by two studies on the subject: (1) Chow and Brenton (2001) found that positive emotion responses on the BDI-IIR were frequently selected, and that the BDI-IIR provided a more complete picture of well-being without compromising psychometric quality; (2) Olsson and Hwang (2008) found that the BDI-IIR was a more effective measure of well-being than the BDI-II, particularly in nonclinical populations. These results suggest that the Beck Depression Inventory should include positive emotion responses.

Continued Surveillance of invasive *Haemophilus influenzae* disease in Northwestern Ontario

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ABSTRACT:

Prior to the introduction of a pediatric conjugate vaccine in the early 1990s, *Haemophilus influenzae* serotype b (Hib) was a major cause of childhood meningitis and pneumonia. Since becoming part of the routine pediatric immunization schedule in Canada, the Hib conjugate vaccine has been very successful in preventing Hib disease. A phenomenon known as “serotype replacement”, however, has lead to the emergence of invasive disease caused by non-type b serotypes. Non-type b *H. influenzae* disease is now reported worldwide, and previous studies by our group found an increased incidence of invasive disease caused by *H. influenzae* serotype a (Hia), f (Hif), and non-typeable *H. influenzae* in Northwestern Ontario (50 cases between January 2002 to July 2011). Three of these cases resulted in severe pediatric meningitis. Our continued surveillance identified 4 cases of invasive *H. influenzae* disease between August 2011 and October 2012. Among them were two cases of Hib, one case of non-typeable *H. influenzae*, and one case of Hia. Retrospective chart review of the Hia case revealed the development of epiglottitis, a life-threatening condition associated with invasive Hib disease but previously unreported in Hia infections. Here we review the clinical presentation of this case and characterize the remaining *H. influenzae* isolates of the region. Our results stress the importance of continued surveillance of *H. influenzae* in the post Hib-vaccine era, and point to the developing significance of Hia in severe invasive disease.

A Comparison of Doxorubicin and Doxorubicinol Concentrations in Rat Heart and Liver Tissue Following Anthracycline Administration

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ABSTRACT:

Doxorubicin (DOX) is an anti-cancer chemotherapeutic and although it is widely used, its accumulation over time in different tissues has not been thoroughly investigated. The purpose of this study was to examine the concentration of both DOX and its metabolite (Doxorubicinol, DOXol) in the heart and liver of male Sprague-Dawley rats. Two doses (1.5 mg/kg and 4.5 mg/kg) were injected intraperitoneally and tissues were collected at 24, 48, 72 and 96 hrs post-injection. In the heart, at all time points, DOX concentrations were higher ($p < 0.05$) following the 4.5 vs 1.5 mg/kg injection (0.78 ± 0.07 vs 1.81 ± 0.26 nmol/g at 24 hrs, 0.37 ± 0.06 nmol/g vs 0.96 ± 0.06 nmol/g at 96 hrs). It was observed that DOX heart concentrations steadily decreased ($p < 0.05$) over time for the 4.5 mg/kg dose, whereas for the 1.5 mg/kg dose, concentrations remained constant for the first 72 hrs and then decreased ($p < 0.05$) at 96 hrs. In the liver, at all time points and for both doses, DOX concentrations were higher ($p < 0.05$) as compared to the heart (3.85 ± 1.1 and 5.29 ± 0.87 nmol/g in the liver vs 0.78 ± 0.07 and 1.81 ± 0.26 nmol/g in the heart, at 24 hrs). While DOXol was detected in small concentrations in both heart and liver tissue, no accumulation was observed over the 96 hrs. These data suggest that in both heart and liver DOX accumulates in a dose dependent fashion. In contrast, DOXol does not accumulate to any degree in either tissue, suggesting that it is rapidly degraded or eliminated from the tissues. Supported by NSERC.

Activation of Innate Immune Response by *Haemophilus influenzae* lipooligosaccharide

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ABSTRACT:

The bacterial endotoxin, lipopolysaccharide (LPS), is a well-studied pathogen-associated molecular pattern known to potently activate the innate immune response. *Haemophilus influenzae*, a Gram negative pathogen is commonly associated with both invasive diseases, such as meningitis and pneumonia, and non-invasive diseases, such as bronchitis and otitis media. *H. influenzae* has been discovered to express a truncated form of the endotoxin, also known as lipooligosaccharide (LOS). Much of the work done on LOS of *H. influenzae* has addressed its structural and compositional implications to virulence; however it is unknown whether LOS can activate the innate immune response. This study proposes to look at different LOS compounds, derived from various strains of *Haemophilus influenzae* (Eagan, Rd, and Rd mutant), and their capacity to induce the innate immune response. The expression of key antigen-presenting and co-stimulatory molecules, ICAM-1, CD 40, CD 86, MHC I and MHC II on THP-1 monocytic cells, stimulated with LOS was measured via immunostaining with flow cytometry. Gene expression of Toll-like receptors (TLR4) and inflammatory (TNFalpha, IL-1beta, IL-6) and suppressive cytokines (IL-10) were measured via real-time PCR. LOS compounds from *H. influenzae* had a decreased immunostimulatory effect on THP-1 cells when compared to the positive control, LPS from *E.coli* (0111:B4 strain). These findings suggest the structure of LOS may favour bacterial evasion from the innate immune response.

The Use of Stressors to Enhance Production of Microalgal Lipids that Could be Used in Health Beneficial Nutraceuticals

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ABSTRACT:

Converting certain microalgal lipids into biodiesel is now well recognized. Furthermore, microalgae co-produce a range of other lipids, primarily polyunsaturated fatty acids (PUFA's), including Omega-3 fatty acids, which can be directly used as health beneficial nutraceuticals. It is known that production of these lipids can be enhanced by physiological stress. Described is research on collected wild strains that naturally exhibit high lipid production and the subjecting of them to environmental stressors as a means of further enhancing the desired lipid profiles. This work includes an initial stage of growing the algae under ideal conditions and then stressing the microalgae by modifying pH, temperature, nutrient deficiency, metals and/or irradiation levels. As a result, significantly higher lipid production can be obtained, primarily within the range of polyunsaturated fatty acids, suggesting great potential for nutraceutical development alongside the co-production of biodiesel from microalgae.

Labels, Stigma and the Sick Role in a Therapeutic Culture: The Case of Developmental Coordination Disorder

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ABSTRACT:

Much literature has been dedicated to the debate on labelling children with various disorders as consequences can ensue; these usually encompass stigmatization and alienated peer and social relationships. But are there benefits to such labels? Although the tradition has been to view labels as a form of stigmatizing mechanism, there are inherent benefits to having such labels such as the availability of treatments. Thus, it begs the question, what would happen without such formal labels? With the emergence of developmental coordination disorder (DCD), the debate on labelling and the ensuing consequences are revisited but situated within a more modern day phenomena: on in which parents often seek these labels as ways of alleviating responsibilities and accommodating children. This study used qualitative interviews with children, parents and educators as well as direct observation to explore ideas of labelling and decipher whether its original tenets hold true or not. Drawing from a small sample of children and families in Northern Ontario, this study provides a foundation for further exploration in labelling tenets. It finds a number of instances in which labelling theory can be challenged and questioned including the differentiation between informal and formal labelling consequences, children's ability to adapt and accept labels and as a result develop more positive self-images and be accommodated within classroom, and the active role that parents play in acquiring labels but the ambivalence they have towards this process. Relevant to this is the overall prevailing bias in health care access for parents who have material and social resources, something to which this study highlights and elaborates upon specifically.

From point of entry to point of care: One organization's experience in using the RAI-MH and OCAN

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ABSTRACT:

Currently, these two instruments are widely used in mental health care, but both are utilized at different points of the care continuum. Each also has different goals in terms of the how the derived information will be utilized in care planning. The RAI-MH, as an inpatient measurement tool, was mandated in 2005 and rolled out in a timely and organized fashion within the NBRHC. The OCAN, used an outpatient mental health care planning tool, was implemented internally in January 2012 but in a vastly different manner, one that seemed rushed and truncated in terms of staff training. As a result, staff and clinicians have had varying responses to the OCAN use, which may have implications for patient care planning. This study used qualitative interviewing and survey data to assess how staff and clinicians were experiencing the use of the OCAN within their own practice, while also examining the contrasting way in which it was implemented in comparison to the RAI-MH. As a result, this study found a number of different challenges were highlighted by both staff and training leads, in addition to highlighting the unanticipated benefits of using the OCAN in clinical practice settings. These results will provide specific suggestions to improve future OCAN implementation practices in other organizations.

Identification of Novel pyrazoloquinazolinecarboxylate Analogues to Inhibit Nerve Growth factor *in vitro*

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ABSTRACT:

Nerve growth factor (NGF) is known to regulate the development and survival of select populations of neurons via its binding/activation of the TrkA and p75^{NTR} receptors. However, in some physiological circumstances NGF dysregulation can result in debilitating pathologies, including diabetic neuropathies, interstitial cystitis and fibromyalgia. Thus, the identification of small molecules which inhibit NGF signalling have significant therapeutic potential. PD 90780, Ro 08-2750, and ALE 0540 are small molecules that have been reported to bind and inhibit NGF activity. Importantly, the docking site of these compounds is hypothesized to occur at the loop I/IV cleft of NGF - a region which is required for efficient and selective binding of this neurotrophin to its receptor(s). Molecular modeling predicts a number of previously reported NGF antagonists (PD 90780, ALE 0540, and Ro 08-2750) share conserved molecular features, and these drug-like small molecules have the ability to bind and modify the molecular topology of NGF. In order to understand the putative mechanism of binding, we synthesized a pyrazoloquinazolinecarboxylate analogue series and tested each compound in an NGF-dependent PC12 cell differentiation assay. *In vitro* data confirms that the pyrazoloquinazolinecarboxylate analogues functionally inhibit NGF's effects on PC12 cell differentiation. The results of this study provide evidence to refine the docking mode of pyrazoloquinazolinecarboxylate based compounds for the purposes of inhibiting NGF *in vitro*. In addition, we identified series analogue PQC 083 (IC₅₀ = 7.0 µM; CI = 5.4 - 10.1 µM) which displays markedly higher potency than previously described NGF antagonists.

The Differential Accumulation of Doxorubicin in the Soleus and Gastrocnemius Muscle of the Rat

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ABSTRACT:

The purpose of the present study was to examine intramuscular (IM) doxorubicin (DOX) levels in the soleus (S) and gastrocnemius (G) muscles of Sprague-Dawley rats following the administration of DOX (1.5 or 4.5 mg/kg). Muscles were collected at 24, 48, 72 and 192 hrs post injection. DOX concentrations were elevated ($P < 0.05$) as compared to control at all time points. Following the 1.5 mg/kg dose, concentrations peaked in both muscles after 48 hrs, but were higher ($P < 0.05$) in the S (1.47 ± 0.46 nmol/g) as compared to the G (0.78 ± 0.24 nmol/g). Similarly, DOX was higher ($P < 0.05$) in the S (0.40 ± 0.13 nmol/g) than the G (0.08 ± 0.02 nmol/g) after 192 hours. The 4.5 mg/kg dose resulted in similar peak DOX concentrations in both the G (2.43 ± 0.52 nmol/g) and the S (2.46 ± 1.35 nmol/g), but this occurred sooner (48 hr) in the S as compared to the G (72 hrs). DOX levels were not different between muscle groups following 192 hrs. These data not only support the notion that DOX accumulates in skeletal muscle in a dose dependent manor, but clearly demonstrate that fiber type differences are a factor in the rate of accumulation and removal or degradation of intracellular DOX. These findings have clinical implications as skeletal muscle may be an important compartment for the sequestering of DOX from the circulation, effectively limiting its therapeutic impact. Supported by NSERC.

Intramuscular and Interstitial Nitric Oxide Concentrations Following Doxorubicin Administration in Nude Mice

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ABSTRACT:

The purpose of the present study was to examine intramuscular (IM) nitric oxide (NO) concentrations in the gastrocnemius (G) and quadriceps (Q) muscles as well as interstitial NO levels in the G of immunodeficient nude mice (n=6) following the administration of doxorubicin (10mg/kg). Muscles were collected at day 3 and 7 post injection and interstitial concentrations were determined using the microdialysis technique. Gastrocnemius IM concentrations of NO were increased ($P<0.05$) from control (626 ± 18 $\mu\text{mol/kg dw}$) to 823 ± 48 and 831 ± 22 $\mu\text{mol/kg dw}$ at day 3 and 7, respectively. Similarly, IM quadriceps concentrations of NO increased ($P<0.05$) from control (599 ± 13 $\mu\text{mol/kg dw}$) to 738 ± 18 and 756 ± 46 $\mu\text{mol/kg dw}$ at day 3 and 7, respectively. In contrast, G interstitial NO concentrations did not change ($P>0.05$) from control values (14.0 ± 2.5 $\mu\text{mol/l}$) for either collection period (day 3 = 16.4 ± 1.7 , day 7 = 15.7 ± 1.6 $\mu\text{mol/l}$). These data clearly demonstrate that intramuscular NO concentrations are increased as a result of doxorubicin administration, and remain elevated for up to 7 days following initial dosing. Interestingly, doxorubicin administration did not alter interstitial NO concentrations suggesting that the effects of anthracyclines on stimulating NO production was isolated to intramuscular mechanisms. Overall, this study suggests that doxorubicin administration stimulates intramuscular NO production and may be a result of increased oxidative stress. Supported by NSERC.

Youth Physical Activity and Fitness in Remote Northern First Nations: A Case Study from Kashechewan, Ontario

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ABSTRACT:

Objectives: To assess community-level opportunities and barriers for physical activity (PA) and current fitness levels among grades 6-7 students in Kashechewan.

Methods: A mixed-methods approach was used. Qualitative methods included an environmental scan (field notes, photographs) and focus groups. These were analyzed for themes. Quantitative data for student PA levels were collected using accelerometry (Actigraph GT3X+, Pensacola, FL) over 3 days. Muscular endurance, strength and flexibility were measured following the Canadian Physical Activity, Fitness and Lifestyle Approach. Aerobic fitness was measured using the Fitnessgram Pacer Test. Data were analyzed descriptively.

Results: Qualitative. The environmental scan revealed few PA facilities (arena, playground and school gym). Perception of teachers (n=5) and students (n=11) was that youth are adequately active but few opportunities for organized activities exist. Barriers to PA included inadequate equipment, few role models and more interest in sedentary activities. Teachers indicated a need to engage girls and timid students.

Quantitative. Seventy-two students participated (n=28 girls, 44 boys; mean age 12.1±1.1y; 63% overweight or obese); of those 41 had complete accelerometer data (n=17 girls, 24 boys; mean age 12.0±1.1y; 58% overweight or obese). Eighty-three percent of boys and 77% of girls accumulated ≥60 minutes of moderate-to-vigorous PA daily. Mean aerobic fitness (38.7±5.8 ml/kg/min for boys; 32.7±5.2 ml/kg/min for girls) appeared below levels reported in the Canadian Health Measures Survey (CHMS). Mean muscular strength (55.0±10.7 kg for boys; 49.6±10.6 kg for girls) exceeded CHMS findings. Maximal performance on the muscular endurance test was achieved by 65% of boys (mean 17.4±8.5 curlups) and 16% of girls (mean 15.3±11.1 curlups). Flexibility (25.8±7.2 cm for boys; 26.0±9.4 cm for girls) was similar to that reported in CHMS.

Conclusion: Physical activity levels appear adequate. The findings present opportunities to facilitate physical fitness of youth at the school and community level by working to overcome identified barriers.

Exploring Nurses' Quality of Work Life and Health in Northeastern Ontario Urban, Rural, and Remote Hospital Settings

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ABSTRACT:

Nurses comprise the largest professional group working in Canada's healthcare system and thus play a central role in the provision of quality healthcare. Nurses are reported to have the highest illness, disability, and absenteeism rates compared to all other occupations across Canada. In 2010, illness and disability were associated with the absenteeism of 19,200 nurses across Canada, weekly. The costs to the healthcare system associated with illness, disability, injury, and absenteeism rates of nurses are significant, with an annual cost of \$711million dollars. Research has demonstrated that inferior work environments are associated with increased patient mortality rates and higher illness, disability, and absenteeism rates among nurses across Canada. There is a dearth of research exploring the quality of work life (QOWL) of registered nurses (RNs) working in northeastern Ontario. Therefore, this presentation will describe a mixed method sequential explanatory research design, guided by social technical systems theory and the Nurses' Quality of Work Life framework, that will be utilized to explore nurses' QOWL in three urban, one rural, and one remote hospital setting in northeastern ON. Phase I will collect quantitative data utilizing a self administrated questionnaire from RNs (n=200) working on medical surgical units at three urban sites, and RNs working across various units at one rural, and one remote site. Phase II of the study will collect qualitative data involving one-one-one semi-structured interviews with two RNs and one nurse leader from one urban, rural, and remote site, to explore findings and key themes identified from Phase I data. Knowledge generated from this research will benefit stakeholders by assisting decision and policy makers to change policies that will improve nurses' QOWL. Improving nurses' QOWL is expected to positively affect the health of nurses, contribute to high quality patient care, and help to ensure the sustainability of the healthcare system.

Recentering Relationships in Diabetes Care: Indigenous Health Medical Education for Practicing Family Physicians

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ABSTRACT:

A commonly cited factor shaping health care experiences and outcomes for Indigenous populations is the availability of culturally appropriate and safe services. Over the last decade medical educators have begun to respond to this need through increased efforts to provide Indigenous-specific cultural safety and awareness training. The Educating for Equity project is a multi-national research project aimed at the development of an evidence-based and community-driven Indigenous health curriculum framework. This poster describes results from the Canadian teams' work in this project which has centered on the development of a continuing medical education Indigenous health training module for diabetes care. Our research seeks to understand how continuing medical education for family physicians can best be delivered to 1) enhance physician capacity to provide diabetes care to Indigenous patients, and 2) improve the health care experiences and health outcomes of Indigenous patients. Developed through systematic literature review, comprehensive multi-site qualitative research (interviews with Indigenous patients and with Indigenous and non-Indigenous physicians and medical educator participants) and expert advisory group support, the curriculum emerging from this project elucidates core areas and concepts that can facilitate a physician's approach to clinical care for Indigenous patients with type 2 diabetes. The recommendations resulting from this research focus on enhancing physician understandings of how complex socio-political, cultural, and biomedical factors shape Indigenous patients' lived experiences of diabetes. By highlighting the context of clinical care as a site for the re-negotiation of relationships and re-establishment of trust between Indigenous patients and their healthcare providers, the results shared here focus on our recommendations in the domain of relationships and the relational process involved in diabetes care.

Antibacterial Properties of Ginseng Extracts

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ABSTRACT:

Cystic fibrosis is the most common inherited genetic disorder occurring at a frequency of 1 in 2500 live births. Cystic fibrosis is characterized by impaired ion transport in mucus secreting epithelial cells leading to a buildup of thick dehydrated mucus. Mucus buildup obstructs airways inducing inflammation and bronchitis, but also provides opportunistic pathogen *Pseudomonas aeruginosa* the ideal environmental conditions to flourish. Chronic infection signified by mature biofilm formation is extremely resistant to current antibiotic treatments. Therefore, research into novel pharmaceuticals to enhance treatment would be greatly beneficial. Ginseng, the most popular medicinal plant, contains multiple compounds with known antibacterial and anti-adhesive properties. The aqueous extract from the North American ginseng species *Panax quinquefolius* has been shown to inhibit bacterial growth in both planktonic and biofilm form. The alcoholic extract and various acidic polysaccharides have been shown to have anti-biofilm and anti-adhesive properties against a variety of other gram negative bacteria. Minimum inhibitory concentration (MIC) experiments supported the bactericidal activities of the aqueous extract, with higher MIC seen for the laboratory PAO1 strain than clinical strains. However, no significant bactericidal activity was observed for the alcoholic extract and acidic polysaccharides. The effect of the alcoholic and aqueous ginseng extracts as well as the polysaccharide component on the structural integrity and adhesive properties of *P.aeruginosa* biofilms are currently under investigation. Biofilm integrity will be measured through cell count viability, attachment and motility, and membrane permeability assays. Funding: *This research is supported by the Ministry of Research & Innovation through the Ontario Research Fund, Research Excellence program (RE02-049).*

Exploring the Role of Canadian Winter on the Participation and Inclusion of Youth with Physical Disabilities

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ABSTRACT:

Background: Having a mobility-related disability can create numerous challenges in navigating the disabling physical and built environment, especially during winter when snow and ice become problematic. Such weather-related challenges can be a key barrier to full community participation and are linked with increased physical and psychological morbidities, leaving many people, especially those with mobility impairments, isolated in their homes. Unfortunately, the effects of winter weather (e.g., snow, ice) have often not been taken into account in mobility research, especially among youth.

Methods: This study explores the experiences of daily activities during Canadian winter among a purposive sample of youth aged 12-20 with a physical disability requiring the use of a mobility device. A qualitative design including in-depth interviews and focus groups within two different sites in Ontario (Sudbury and Toronto) was conducted. *Results:* Our findings show that youth encounter several barriers to participating in social and recreational activities in winter. Although some youth described participating in adapted winter sports, most youth expressed concerns about safety (when navigating their wheelchair in the snow and ice), risk of frostbite, inadequate winter clothing, and social isolation. Participants also gave several suggestions to improve the usability of mobility devices in the winter. In conclusion, more attention needs to be paid to the influence of winter conditions on the social inclusion and participation of young people with physical disabilities.

Disruption of mRNA Processing GW Bodies by Viruses

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ABSTRACT:

In recent years two membrane-free cytoplasmic mRNA processing microdomains were described, ie stress granules (SG) and GW/P bodies. While SGs are transiently formed in response to chemical and physical stressors, the GW bodies are consistently present. Stress granules serve as a transient mRNA storage sites in cells and mRNA can be shuttled back to ribosomes upon dissipation of stressor; and the GW bodies are the sites for mRNA committed for degradation. Together with polysomes, SGs and GW bodies form a dynamically interacting ribonucleoprotein (RNP) assemblies that coordinate mRNA turn over. Proteins that form GW bodies take part in a variety of post-transcriptional processing such as mRNA deadenylation (Caf1 and Ccr4), mRNA decapping (Dcp1/2 and Lsm1-7), translation inhibition (Rck/p54, eIF4ET), mRNA binding (eIF4E), mRNA 5'→3' degradation (Xrn1), micro RNA mediated gene silencing (Ago1-4), and scaffolding platform (Ge-1, GW182) to recruit other components. In this presentation we focus on GW bodies and demonstrate that viruses remodel the GW bodies and interfere with their integrity resulting in their complete disassembly.

Vigilance-Harmonizing for Health Protective Practice -Paradoxes for Pandemic Flu Preparations Among Nipissing University Students

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ABSTRACT:

The study's findings indicate that specific knowledge is needed in advance for Health Care Professionals (HCP's) to best tailor and deliver messages of advocacy for promoting Flu immunization (PI) uptake during or prior to a potential or actual Pandemic Flu (PF) outbreak, respective to a Nipissing University (NU) age-cohort. The study was planned prior to the inception and explication of the H1N1Pandemic 2009, and was conducted post- H1N1. The study employed both qualitative (grounded theory-GT) and quantitative methodologies. The GT method was selected as more knowledge was deemed to be necessary for this convenience, purposive study population (who traditionally have been highly susceptible to PF strains). A BSP was generated ("Vigilance Harmonizing for Health Protective Practices") from the medium of audio-taped interview content, along with concurrent constant comparison method, subsequent generation of categories and properties that reflected paradoxes in student's rationales for intent to accept or decline the respective current Flu vaccine. Measures that students take from a preventive perspective will be highlighted and discussed. Particularly relevant for HCP's are the results indicating that a significant proportion of the study group claim that they do not plan to accept the flu vaccine, offering their own personal belief reasons. HCP's need to be aware of these reasons as barriers to PF immunizations, and need to both tailor their messages accordingly and develop strategies for enlightening them of the value of PI in an attempt to promote more optimal immunization uptake for the herd immunity level and population health needs.

Effects of Lexical Neighbourhood Density on Identifying Words in a Binocular Rivalry Task

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ABSTRACT:

According to the inhibition deficit hypothesis, older adults perform more poorly on cognitive tasks than do younger adults because they are not able to ignore irrelevant information. However, in a previous study assessing this hypothesis with a binocular rivalry task, older and younger adults demonstrated similar processing of irrelevant information. This research explored whether older adults show inhibitory deficits when identifying words in a similar binocular rivalry task. In this binocular rivalry task, older and younger adults viewed a priming display and were asked to identify a target word while ignoring a distractor word. Following each priming display, participants completed the binocular rivalry portion of the task. In this portion, participants viewed a dynamic visual mask in one eye while a word gradually appeared in the other eye. Participants read the word as quickly as possible. This target word was either the target or distractor word from the priming display, a phonologically related word to the target in the priming display, or a new word, unrelated to either word in the priming display. Inhibitory deficits were revealed if target and distractor words from the prime task were identified equally quickly during the binocular rivalry task. Older and younger adults were expected to demonstrate considerable processing for target words and some processing for distractor words from the prime display. Both older and younger adults demonstrated these degrees of processing by identifying the target words from the prime display significantly faster than distractor words and identifying distractor words faster than new words.

Isolation and Characterization of *Clostridium difficile* Isolates from Patient Fecal Samples at Health Sciences North (HSN). Relationship Between Hospital and Community Acquired *Clostridium difficile* Infection (CDI) in Northern Ontario

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ABSTRACT:

Clostridium difficile associated diarrhea is responsible for hospital and community acquired enteric infections that might lead to severe toxic colitis, morbidity and mortality among immune compromised individuals and/or patients with prior history of intensive wide spectrum antibiotherapy. Frequent outbreak of *C. difficile* has contrasted against the low incidence rate of CDI at HSN (0.13 compared to provincial rate of 0.37 per 1000 patients days). The use of an enzyme immunoassay (EIA) method with low sensitivity might have contributed to the underestimation of CDI rate at HSN. The clinical sequelae would have been experienced at potential hospital transmission of the undetected *C. difficile* strains and delay of patient treatment. In June 2012, we have introduced the GeneXpert based real-time PCR diagnostic platform (Cepheid Inc) in parallel to EIA. In the first 7 months, we have tested >1400 fecal samples. Our current results show over 51% increased efficiency in detecting toxigenic *C. difficile* strains that would otherwise be considered false negatives using EIA. Our results also indicate that unlike the 2010 outbreak, when the toxigenic NAP1 was the dominant strain, the current most abundant isolate is *tcdB*⁺ (73%) followed by NAP1 (15%), *tcdB*⁺/*cdtB*⁺ (10%) and *cdtB*⁺ (2%). The *tcdB*⁺ isolate was the primary cause of two recent *C. difficile* outbreaks in 2012 at HSN. A substantial number of toxigenic isolates originated from community as well as nosocomial source. Contrary to common perception that associates the CDI to elderly, our data shows a bimodal distribution across different age groups, i.e. a shallow peak corresponding to 7-54 age group and a higher peak that is associated with 55-102 age group. Molecular characterization of toxigenic strains by ribotyping, multiplex PCR, MLST and toxinotyping is underway. Analysis of clustering pattern among isolates with respect to their geographic origin, evolutionary relatedness and diversity awaits further characterization.

Modification of High Dose Radiation-Induced Cardiac Inflammation and Fibrosis by Low Dose Computed Tomography (CT) or Positron Emission Tomography (PET) Scans in Trp53 heterozygous Mice

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ABSTRACT:

It is well known that high dose radiation exposure can cause deleterious biological consequences such as cell death, mutation, cancer, inflammation, and immune suppression. However, studies have shown that a prior low dose exposure can protect cells and organisms from the effects of high doses. This biological phenomenon is called the adaptive response. The specific aim of this research is to test the hypothesis that low doses of diagnostic radiation from CT and PET scans can induce an adaptive response and protect cardiac tissue from high dose damage. We will characterize ventricular inflammation and fibrosis using H&E, and Trichrome staining in age-matched hearts of Trp53 heterozygous mice that were given a single whole-body high dose (4 Gy) of γ -radiation at 8 weeks of age and euthanized at end of life. The results will be compared to hearts from adapted mice that were given a low dose CT or PET scan 24 hours prior to the high dose exposure. Findings from these studies will provide further insight into the effects of low dose radiation on cardiac function and inflammation. These experiments are important because of the increasing use of CT and PET scanning in detection of disease and the concerns of low dose radiation exposure.

Use of Accelerated Hydrogen Peroxide (AHP)-Based Formulations in the Control of Antibiotic-Resistant Contaminants

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ABSTRACT:

Infections due to antibiotic-resistant bacteria (ARB) have increased dramatically in recent years. There is also a correlation between the frequency of environmental surfaces contamination and the risk of acquisition of nosocomial infections due to ARB, resulting in adverse clinical outcomes, higher morbidity and mortality, and increased health costs. The use of effective disinfectants can be crucial in interrupting the spread of ARB in hospitals in particular.

Our objective was to evaluate the effectiveness of environmental surface disinfectants based on accelerated hydrogen peroxide (AHP) against 30 multidrug-resistant isolates of *Acinetobacter*, and ESBL producing *E. coli* and *Klebsiella* species. The microbial isolations were performed according to the standards of the Clinical Laboratory Standard Institute (CLSI). The microbicidal activity was determined using the second tier of the Quantitative Carrier Test (ASTM International: E-2197), using five carriers/samples, and three controls. Membrane filtration was used to determine the numbers of viable organism as colony forming units (CFU), and log₁₀ reductions were calculated. The product performance criterion was ≥6-log₁₀ reduction in the viability titer of the tested bacteria.

All the tested formulations met the product performance criterion against all the ARB. The formulations selected for testing are considered safer for humans and the environment while having a good materials compatibility profile. Their use should contribute to reducing the risk of spread of nosocomial infections via environmental surfaces.

The Videoconference Telepractices of Northern Ontario Registered Dietitians

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ABSTRACT:

Videoconferencing (VC) is a way for Registered Dietitians (RDs) to provide nutrition education to people living in isolated, remote or rural communities; to access professional development opportunities; and, to connect with other health care professionals. The Northern Ontario Dietetic Internship Program (NODIP) and Northern Ontario School of Medicine (NOSM) use VC extensively and aim to enhance the placements of NODIP interns to meet VC competencies and improve these skills with NODIP RD Preceptors. Yet it is not clear whether RDs practicing in northern Ontario are already using or are ready and willing to use VC in their professional practice.

Objectives: To determine the VC telepractice readiness of northern Ontario RDs to support the design, implementation and evaluation of NODIP interventions aimed at facilitating the uptake and impact of VC use in everyday practice.

Methods: Northern Ontario RDs' views and use of telepractice, including VC, will be determined through a 15-item online survey (Fluid Surveys[®]) that will be distributed by the College of Dietitians of Ontario (CDO) to approximately 300 currently practicing RDs in NODIP's catchment area of Local Health Integration Networks 12, 13 and 14. The results will be analyzed using Microsoft[®] Excel[®] version 14.2.4, 2011 and will focus on quantitative data analysis using frequencies and pivot tables.

Results: Pending data collection and analysis, February to April 2013.

Implications & Conclusions: Understanding the current state of telepractices amongst northern Ontario RDs will inform the NODIP intern curriculum as well as professional development priorities for RD Preceptors. This knowledge can benefit other NOSM Health Sciences professions in their quest to adopt and successfully use VC to improve their own practices in northern Ontario. There is also potential to share and further collaborate within NOSM as well as provincially and nationally with associations such as CDO and Dietitians of Canada (DC).

High Fat Diet, Exercise, and The IL-6 Paradox

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ABSTRACT:

Insulin resistance is the principle step towards the progression of type 2 diabetes, and has been linked to increased circulating levels of cytokines, including interleukin-6 (IL-6). There is also an endogenous up-regulation of IL-6 in response to exercise, which has been associated with improved insulin sensitivity. However, the mechanism behind the dual role of IL-6 on insulin signalling remains unknown. The specific aim of this research is to test the hypothesis that IL-6 is an important mediator of increased physical activity-induced insulin sensitivity. Male wild type (WT) and IL-6 knockout (IL-6^{-/-}) mice were fed a high fat diet (60% from kcal). The mice were divided into four groups, WT and IL-6^{-/-} with (Run) or without (Sed) access to running wheels, and the treatment lasted four weeks. There were significant differences in the total caloric intake between the Run and Sed mice in both WT (462.2 kcal \pm 8.8 *versus* 409 kcal \pm 7.6, $p < 0.05$) and IL-6^{-/-} (461.2 kcal \pm 7.6 *versus* 388.8 kcal \pm 7.6, $p < 0.05$) strains. The WT mice had increased weight gain compared to the IL-6^{-/-} mice (4.9 g \pm 0.3 or 21.6% *versus* 3.3 g \pm 0.3 or 14.6%, $p < 0.05$). There were no differences in average daily running distances between groups. Glucose tolerance tests yielded a non-significant 25.6% increase in plasma glucose in IL-6^{-/-} Run compared to WT Run (glucose area under the concentration-time curve above baseline). Future studies are directed towards examining changes in early signalling events in the insulin pathway using ELISA and western blot analyses on various downstream molecules. The results obtained will provide insight into the role of IL-6 in mediating both insulin resistance and insulin sensitivity, and is critical to the development of potential therapeutic interventions.

Investigating Antimicrobial Activity of Wild Microalgae

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ABSTRACT:

Microalgae are known to synthesize a diverse range of primary and secondary metabolites, some of which seem to be able to inhibit bacterial and fungal growth. Due to the growing resistance to antibiotics currently in use, there is a continuous need to discover new antimicrobial compounds and novel mechanisms of action. Certain microalgae may, therefore, have the ability to produce these potentially new and needed antimicrobial agents.

We have been looking a wide range of microalgae taken from water samples from a region of Northern Canada. In particular, we have been looking at water bodies in which microalgae manage to thrive in extremes of temperature, pH and/or metal (e.g., nickel, copper) levels. Different species of microalgae were isolated, the cells processed and extraction of metabolites performed with organic solvents. The algal extracts were tested against different bacterial species for evidence of antimicrobial activity. The results have shown that algal strains surviving under extreme environmental conditions can well be an important source of antimicrobial compounds.

Neuropsychological Effects of Opiate Replacement Treatment: Methadone vs. Suboxone in Prescription Opiate Addiction

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ABSTRACT:

Opioid dependence is a chronic and severe disorder associated with increased mortality, medical/psychiatric co-morbidities and adverse social, vocational, neuropsychological and legal consequences if left untreated. There is a vast literature on the efficacy of methadone maintenance treatment for opioid dependency in patients formerly addicted to heroin, but comparatively less on treatment outcomes in the prescription opiate dependent population. Methadone maintenance treatment for opiate addiction has been the “gold standard” in terms of medication assisted recovery in Canada until the recent introduction of Buprenorphine. Both medications are opioid agonists which minimize opioid withdrawal symptoms and reduce craving for opioids as part of opioid substitution treatment (OST). OST has proven effective in reducing illicit drug use, mortality, social and mental health problems and contributes to improved quality of life in opioid-dependent patients. However, chronic opioid dependence is associated with several cognitive deficits often involving frontal lobe functioning, such as executive functions, fluency, memory, decision making and attention. There are mixed findings in the literature with some evidence to suggest that methadone maintenance treatment itself may be linked to impairments in several cognitive functions, possibly extending impairments attributable to long-term opioid abuse, with other evidence showing improved cognition after 2 months of methadone maintenance treatment. Relatively few studies have looked at the cognitive effects of buprenorphine treatment in comparison to methadone maintenance treatment, but there is some evidence to suggest that buprenorphine treatment results in improved overall cognitive performance compared to methadone treatment in heroin addicts. These findings have not been replicated in the prescription opiate addict population. This study will present data that comprehensively examined neuropsychological functioning in prescription opiate addicts treated with either Methadone or Buprenorphine in an outpatient treatment clinic.

Improving Health Equity for Northern Ontarians: Applied Health Research with Vulnerable Populations

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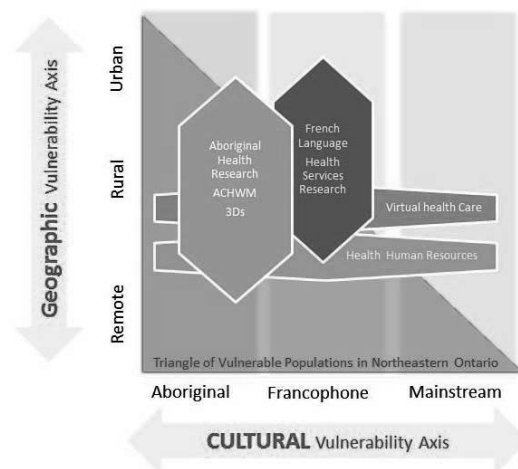
ABSTRACT:

The emerging research program at the Centre for Rural and Northern Health Research (CRaNHR) will focus on transforming health policy, systems and practice to improve health equity for vulnerable and special health needs populations in northern Ontario. People in this region have poorer health status and face unique challenges due to culture and geography. This presentation will describe an applied research program that aims to improve access, delivery, and quality of care for all ages, genders, ethnicities and cultures.

The program has a research focus on rural, remote, Aboriginal and Francophone populations and examines health professionals and virtual health care (e-health) as a means to improve quality of care. Specific research projects will develop a culturally safe model of health and mental health care for Aboriginal adults and seniors; adapt and implement an Aboriginal child and youth health measure to inform evidence-based decision-making; and assess the quality and provision of medical care to Francophones.

Our research will provide an integrated picture of cost effective solutions to the delivery of quality health care services to vulnerable populations in the North. Our program will use ethically and culturally appropriate research with continuous involvement of knowledge users including the North East and North West Local Health Integration Networks, Aboriginal and Francophone Health Organizations, Public Health Units and other health organizations to improve health equity in northern populations.

Program Overview



Assessing Fitness-to-Drive: Practical Tips on Choosing the Right Screening Tools for Your Practice

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ABSTRACT:

Assessment of older patients' fitness to drive is a difficult challenge faced by physicians. Many screening tests have been proposed, but to date, none of them has proved universally acceptable in meeting the needs of physicians or their patients. Therefore, it is likely that researchers will continue to propose new screening tests. We provide a list of seven questions that physicians should ask about any screening procedure they are considering for use in their practice. The questions are arranged in hierarchical order such that one can stop at any point when the answer to a question is unsatisfactory.

The seven questions are: 1) How suitable is the gold standard? 2) Are the study participants similar enough to your patients? 3) Are screening test properties reported? 4) Are the screening test properties good enough to make the test useful? 5) Have the test's properties been independently confirmed? 6) Is there any conflict of interest? 7) How acceptable would the test be to your patients? We hope that this list of seven questions will prove to be a useful guide to physicians and other clinicians as they critically appraise both currently available and yet to be proposed screening tools for fitness-to-drive.

Examining the Association of the Combined Effects of Alcohol and Cannabis on Unsafe Driving

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ABSTRACT:

Introduction: Research demonstrates that driving under the influence of alcohol or cannabis alone is associated with increased crash risk. This study explores the combined influence of alcohol and cannabis on unsafe driving.

Methods: Drivers 20 years and older, drug and alcohol tested, involved in a United States fatal crash (1991-2008) were examined using a case-control design. Cases were drivers with at least one potentially unsafe driving action (UDA) recorded in relation to the crash (e.g., weaving); controls had none recorded. We examined the prevalence of driving under the influence of alcohol, cannabis, and both agents, for drivers involved in a fatal crash. Adjusted odds ratios of committing an UDA for both the additive effects of alcohol when combined with THC and the synergistic effects of both THC and alcohol were computed via logistic regression.

Results: Over the past two decades, the detection prevalence of THC and Alcohol in car drivers has increased approximately five-fold from below 2% in 1991 to above 10% in 2008. Each additional .01 BAC unit increased the odds of an UDA approximately 7-10% for the additive effect and 7-16% for the synergistic effects.

Conclusions: Drivers positive for both agents were more likely to make an error than drivers positive for either alcohol or Cannabis only. Future research examining Cannabis concentration levels, alcohol, and driving are necessary. Given the increased associated risk was seen at lower levels of alcohol concentration, driver and public health education should highlight the association of this possible effect on unsafe driving.

Aggressive Driving Behaviour in Young Drivers (Aged 16 Through 25) Involved in Fatal Crashes

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ABSTRACT:

Introduction: We wished to determine the extent to which number of passengers, driver age, and sex were associated with aggressive driving actions (ADAs) in young drivers involved in a fatal crash.

Methods: We used U.S. fatal-crash data from Fatality Analysis Reporting System (FARS), 1991 – 2008. Proxy measures of aggressive driving included ADA presence and speed differential (posted speed limit minus estimated travel speed). We examined the odds of an ADA and speed differential in young drivers (aged 16 to 25) by passenger status.

Results: Compared to driving alone young drivers (aged 16) had increased odds of an ADA between 14% (OR: 1.14; 95%CI: 1.07; 1.22) and 95% (OR: 1.95; 95%CI: 1.40; 2.74) when accompanied by one and five passengers respectively. Further, carrying a higher number of passengers was a stronger predictor of speeding in younger drivers.

Conclusions: While the results of our study support the use of graduated licensing approaches there is room for improvement. Our study indicates that tackling impaired driving is not sufficient to drastically reduce aggressive driving among the youngest drivers. Further research on young drivers is required to understand the influence of peers and the role of gender on driving behavior. Strategies to reduce aggressive driving behaviors among the youngest drivers may not only prevent crashes during their early driving careers but may also translate into a reduced crash risk over their lifetime.

Decreasing Driver Speeding on a Simulated Drive with Feedback and Reinforcement

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ABSTRACT:

Background/Objectives: Research suggests that driver feedback combined with reinforcement can increase safe driving (i.e., reduce speeding and tailgating). Although promising, it is currently unknown whether both feedback and reinforcement are required to increase safe driving or whether similar results could be achieved with just one of these components. We investigated the amount of speed reduction that could be achieved on a simulated drive with just one intervention component (i.e., feedback alone or reinforcement alone) compared with feedback and reinforcement combined.

Methods: Twenty-eight men (7 per group) aged 18-29 completed a 30-minute simulated drive using a 2x2 design (feedback or not; reinforcement or not). Real-time feedback consisted of a dashboard device informing participants of their current speed relative to the speed limit using lights. Reinforcement consisted of drivers earning points for driving at or below the speed limit; points were later exchanged for a gift card, with its value determined by the number of points earned.

Results: Compared with control participants, drivers who received feedback combined with reinforcement spent less time driving above the speed limit, had a slower mean speed, and had a smaller standard deviation of speed (all *p*-values < .05). Drivers exposed to reinforcement alone showed speed reductions similar to drivers who received both feedback and reinforcement. Drivers exposed to feedback alone drove at speeds similar to control participants.

Conclusion: Reinforcement alone was necessary and sufficient to achieve a reduction in drivers' speed. This information could be used to inform policy-makers and car manufacturers.

Fear Conditioning is Associated with Fewer synapses in the Lateral Amygdaloid Nuclei of the Rat

PRESENTING AUTHOR:

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ABSTRACT:

Previous research has found that the central and lateral amygdaloid nuclei (CE, LA) have distinct roles in fear conditioning and that synaptic plasticity is a likely mechanism for the observed changes in behaviour. This study quantified the number of co-localized synaptic proteins in the CE and LA regions using confocal microscopy and unbiased design-based stereology following Pavlovian fear conditioning. Paired, unpaired, and a tone only groups were included in a traditional classically conditioning paradigm where mild 0.3 mA shock was used as the unconditioned stimulus and freezing was quantified as the UR/CR. Synapses were quantified 24 hours after the establishment of a conditioned fear response and identified by the co-localization of antibodies for SV2 (presynaptic) and PSD95 (postsynaptic). Here, the combined wave lengths of red and green combined to produce a distinct yellow colour when both proteins were present. A series of 50 microns, double- labelled coronal sections were obtained using an unbiased design-based stereological procedure. Behavioural results confirmed that the paired animals showed significantly more freezing in the 5- second pre-shock interval than the unpaired and tone only groups. The synaptic data showed that fear conditioning is associated with fewer synapses in the LA compared to unpaired control animals. These results confirm that synaptic changes are associated fear conditioning in the amygdale and that the LA is particularly altered. This animal research has the potential to further our understanding of human psychopathology in the areas of anxiety and phobia development. (Approved by the Nipissing University Animal Care Committee).

Photoluminescence Near-Infrared Quantum Dots: Novel Tools for Whole Animal Imaging

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ABSTRACT:

Imaging modalities in the clinic generally include optical imaging, MRI, CT, PET, or SPECT. Each imaging modality has its own unique advantage along with intrinsic limitations, such as insufficient sensitivity or spatial resolution, which makes it difficult to obtain accurate and reliable information at the disease site. Pioneering research articles showed the use of visible-quantum dots (QDs) as luminescent contrast agents for imaging cancer and guiding cancer surgery. The possible future use of QDs for clinical applications is expected to have a significant impact; however, many challenges in this field have yet to be overcome. Several recent reports showed there is an outstanding demand for the nanomaterials to exhibit emission profiles in the near-infrared diagnostic window of 700–900nm, to avoid the absorption of bio-molecules like hemoglobin, proteins and water as well as to stay away from autofluorescence of visible light (400–600nm). In this presentation, we discuss the design of visible to near-infrared emitting quantum dots and the coupling of these quantum dots with targeting bio-molecules for cancer imaging.

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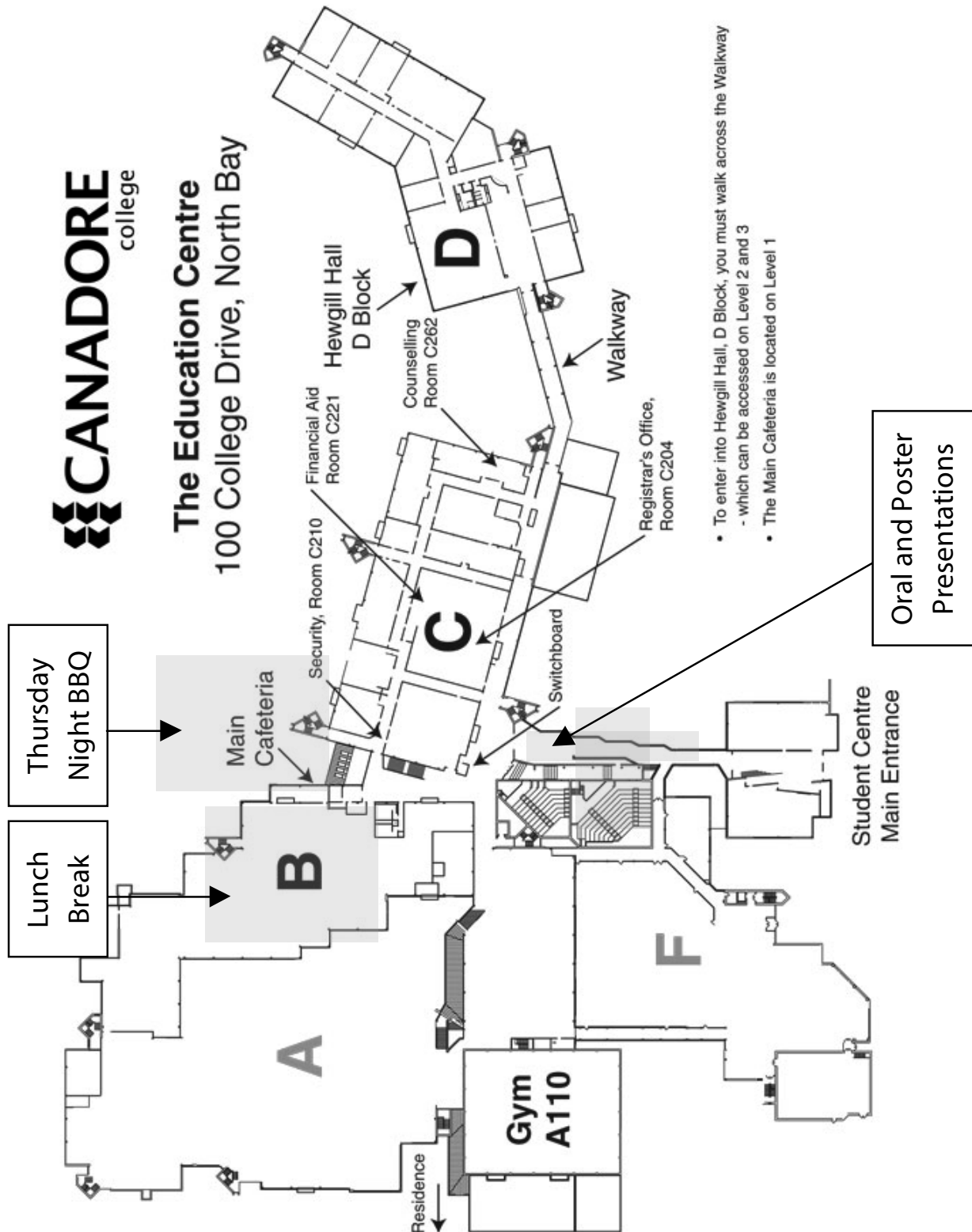
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MAP



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