Canadian Society for Epidemiology and Biostatistics
CSEB-SCEB
Société Canadienne d'Épidémiologie et de Biostatistique

JUNE 8-10
2016
UNIVERSITY OF MANITOBA
BANNATYNE CAMPUS
727 MCDERMOT AVE
WINNIPEG, MB

2016 CSEB NATIONAL STUDENT CONFERENCE PROGRAM

PATTERNS OF HEALTH: A POPULATION PERSPECTIVE

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Acknowledgements

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Dr. Nathan Nickel

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Winnipeg

Mayor's Message

On behalf of the City of Winnipeg and my city council colleagues, it is my pleasure to welcome delegates of the Canadian Society for Epidemiology and Biostatistics 2016 Student Conference to our city. We're proud to be your host for this event.

Winnipeg has a diverse cultural and arts community, as well as a variety of restaurants, shopping experiences, and sporting events for you to explore and enjoy. I hope that you will enjoy our warm hospitality and visit some of our iconic attractions, including our stunning Canadian Museum for Human Rights and the unique Journey to Churchill exhibit at the Assiniboine Park Zoo, and discover our vivacious communities, including Osborne Village (voted one of the best neighbourhoods in Canada).

Best wishes for a professorially rewarding conference and a great stay in our city.

Sincerely,

Brian Bowman
MAYOR

Max Rady College of Medicine
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S113 Medical Services Building
750 Bannatyne Ave
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We are pleased and honored to welcome you to the University of Manitoba and to the 2016 Student Conference of the Canadian Society of Epidemiology and Biostatistics (CSEB). The CSEB Student Conference is the premier opportunity for biostatistics and epidemiology students to showcase their research and to connect and network with colleagues from around Canada. We hope that you will find this an enriching three days and that you will leave Winnipeg having gained valuable experiences, knowledge, and connections.

The CSEB Student Conference is a conference planned by students, for students. The Conference Planning Committee has worked hard to prepare an engaging and informative program that has something for everyone.

The signature event of the CSEB Student Conference, its scientific session, includes presentations that cover a broad spectrum of topics, including population health, measurement error, epigenetics, and more. Students will leave the conference with deeper insights into their area of research and be introduced to new and emerging ideas in their field.

Beyond the scientific session, there are many opportunities for students to grow their skills and broaden their knowledge. Workshops will provide in-depth knowledge about such topics as propensity score models and health equity measurement. A stellar line up of invited speakers from top national and international universities will participate in a symposium; they will challenge your ideas and share their research insights into such diverse areas as indigenous health and measurement error. Be sure to spend time with our speakers, to find out more about their career paths and what it takes to be a top researcher in your field. We are pleased to partner with the Canadian Student Health Research Forum (CSHRF), which is now in its 29th year, to offer this symposium.

Winnipeg is situated at the geographic centre of North America, where the Red and Assiniboine Rivers join, a gathering place for over 6000 years. National Geographic magazine highlights Winnipeg as one of the 20 best destinations to visit in 2016. With the Canadian Museum of Human Rights, The Forks, Royal Canadian Mint, and numerous cultural venues, our city offers visitors a variety of attractions to see and do.

This is an exciting time to be a student who is training in biostatistics or epidemiology. Silos are being broken down and bridges are being built to connect the bench science, quantitative methods, and population health. We are delighted to host the CSEB Student Conference at the University of Manitoba. We look forward to interacting with you during your stay. We hope that you have wonderful and productive conference.

Best Wishes,

Lisa Lix, PhD   Nathan Nickel, PhD
Faculty Co-Advisor,   Faculty Co-Advisor,
CSEB Student Conference   CSEB Student Conference
Professor,   Assistant Professor,
Community Health Sciences   Community Health Sciences
Rady Faculty of Health Sciences Rady Faculty of Health Sciences
University of Manitoba   University of Manitoba

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C'est un plaisir et un honneur de vous accueillir à l'Université du Manitoba, ainsi qu'à la Conférence des étudiants de 2016 de la Société canadienne d'épidémiologie et de biostatistique (SCEB). La Conférence des étudiants de la SCEB est une occasion sans égale pour les étudiants en biostatistique et en épidémiologie de présenter leurs travaux de recherche, en plus de rencontrer des collègues de partout au Canada et de réseauter. Nous espérons que vous trouverez ces trois jours enrichissants et que vous quitterez Winnipeg avec le sentiment d'avoir acquis de précieuses connaissances, vécu des expériences mémorables et fait des rencontres intéressantes.

La Conférence des étudiants de la SCEB est un événement organisé par des étudiants à l'intention des étudiants. Le Comité de planification de la Conférence a travaillé très fort pour élaborer un programme à la fois captivant et informatif où chacun y trouvera son compte.

L'événement phare de la Conférence des étudiants de la SCEB, soit la séance scientifique, réunit des communications qui couvrent un large éventail de sujets, dont la santé de la population, les erreurs de mesure, l'épigénétique et bien plus encore. Les étudiants quitteront la conférence avec une compréhension approfondie de leur domaine de recherche et seront exposés à de nouvelles idées émergentes dans leur champ d'intérêt.

Au-delà de la séance scientifique, il existe de nombreuses possibilités pour les étudiants de parfaire leurs compétences et d'élargir leurs connaissances. Les ateliers proposeront des connaissances poussées sur des sujets tels que les modèles de scores de propension et la mesure de l'équité en matière de santé. Un ensemble de conférenciers invités brillants, provenant des meilleures universités du Canada et de l'étranger, participeront à un forum. Ils contesteront vos idées et partageront les leurs dans des domaines aussi variés que la santé des Autochtones et les erreurs de mesure. Ne manquez pas de passer du temps avec nos conférenciers pour en savoir plus sur leur cheminement de carrière et ce qu'il faut pour devenir un chercheur prisé dans votre domaine. Nous sommes heureux de collaborer avec le Forum sur la recherche en santé pour les étudiants canadiens (FRSEC), qui en est à présent à sa 29e édition, pour offrir ce colloque.

Winnipeg se situe au cœur de l'Amérique du Nord, où les rivières Rouge et Assiniboine se rejoignent : un lieu de rassemblement depuis plus de 6000 ans. Le National Geographic estime que Winnipeg figure parmi les 20 destinations à ne pas manquer de visiter en 2016. Avec le Musée canadien des droits de la personne, Les Fourches, la Monnaie royale canadienne et de nombreux sites culturels, Winnipeg offre à ses visiteurs une variété d'attractions touristiques à voir et à vivre.

La période actuelle est emballante pour tout étudiant qui suit une formation en biostatistique ou en épidémiologie. Les cloisons qui séparent les disciplines sont en voie de disparaître et des ponts sont jetés en vue de relier les sciences de laboratoire, les méthodes quantitatives et la santé de la population. Nous sommes très heureux d'accueillir la Conférence des étudiants de la SCEB à l'Université du Manitoba. Nous nous réjouissons d'interagir avec vous pendant votre séjour. Nous espérons que votre conférence sera formidable et productive.

Meilleures salutations.

Lisa Lix, Ph.D.
Co-conseillère universitaire,
Conférence des étudiants de la SCEB
Professeure,
Sciences de la santé communautaire
Faculté Rady des Sciences de la santé
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Nathan Nickel, Ph.D.
Co-conseiller universitaire,
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University of Manitoba | Rady Faculty of Health Sciences

Dear Students,

Welcome to Winnipeg and to our health sciences campus! We are happy and proud to share the results of 15 months of hard work with you. Over the next three days you will have the opportunity to develop and hone your research skills, learn from guest experts who are part of our joint symposium with the Canadian Student Health Research Forum, and present your own research in a low pressure, student-friendly environment. You will also have a chance to network with each other and with local academics and other professionals, which we hope will be lasting connections that could lead to exciting future collaborations.

We are on social media and we hope that you will connect with us and each other. Join in the conversation using #cseb2016. Join our LinkedIn Group, Like us on Facebook, and follow us on Twitter. Do not hesitate to contact us throughout the conference if you have any questions or suggestions. You can reach us at: csebwpg2016@gmail.com. We will be sending you an evaluation form after the conference to ask you for your feedback.

Over the next three days we plan to showcase the diversity and rich culture of our city. And we hope you have time to explore and experience Winnipeg yourself. We highly recommend visiting The Forks, where you can shop, dine, visit the Canadian Museum of Human Rights, and walk the paths along the river. Our city is beautiful, particularly in Spring and Summer, with both active arts and sports scenes and many superb places to eat.

We hope you have a fun and educational three days here and leave feeling inspired and motivated to return home to work on your research. In closing, we would like to thank the planning committee that made this conference possible and you, for coming to share your passion and making the next three days a huge success!

All the best,

Kristine Kroeker, Aynslie Hinds, and Laetitia Guillemette
Student Chairs, 2016 CSEB National Student Conference

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UNIVERSITY of MANITOBA | Rady Faculty of Health Sciences

Chers étudiants, chères étudiantes,

Nous vous souhaitons la plus cordiale des bienvenues à Winnipeg et au Campus des sciences de la santé ! Nous sommes heureuses et fières de partager les résultats de 15 mois de travail acharné avec vous. Au cours des trois prochains jours, vous aurez l'occasion de développer et de perfectionner vos compétences en recherche, d'apprendre auprès des experts que nous avons invités au colloque conjoint avec le Forum sur la recherche en santé pour les étudiants canadiens (FRSEC), et de présenter vos propres recherches dans un environnement accueillant et encourageant. Vous aurez également l'occasion de réseauter entre vous ainsi qu'avec des chercheurs établis et d'autres professionnels afin de créer des liens qui, nous l'espérons, seront durables et mèneront à de futures collaborations emballantes.

Nous sommes présents dans les médias sociaux; nous espérons que vous nous y rejoindrez et que vous y créerez des liens avec les autres participants. Faites partie de la conversation en utilisant le mot-clic #cseb2016, joignez-vous à notre groupe LinkedIn, « aimez » notre page Facebook et suivez-nous sur Twitter ! N'hésitez pas à communiquer avec nous à l'adresse suivante tout au long du congrès si vous avez des questions ou des suggestions: csebwpg2016@gmail.com.
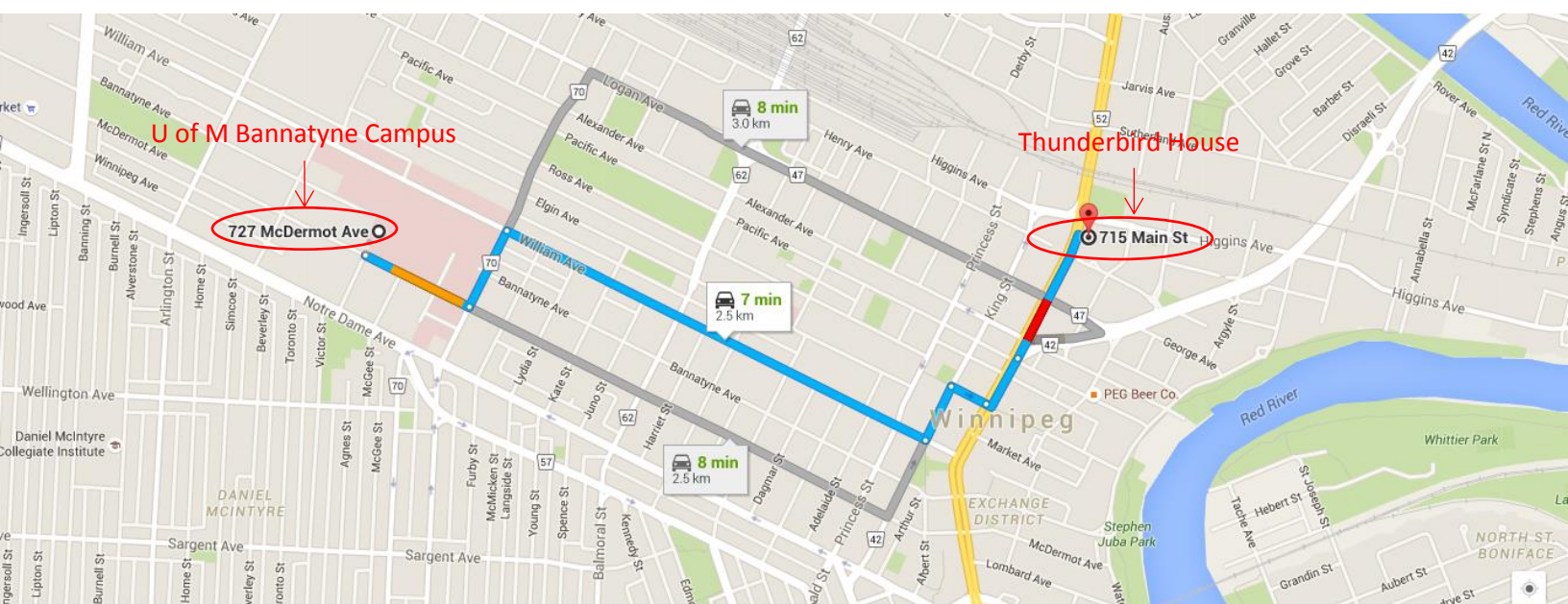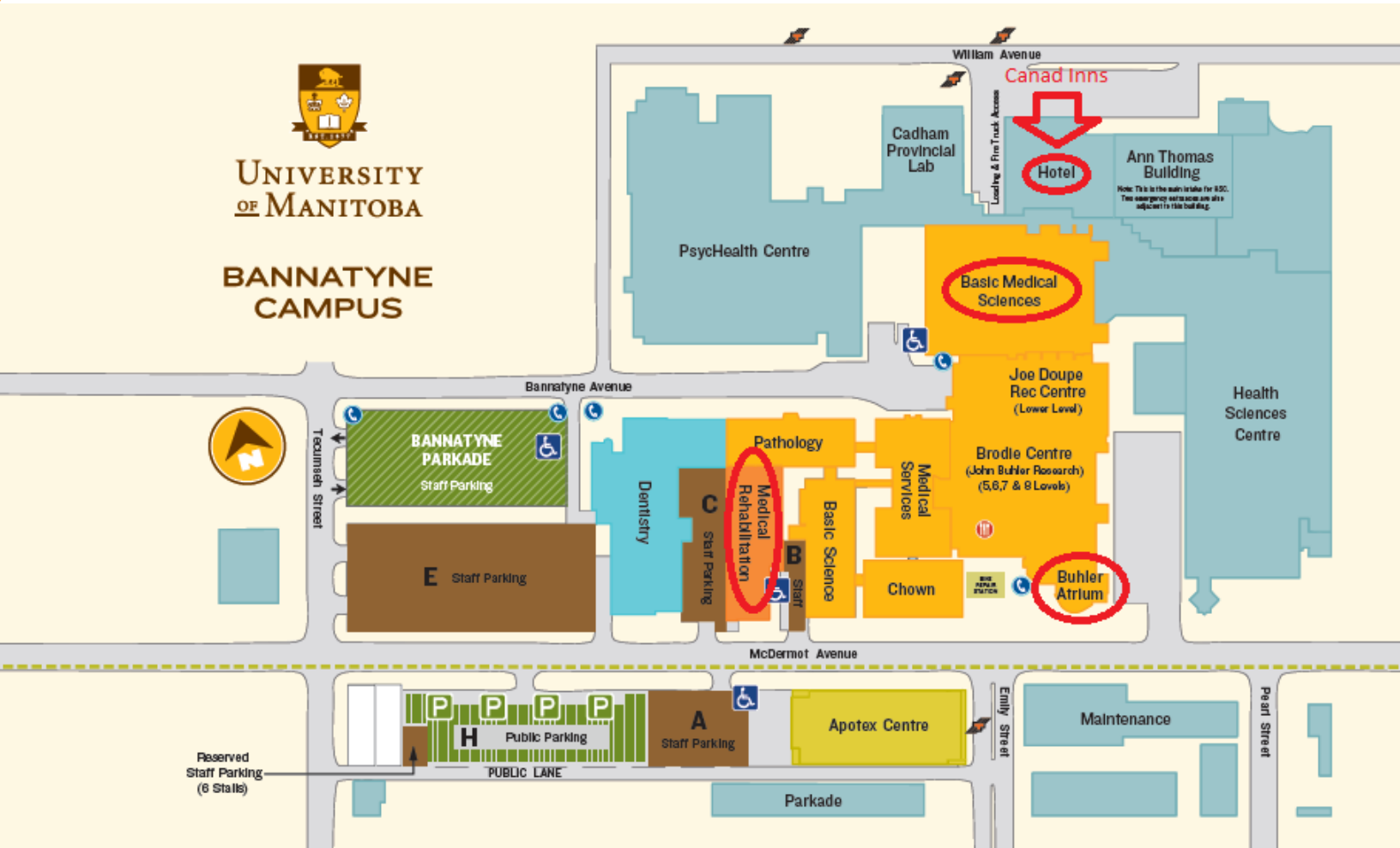
Les prochains jours mettrons en valeur la diversité et la richesse culturelle de notre ville; nous espérons que vous aurez le temps de la visiter et d'en profiter. Nous vous recommandons vivement de visiter Les Fourches, où vous pourrez magasiner, fréquenter de bons restaurants, visiter le Musée canadien des droits de la personne et déambuler dans les chemins qui longent la rivière. Notre ville est magnifique au printemps et en été, les scènes sportive et artistique dynamiques y contribuant beaucoup.

Nous espérons que vous vivrez un congrès agréable et éducatif avec nous et que vous nous quitterez inspirés et motivés de travailler à vos recherches une fois de retour chez vous. En terminant, nous tenons à remercier le comité de planification qui a rendu cette conférence possible, ainsi que vous, pour la passion que vous contribuerez à nos discussions qui ne manqueront pas de faire de cet événement un franc succès !

Meilleures salutations.
Kristine Kroeker, Aynslie Hinds, et Laetitia Guillemette
Présidentes étudiantes, Congrès national des étudiants de la SCEB 2016

Floor Plans & Maps

University of Manitoba — Bannatyne Campus map

Directions map: U of M Bannatyne Campus (727 McDermot Ave) to Thunderbird House (715 Main St)

Wednesday, June 8, 2016
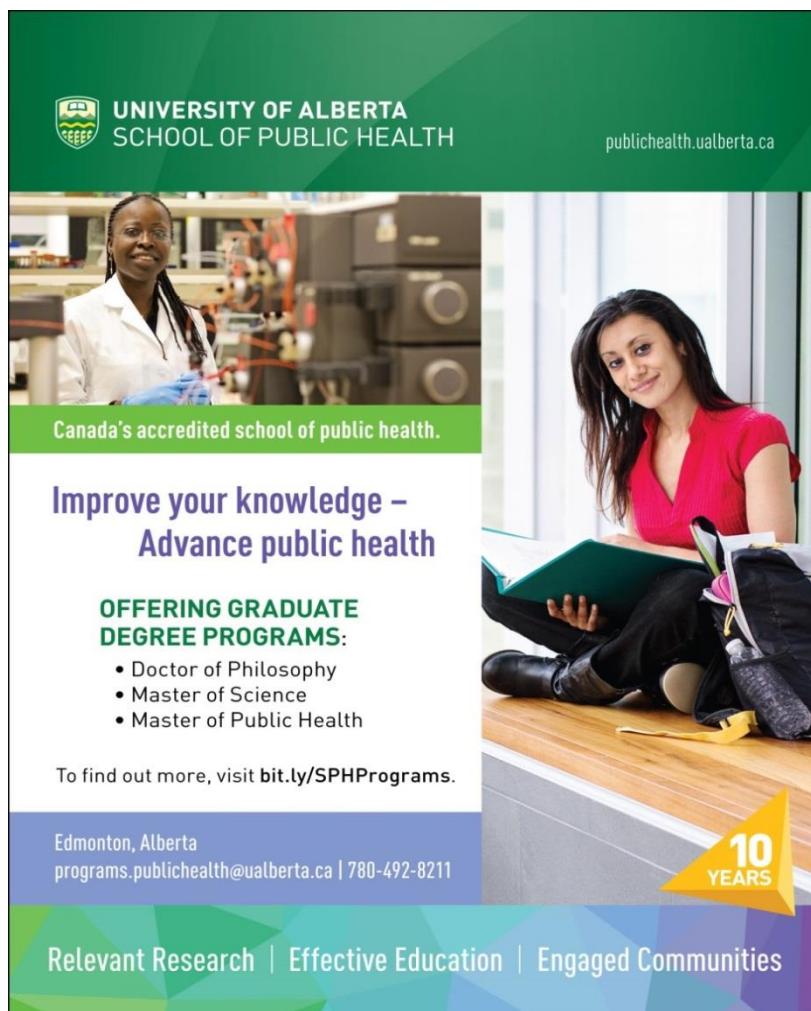
Time	Event	Location
8:00am – 11:45am	Early Registration	Brodie Centre, Answers' Desk
11:45am – 1:00pm	Registration and Lunch	Buhler Atrium
1:00pm – 4:00pm	Workshop 1: Dr. Atul Sharma | Propensity Scores: Making Sense of Non-Randomized Observational Data	R060 Rehabilitation Building
1:00pm – 4:00pm	Workshop 2: Dr. Nathan Nickel | Don't Leave Them Behind: Epidemiology of Health Equity	R626 Basic Medical Sciences Building (BMSB)
1:00pm – 4:00pm	Workshop 3: Dr. Dan Chateau | Structural Equation Modeling Using SAS	R219/221 BMSB
1:30pm – 3:00pm	Workshop 4: Career Development Panel	R214/218 BMSB
4:00pm – 6:30pm	Free Time	
6:30pm	Official Welcome & Dinner Reception	Thunderbird House 715 Main St

Thursday, June 9, 2016 - In collaboration with Canadian Student Health Research Forum

Time	Event	Location
7:45am – 9:00am	Breakfast	Buhler Atrium
9:00am – 9:15am	Welcome, Opening Remarks, and Chairs' Overview	Theatre A (BMSB)
9:15am – 10:00am	Guest Speaker 1: Dr. Sandro Galea | The Principles of Population Health Science, Towards Scholarship of Consequence	Theatre A (BMSB)
10:00am – 10:30am	Coffee Break	Joe Doupe Concourse
10:30am – 11:15am	Guest Speaker 2: Dr. Xiangguo Qiu | Fighting Ebola Virus Infection in the Lab and Field	Theatre A (BMSB)
11:15am – 12:00pm	Guest Speaker 3: Dr. Ann Aschengrau | Long-Term Neurotoxic Effects of Early Life Exposure to Tetrachloroethyene (PCE)-Contaminated Drinking Water	Theatre A (BMSB)
12:00pm – 12:30pm	Lunch	Joe Doupe Concourse
12:30pm – 1:45pm	Speed Networking Session for CSEB Attendees	Buhler Atrium
2:00pm – 2:45pm	Guest Speaker 4: Dr. Kue Young | Apples and Oranges, or Oranges and Tangerines? Perils of International Comparison of Health indicators	Theatre A (BMSB)
2:45pm – 3:15pm	Coffee Break	Joe Doupe Concourse
3:15pm – 4:00pm	Guest Speaker 5: Dr. Raymond J. Carroll | What Percentage of Children in the U.S. are Eating an Alarmingly Poor Diet? A Statistical Approach	Theatre A (BMSB)
4:00pm – 4:30pm	Round Table Discussion	Theatre A (BMSB)
4:30pm – 5:30pm	CHSRF Awards Ceremony / Free Time for CSEB Attendees	
5:30pm – 7:00pm	Cocktail Reception for CHSRF and CSEB Attendees	Brodie Atrium
7:00pm – 9:30pm	Pub Quiz Trivia Night	King's Head Pub 120 King St

Friday, June 10, 2016

7:45am – 9:15am	Breakfast	Canad Inns Heath Sciences Centre (Ambassador A)
9:15am – 10:45am	Poster Competition and Coffee Break	Buhler Atrium
10:45am – 12:00pm	Concurrent Oral and Rapid Fire Competition (first wave)	R160 Rehabilitation Building R230 Rehabilitation Building R236 Rehabilitation Building 626 BMSB
12:00pm – 1:00pm	Lunch and Poster Exposition (Rapid Fire Presenters)	Canad Inns Heath Sciences Centre (Ambassador A)
1:00pm – 2:10pm	Concurrent Oral and Rapid Fire Competition (second wave)	R160 Rehabilitation Building R230 Rehabilitation Building R236 Rehabilitation Building 626 BMSB
2:10pm – 2:30pm	Coffee Break	Canad Inns Heath Sciences Centre (Ambassador A)
2:30pm – 3:45pm	Concurrent Oral Competition (third wave)	R160 Rehabilitation Building R230 Rehabilitation Building R236 Rehabilitation Building 626 BMSB
3:45pm	Closing Remarks	Theatre A (BMSB)

Wednesday, June 8, 2016

Time	Event	Location
8:00am – 11:45am	Early Registration	Brodie Centre, Answers' Desk
11:45am – 1:00pm	Registration and Lunch	Buhler Atrium
1:00pm – 4:00pm	**Workshop 1: Dr. Atul Sharma | Propensity Scores: Making Sense of Non-Randomized Observational Data** Background: Randomized, controlled trials remain the gold standard in medical research. Nevertheless, with the increasing availability of administrative data and 'natural experiments' in health policy, clinical investigators must be prepared to interpret and analyze observational data arising from non-randomized trials and quasi-experimental study designs. This workshop is intended to support investigators as they design and interpret such trials. In it, we will focus on the application of propensity score methods to account for the selection biases that can confound such studies, even making it possible to analyze observational data as if they arose from a randomized trial. Divided into two sessions, the first will provide a 1h introduction to the theory and application of propensity score methods, concentrating on real-world examples from the medical literature. The second session will be a 1h computer lab, to review the use of specialized software needed to perform propensity score analysis, including the R statistical language and specialized libraries for propensity score matching, assessment of post-match balance, and sensitivity analysis (e.g. the Matching and rbounds packages). Objectives: • Understand the role of randomization in ensuring 'covariate balance' between experimental groups • Recognize the implications of selection biases as confounders in non-randomized observational data • Understand how the 'balancing property' makes it possible to condition on propensity scores to balance experimental groups in non-randomized trials Understand the various ways that of propensity scores (PS) can be used to analyze quasi-experimental designs, including: • Stratification • Regression adjustment • Weighted regression • Propensity score matching Recognize the limitations of propensity score methods and understand the importance of post-analysis assessment of modeling assumptions, including: • Appropriate methods for assessing covariate balance • Sensitivity analysis to test the robustness of conclusions to hidden biases from unobserved confounders (Rosenbaum bounds) • Devices for testing the robustness of study conclusions, including multiple control groups, coherence, and dose-response relationships.	R060 Rehabilitation Building
1:00pm – 4:00pm	**Workshop 2: Dr. Nathan Nickel | Don't leave them behind: Epidemiology of Health Equity** Many health outcomes follow a social gradient where lower socioeconomic status is associated with worse health; health inequities are those systematic differences in health that are avoidable, remediable, and unfair. The 62nd World Health Assembly called upon the international population health community to monitor progress in in reducing health inequities. This workshop will focus equipping students with epidemiological measures often used in health equity research. Students will have the opportunity to participate in an interactive workshop designed to familiarize them with key concepts in health equity. The workshop will provide an overview of the language of and theoretical considerations for health equity research. Participants will gain hands-on experience with a variety of epidemiological measures of health equity. Through these interactive exercises, students will gain an appreciation for the strengths and weaknesses of a variety of health equity measures. Learning Objectives: • Explain to a lay person the language used in health equity research and differentiate between terms such as "health inequity," "health inequality," and "health disparity." • Interpret results from health equity research. • Describe why relative and absolute comparison measures can give different – and sometimes contradictory – impressions vis-à-vis changes in health disparities over time. • Explain how the size of population sub-groups can impact measures of health equality to other population health professionals. • Explain how the prevalence of the health indicator can impact equality measures. • Describe and apply a variety of health equality measures as well as their strengths and weaknesses.	R626 Basic Medical Sciences Building (BMSB)

1:00pm – 4:00pm	**Workshop 3: Dr. Dan Chateau | Structural Equation Modeling Using SAS** The CALIS procedure in SAS/STAT is a general structural equation modeling (SEM) tool. This workshop introduces the general methodology of SEM and the applications of the CALIS procedure, with examples in social, educational, behavioral, and marketing research. Specifically, the following how-to techniques of the CALIS procedure (SAS/STAT 13.2) are covered: (1) Specifying structural equation models with latent variables by using the PATH modeling language; (2) Interpreting the model fit statistics and estimation results; (3) Analyzing direct and indirect effects; (4) Modifying structural equation models. This workshop is designed for statisticians and data analysts who want to overview the applications of the SEM by the CALIS procedure. Attendees should have a basic understanding of regression analysis and experience using the SAS language. Previous exposure to SEM is useful, but not required.	219/221 BMSB
1:30pm – 3:00pm	**Workshop 4: Career Development Panel** Featuring: Dr. Mark Oremus, Dr. Al Artaman, Llewellyn Armstrong and Stephanie Sproule.	R214/218 BMSB
4:00pm – 6:30pm	Free Time	
6:30pm	**Official Welcome & Dinner Reception** Keynote Speaker: Dr. Niigaanwewidam James Sinclair Entertainment: Peaceful Village Drumming Notes: Whaka Pimadiziiwii Pinaysiiwigamic (Thunderbird House) is a sacred and grounding place, situated on consecrated grounds; please dress accordingly. Recommended attire: business casual. Please note that you will have to take your shoes off when inside Thunderbird House. You may walk around barefoot, in socks, or in flip-flops.	Thunderbird House 715 Main St

Thursday, June 9, 2016 - In collaboration with Canadian Student Health Research Forum

7:45am – 9:00am	Breakfast	Buhler Atrium
9:00am – 9:15am	Welcome, Opening Remarks, and Chairs' Overview	Theatre A (BMSB)
9:15am – 10:00am	**Guest Speaker 1: Dr. Sandro Galea | The Principles of Population Health Science, towards Scholarship of Consequence** Population health science is the study of the conditions that shape distributions of health within and across populations, and of the mechanisms through which these conditions manifest as the health of individuals. Several leading schools of public health are launching doctoral programs in population health science and trainees in these schools are increasingly thinking of themselves as population health scientists. But what is "population health science"? Is it simply public health in a new cloak? In this presentation I present foundations of population health science with formative core principles around which we can organize our thinking and scholarship. I will do this as a means of providing a frame that can guide us to the opportunities for consequential action that can improve the health of populations.	Theatre A (BMSB)
10:00am – 10:30am	Coffee Break	Joe Doupe Concourse
10:30am – 11:15am	**Guest Speaker 2: Dr. Xiangguo Qiu | Fighting Ebola Virus Infection in the Lab and Field** The history-making Ebola outbreak in West Africa is over. Several vaccines and treatment strategies against Ebola virus (EBOV), including the VSV-EBOV vaccine and the monoclonal antibody cocktail ZMapp, have progressed rapidly during this outbreak. Both VSV-EBOV and ZMapp were developed by us at the National Microbiology Lab, PHAC. This presentation will review how these two interventions were developed in the lab and used in the field during the outbreak, and the expectations for the future.	Theatre A (BMSB)
11:15am – 12:00pm	**Guest Speaker 3: Dr. Ann Aschengrau | Long-Term Neurotoxic Effects of Early Life Exposure to Tetrachloroethyene (PCE)-Contaminated Drinking Water** Tetrachloroethylene (PCE) is a solvent commonly used for metal degreasing, textile processing, and dry cleaning. Because most of its use occurs in uncontrolled occupational settings, PCE is a common drinking water and Superfund site contaminant. PCE and the closely related solvent trichloroethylene (TCE) have well-known neurotoxic effects among adults who are exposed in occupational settings. However, much less is known about the neurotoxic effects of lower level environmental exposures, particularly among pregnant women and children.	Theatre A (BMSB)
12:00pm – 12:30pm	Lunch	Joe Doupe Concourse
12:30pm – 1:45pm	Speed Networking Session for CSEB Attendees	Buhler Atrium

Time	Session	Location
2:00pm – 2:45pm	**Guest Speaker 4: Dr. Kue Young | Apples and Oranges, or Oranges and Tangerines? Perils of International Comparison of Health Indicators** This talk focuses on the pitfalls of making international comparisons of health systems and health status. The speaker will draw on his work in circumpolar health research and select examples of comparisons which vary in terms of validity, reliability and feasibility.	Theatre A (BMSB)
2:45pm – 3:15pm	Coffee Break	Joe Doupe Concourse
3:15pm – 4:00pm	**Guest Speaker 5: Dr. Raymond J. Carroll | What Percentage of Children in the U.S. are Eating an Alarmingly Poor Diet? A Statistical Approach** In the United States the preferred method of obtaining dietary intake data is the 24-hour dietary recall, yet the measure of most interest is usual or long-term average daily intake, which is impossible to measure. Thus, usual dietary intake is assessed with considerable measurement error. Also, diet represents numerous foods, nutrients and other components, each of which have distinctive attributes. Sometimes, it is useful to examine intake of these components separately, but increasingly nutritionists are interested in exploring them collectively to capture overall dietary patterns and their effect on various diseases. Consumption of these components varies widely: some are consumed daily by almost everyone on every day, while others are episodically consumed so that 24-hour recall data are zero-inflated. In addition, they are often correlated with each other. Finally, it is often preferable to analyze the amount of a dietary component relative to the amount of energy (calories) in a diet because dietary recommendations often vary with energy level. We propose the first model appropriate for this type of data, and give the first workable solution to fit such a model. The methodology, along with uncertainty quantification, is illustrated through an application to estimating the population distribution of the Healthy Eating Index-2005 (HEI-2005), a multi-component dietary quality index involving ratios of interrelated dietary components to energy, among children aged 2-8 in the United States. We answer the question in the title of this talk, pose a number of interesting questions about the HEI-2005, and show that it is a powerful predictor of the risk of developing colorectal cancer.	Theatre A (BMSB)
4:00pm – 4:30pm	Round Table Discussion	Theatre A (BMSB)
4:30pm – 5:30pm	CSHRF Awards Ceremony / Free Time for CSEB Attendees	
5:30pm – 7:00pm	Cocktail Reception for CSHRF and CSEB Attendees	Brodie Atrium
7:00pm – 9:30pm	**Pub Quiz Trivia Night** Do you love trivia? Do you love to win? Come down to the King's Head Pub and team up with your fellow Conference attendees for an awesome night. What better way to unwind after a day at the conference! Enjoy some healthy competition! Prizes will be awarded to the winning team along with some serious bragging rights. **Location: King's Head Pub (120 King St, Winnipeg, MB R3B 1H9)** **Directions: Walk east on McDermot Ave, turn north/left on King St** Please note that food and drinks will not be included.	King's Head Pub 120 King St
Friday, June 10, 2016		
7:45am – 9:00am	Breakfast, Poster Set-Up	Canad Inns Heath Sciences Centre (Ambassador A)
9:00am – 9:15am	Opening Remarks from CSEB Officials	Canad Inns Heath Sciences Centre (Ambassador A)
9:15am – 10:45am	**Poster Competition** and Coffee Break	Buhler Atrium
10:45am – 12:00pm	**Concurrent Oral and Rapid Fire Competition (first wave)**	
	A1 Chronic Diseases	R160 Rehabilitation Building
	A2 Aging & Work-Related Health	R230 Rehabilitation Building
	A3 Genetic and Molecular Epidemiology	R236 Rehabilitation Building
	A4 Epidemiologic Methods	626 BMSB

Time	Event	Location
12:00pm – 1:00pm	Lunch + Poster Exposition (Rapid Fire presenters)	Canad Inns Heath Sciences Centre (Ambassador A)
1:00pm – 2:10pm	**Concurrent Oral and Rapid Fire Competition (second wave)**	
	B1 Maternal and Child	R160 Rehabilitation Building
	B2 Cancer 1	R230 Rehabilitation Building
	B3 Health Addictions, Mental & Psychosocial Health	R236 Rehabilitation Building
	B4 Biostatistics	626 BMSB
2:10pm – 2:30pm	Coffee Break + Poster Exposition (Rapid Fire presenters)	Canad Inns Heath Sciences Centre (Ambassador A)
2:30pm – 3:45pm	**Concurrent Oral Competition (third wave)**	
	C1 Well-Being and Quality of Life	R160 Rehabilitation Building
	C2 Cancer 2	R230 Rehabilitation Building
	C3 Global Health	R236 Rehabilitation Building
	C4 Surveillance & Spatial/Clinical Epidemiology	626 BMSB
3:45pm	Closing Remarks	Theatre A (BMSB)

QUESTIONS? See a volunteer with an orange name tag

Workshop Facilitators

ATUL SHARMA is a pediatric nephrologist and biostatistician, who recently joined the Biostatistical Consulting Group as a senior consultant. As such, he brings a unique combination of clinical and statistical insights to statistical topics of interest to clinical investigators.

NATHAN NICKEL is a Research Scientist at the Manitoba Centre for Health Policy and teaches Principles of Epidemiology in the department of Community Health Sciences at the University of Manitoba. Dr. Nickel's expertise focuses on health service research using administrative data and health equity research in the area of maternal and child health. He is particularly interested in causal inference with respect to the evaluation of maternal and child health interventions.

DAN CHATEAU is a Research Scientist at the Manitoba Centre for Health Policy and an Assistant Professor in the Department of Community Health Sciences at University of Manitoba. He completed a PhD in Cognitive Psychology at the University of Western Ontario, and has conducted research at both MCHP, and as a consultant in the Biostatistics Consulting Unit in the College of Medicine, Faculty of Health Sciences. These positions provided a strong base in health services research and quantitative research methods. Dr. Chateau has worked on a broad range of projects for organizations as diverse as the WRHA, Manitoba Health, the Canadian Science Centre for Human and Animal Health, and the Division Scolaire Franco-Manitobaine, and with numerous clinicians and members of other departments at the University of Manitoba and beyond. In addition to contributing to major reports at MCHP, at present Dan is a member of the steering committee and quantitative methods team for the Canadian Network of Observational Drugs Effect Studies (CNODES), and a co-PI on a large multi-year grant investigating the effects of policies and interventions on health equity in Manitoba's children (PATHS).

MARK OREMUS is an associate professor in the School of Public Health and Health Systems at the University of Waterloo. He is the Vice President of the Canadian Society for Epidemiology and Biostatistics (President effective June 2016) and the Communications Officer for the International Joint Policy Committee of the Societies of Epidemiology. Mark is an associate researcher at the Gilbrea Centre for Studies in Aging and an associate professor (part-time) in the Department of Clinical Epidemiology and Biostatistics at McMaster University. His research interests include aging, chronic disease, dementia, caregiving, health economics, quality-of-life, systematic reviews, public policy, and population health. Mark teaches epidemiologic methods at the undergraduate and graduate levels.

AL ARTAMAN is a medical scientist with years of experience in clinical and pharmaco-epidemiology as well as public and global health epidemiology. As the Director of Epidemiology at Cancer Care Manitoba, he is responsible for cancer epidemiologic research management and collaboration with regional and national cancer research networks. He had previously worked as consultant in the private sector, researcher in the academia, and epidemiology manager in the government sector. He was recently the Coordination Committee chair of the Canadian Alliance for Regional Risk Factor Surveillance. He is currently an expert for the Global Burden of Diseases, Injuries, and Risk Factors Study coordinated through the University of Washington.

LLEWELLYN ARMSTRONG is the statistician for the Institute for Wetland and Waterfowl Research within Ducks Unlimited Canada. She consults with research and field staff on issues of study design, sampling methodology, and statistical analyses and also conducts research into the use of innovative biostatistical techniques. She obtained her MSc in Statistics from the University of Manitoba and for six years she was the primary consultant for the Statistical Advisory Service at the University of Manitoba. Llwellyn is a member of the Statistical Society of Canada, and has served as Regional Representative for Manitoba- Saskatchewan-NWT-Nunavut (2012-2015), Chair of the Strategic Planning Committee (2012- 2014), and currently serves as Executive Secretary (2015 – 2018).

STEPHANIE SPROULE, B.Sc. (hons), MMath is a Biostatistician with over 14 years of experience, primarily in the pharmaceutical industry. She holds a Bachelor of Science with honors in Statistics from the University of Manitoba, as well as a Masters of Mathematics in Statistics - Biostatistics from the University of Waterloo. Stephanie began her career in Saskatoon as a research officer with the Population Health Surveillance Unit of Saskatoon District Health, studying preventable injuries in children and infant mortality. She then moved back home to Winnipeg to take on the role of Biostatistician with Cangene Corporation (now Emergent BioSolutions). During her tenure at Cangene, Stephanie was responsible for the design and reporting of clinical trials at all phases of clinical development, including product development and manufacturing statistical support, and was eventually promoted to the management team where she gained a new insight into the worlds of clinical operations, outsourcing, budgeting and human resources. Currently, she is an independent consulting Biostatistician and founder of Optimum Statistics Inc., with clients ranging from PhD candidates to large global pharmaceutical companies. Stephanie lives in a small community outside Winnipeg with her husband and two young children. When she isn't working, she can typically be found shuttling her children to and from sports activities or planning her next escape to a warmer climate!

Guest Speakers

SANDRO GALEA MD, MPH, DrPH, is a physician and an epidemiologist. He is Dean and Professor at the Boston University School of Public Health. Prior to his appointment at Boston University, Dr Galea served as the Anna Cheskis Gelman and Murray Charles Gelman Professor and Chair of the Department of Epidemiology at the Columbia University Mailman School of Public Health. He previously held academic and leadership positions at the University of Michigan and at the New York Academy of Medicine. in his scholarship, Dr Galea is centrally interested in the social production of health of urban populations, with a focus on the causes of brain disorders, particularly common mood-anxiety disorders and substance abuse. He has long had a particular interest in the consequences of mass trauma and conflict worldwide, including as a result of the September 11 attacks, Hurricane Katrina, conflicts in sub-Saharan Africa, and the American wars in Iraq and Afghanistan. This work has been principally funded by the National Institutes of Health, Centers for Disease Control and Prevention, and several foundations. He has published over 500 scientific journal articles, 50 chapters and commentaries, and 9 books and his research has been featured extensively in current periodicals and newspapers. His latest book, co-authored with Dr Katherine Keyes, is an epidemiology textbook, Epidemiology Matters: a new introduction to methodological foundations. Dr Galea has a medical degree from the University of Toronto, and graduate degrees from Harvard University and Columbia University; he has an honorary doctorate from the University of Glasgow. He was named one of TIME magazine's epidemiology innovators in 2006. He is past-president of the Society for Epidemiologic Research and an elected member of the National Academy of Medicine and of the American Epidemiological Society. Dr Galea serves frequently on advisory groups to national and international organizations. He currently serves on the Advisory Council on Minority Health and Health Disparities and has formerly served as chair of the New York City Department of Health and Mental Hygiene's Community Services Board and as member of its Health Board.

NIIGAANWEWIDAM JAMES SINCLAIR is Anishinaabe, originally from St. Peter's (Little Peguis) Indian Settlement near Selkirk, Manitoba, and is an Associate Professor and current Head of the Department of Native Studies at the University of Manitoba. He is an international commentator on Indigenous issues for outlets like Al-Jazeera, The Guardian, and national broadcasters like CTV, CBC, and The Globe and Mail and was named one of CBC Manitoba's "Top 40 under 40" in 2015. Niigaan is an award winning speaker, writer, and editor of such books as the award-winning Manitowapow: Aboriginal Writings from the Land of Water (Highwater Press, 2011) and Centering Anishinaabeg Studies: Understanding the World Through Stories (Michigan State University Press, 2013), The Winter We Danced: Voices of the Past, the Future, and the Idle No More Movement (Arbeiter Ring Press, 2014). He is the Editorial Director of The Debwe Series with Portage and Main Press.

KUE YOUNG CM, MD, D.Phil, FRCPC, FCAHS, has been dean of the School of Public Health at the University of Alberta since August 2013. Previously he has been TransCanada Chair in Aboriginal Health at the University of Toronto and Head of the Department of Community Health Sciences at the University of Manitoba. He devoted much of his professional career in primary care, health administration, and academic research in Aboriginal and northern communities. His research was recognized by the CIHR Senior Investigator award and induction as Fellow of the Canadian Academy of Health Sciences. For his contributions to Aboriginal health, he was appointed Member of the Order of Canada in 2010.

ANN ASCHENGRAU is Professor of Epidemiology at Boston University School of Public Health. She received a BA in Biology from Northeastern University and MSc and DSc degrees in epidemiology from Harvard T.H. Chan School of Public Health. Dr. Aschengrau has been an environmental epidemiologist for the past 30 years and has focused much of her teaching and research in this area. In particular, she has authored nearly 100 research reports that focus mainly on the health effects of environmental pollution, particularly drinking water contaminants. She is currently the Principal Investigator of a study on the risk of birth defects and stillbirths in relation to prenatal exposure to tetrachloroethylene-contaminated drinking water. Dr. Aschengrau has also served as a member of advisory committees for governmental agencies, has taught courses in epidemiology for the past 25 years, and has co-authored the best-selling textbook "Essentials of Epidemiology in Public Health," now in its third edition.

RAYMOND CARROLL is a Distinguished Professor of Statistics and Nutrition at Texas A&M University (USA), and Distinguished Professor at the University of Technology Sydney (Australia). He has been P.I. of a major NCI grant for the development of statistical methodology since 1990, and became the first statistician to receive the prestigious National Cancer Institute MERIT Award (in 2005). He is the Director of the Texas A&M Institute for Applied Mathematics and Computational Science. Dr. Carroll served as editor of Biometrics, the journal of the International Biometric Society, and as editor of the Journal of the American Statistical Association (Theory and Methods). He has won many honors in the profession, including the 1988 COPSS Presidents' Award, given annually by the North American statistical societies to the outstanding statistician under the age of 40. He gave the Fisher Lecture at the 2002 Joint Statistical Meetings, an award given by the major statistical societies in honor of a senior statistician whose research has "influenced the theory and practice of statistics". He was the founding chair of the Biostatistics Study Section (BMRD) at the National Institutes of Health. He is an elected Fellow of all three major international statistical organizations, and the AAAS. He has graduated 44 Ph.D. students.

XIANGGUO QIU is the head of Vaccine Development and Antiviral Therapy group in Special Pathogens Program of National Microbiology Laboratory, Public Health Agency of Canada. She also is an adjunct professor in Department of Medical Microbiology, University of Manitoba. She received her M.D. at Hebei Medical University and M.Sc. in immunology at Tianjin Medical University. In 2003, she joined Special Pathogens Program at National Microbiology Laboratory, Public Health Agency of Canada to start studying the most deadly viruses such as Ebola/Marburg/Lassa in the only level 4 (highest containment level) laboratory in Canada. Her primary field is immunology with research emphasis on vaccine development, post-exposure therapeutics and disease modeling of haemorrhagic viruses. As a member of WHO expert team, she had provided advises/technical support for biosafety in many big events such as 2008 Bejing Olympics, etc. Her group has first demonstrated that mAbs completely protect nonhuman primates from Ebola virus infection in the filovirus field. Moreover, she and colleagues have developed VSVΔG-EBOV-GP Vaccine, ZMAb and ZMapp mAb cocktail which have been compassionately used in Ebola infected patients and showed very promising outcomes during 2014-2016 West Africa outbreak. Dr. Qiu has been granted several awards including 2006 PHAC Research Merit award for VSV-EBOV vaccine development (team) and 2013 PHAC Research Merit award for ZMAb/ZMapp development; 2015 Dr. Frank Plummer Researcher of the Year Award, Medical Microbiology and Infectious Disease, University of Manitoba; Friends of Africa Humanity Award for the contribution during the 2013-2016 Ebola Outbreak in West Africa.

Concurrent Sessions At-a-Glance

Concurrent Sessions (1st wave)
Friday, June 10 – 10:45am -12:00pm

A1	CHRONIC DISEASES	R160 REHABILITATION BUILDING
A1.1	The relationship between depression and cognition in adults with diabetes mellitus Presented by **SOFIA DANNA** MSc Epidemiology Student, McGill University	
A1.2	Paediatric to adult health care transition readiness and experiences of Canadian adolescents diagnosed with epilepsy in childhood and their parents Presented by **ALISON DASIEWICZ** MSc Student, Western University	
A1.3	Exposure to Diabetes in Utero Impairs Cardiac Relaxation in Youth with Type 2 Diabetes Presented by **LAETITIA GUILLEMETTE** PhD Student, University of Manitoba	
A1.4	The Effects of Multi-morbidity on changes in quality of life for patients with hip and knee replacement Presented by **LIXIA ZHANG** PhD Student, University of Manitoba	
A1.5 **(34)**	Neonatal Group B Streptococcal Disease: Burden of Illness and Assessment of Preventability in British Columbia Presented by **PRISCILLA KARNABI**	
A1.6 **(35)**	Sex differences in the association between dietary patterns and incident type 2 diabetes: A systematic review and meta-analysis Presented by **CHRISTOPHER TAIT** PhD Student, Dalla Lana School of Public Health, University of Toronto	
A1.7 **(36)**	Evolution of factors that could explain the increasing prevalence of type 2 diabetes in New Brunswick Presented by **VÉRONIQUE THIBAULT** MSc Student, Université de Sherbrooke	
A2	GENETIC & MOLECULAR EPIDEMIOLOGY	R230 REHABILITATION BUILDING
A2.1	The influence of the rs4149601, rs2288774, and rs576416 NEDD4L single nucleotide polymorphisms in the development of salt sensitive hypertension with age in a Canadian Caucasian population. Presented by **STEVEN KUTCHER** MSc Student, University of Ottawa	
A2.2	Influence of Antioxidant and Oxidant Properties of Diet on Leukocyte Telomere Length Presented by **ALEXIS MICKLE** MSc Student, University of Calgary/Alberta Health Services Department of Cancer Epidemiology and Prevention Research	
A2.3	Gene mapping for autism spectrum disorders using a multiple IBD clustering method Presented by **GARY TONG** BSc Student, University of Manitoba	
A2.4 **(37)**	Spatial modelling of lung and thyroid cancers in United States counties Presented by **LAURA FELDMAN** MPH Student, Dalla Lana School of Public Health	
A2.5 **(38)**	Economic Analysis of Genetic Testing in Insurance Markets Presented by **AARON GLADSTONE** MA Economics Student, Queen's University	
A2.6 **(39)**	Total versus partial splenectomy in children and adolescents with hereditary spherocytosis: a systematic review and meta-analysis Presented by **LEONARDO GUIZZETTI** PhD Student, Western University	
A3	AGING & WORK-RELATED HEALTH	R236 REHABILITATION BUILDING
A3.1	Analysis of the association between personal and work-related exposures and occupational injury occurrences in the American aging working population Presented by **NAVNEETKAUR BAIDWAN** MPH, PhD Student, University of Minnesota	
A3.2	Is chronic pain an important determinant of Self-rated health among middle aged and older Canadians? A two-level countrywide analysis of the Canadian Community Health Survey on Healthy Aging. Presented by **BARTHOLOMEW CHIREH** PhD Student, University of Saskatchewan	
A3.3	Health and Injury Study of Janitorial Service Employees Presented by **DEIRDRE GREEN** MS, PhD Student, University of Minnesota	
A3.4	Specialized care and recurrent traumatic brain injury: a retrospective cohort study Presented by **OLIVER LASRY** PhD Student, McGill University	
A3.5 **(40)**	Impact of drop-in centres on health of street children in New Delhi Presented by **RONITA NATH** PhD Student, McMaster University	
A3.6 **(41)**	Sleep deprivation and anxiety in healthy interns Presented by **VIVIAN ONAEMO** PhD Student, University of Saskatchewan	
A3.7 **(42)**	Exploring Pathways to Health Equity for South African Gold Mining Communities Presented by **JESSICA YU** PhD Student, University of British Columbia	
A4	EPIDEMIOLOGIC METHODS	626 BMSB
A4.1	Evaluation of Sexual Orientation Questions in Population Health Surveys on Canadians: A Mixed Methods Approach Presented by **CHRISTOFFER DHARMA** MSc Student, Western University	
A4.2	A Meta-Epidemiological Study Examining the PEDro and Cochrane Risk of Bias Tools in Assessing Bias among Randomized Controlled Trials on Physical Interventions Presented by **PRINON RAHMAN** MSc Student, Dalhousie University	
A4.3	Establishing Quality of Life in Minimally Conscious and Covertly Aware Vegetative Patients: An Online Multidisciplinary Delphi Consensus Process Presented by **JASMINE TUNG** MSc Student, Western University Department of Epidemiology and Biostatistics	
A4.4 **(43)**	Income inequality and access to primary prevention in Colombia: Evidence from 2013 Quality of Life National Survey Presented by **ADRIANA ANGARITA-FONSECA** PhD Student, University of Saskatchewan	
A4.5 **(44)**	Does Adherence to the 2015 Dietary Guidelines for Americans (DGA) Relate to the Risk of Obesity and Other Chronic Diseases in Canada? Presented by **MAHSA JESSRI** PhD Student, University of Toronto, Faculty of Medicine	
A4.6 **(45)**	Hepatitis C in Thunder Bay: Analysis of an Outbreak Presented by **CHARLOTTE MCEWEN** BScN Student, Lakehead University	
A4.7 **(46)**	Impact of survey and demographics on performance measurement of population health: comparison of national and international metrics Presented by **YAN XU** Medical Student, Queen's University	

NOTE: RAPID FIRE PRESENTERS CAN FIND THEIR POSTER NUMBER IN BRACKETS BESIDE THEIR PRESENTATION

Concurrent Sessions (2nd wave)
Friday, June 10 – 1:00pm -2:10pm

B1	MATERNAL AND CHILD HEALTH	R160 REHABILITATION BUILDING
B1.1	Prenatal and Early Childhood Antibiotics Exposure and Risk for Neurodevelopmental Disorders Presented by **AMANI HAMAD** PhD Student, University of Manitoba	
B1.2	The effect of paid maternity leave policies on early childhood growth in low and middle-income countries Presented by **DEEPA JAHAGIRDAR** PhD Student, McGill University	
B1.3	Stillbirth associated with birth weight discordance in twin gestations Presented by **SHAYESTEH JAHANFAR** PhD Student, University of British Columbia	
B1.4	Teenage pregnancy: The impact of maternal adolescent childbearing and older sister's teenage pregnancy on a younger sister Presented by **ELIZABETH WALL-WIELER** PhD Student, University of Manitoba	
B1.5 **(47)**	Household Food Insecurity and Obesity in First Nations living on-reserve in Canada Presented by **ASHLEIGH DOMINGO** MSc Student, University of British Columbia	
B1.6 **(48)**	Children with Autism Spectrum Disorder in Manitoba: Prevalence, Population Characteristics and Psychotropic Medication Use Presented by **LORENA VEHLING** MSc Student, University of Manitoba	
B2	CANCER 1	R230 REHABILITATION BUILDING
B2.1	Routine follow-up care after curative treatment of head and neck cancer: An analysis of patients' information needs and preferences for organization of healthcare services Presented by **KELLY BRENNAN** MSc Epidemiology Student, Queen's University	
B2.2	Quality of life trajectories after prostate cancer diagnosis: the role of physical activity and prognostic factors Presented by **MEGAN FARRIS** MSc Student, University of Calgary	
B2.3	Childhood Infections and the Risk of Childhood Acute Lymphoblastic Leukemia: a Systematic Review Presented by **JEREMIAH HWEE** PhD Student, University of Toronto, Dalla Lana School of Public Health	
B2.4 **(49)**	Update of Cancer in Ontario Métis people: Risk Factors and Screening Behaviours Presented by **CAROLINE CAWLEY** MPH Student, University of Toronto, Cancer Care Ontario - Aboriginal Cancer Control Unit	
B2.5 **(50)**	Lifetime cumulative exposure to estrogen and postmenopausal IGF-1 levels Presented by **CARMEN CHAN** MSc Student, Queen's University	
B3	ADDICTIONS, MENTAL & PSYCHOSOCIAL HEALTH	R236 REHABILITATION BUILDING
B3.1	Connection with a Screen: The Impact of Computer-Mediated Communication on the Health of Canadian Young People Presented by **LINDSAY FAVOTTO** MSc Student, Queen's University	
B3.2	Exposure to parental psychopathology and offspring's risk of suicidal ideation, suicide attempt and suicide: A systematic review Presented by **SARAH GOODDAY** PhD Candidate, University of Toronto	
B3.3	Untangling the relationships between autism spectrum disorders and non-genetic risk factors Presented by **ANGELA KRUTISH** MSc Student, University of Manitoba	
B3.4	The role of social environments on binge drinking among Aboriginal youth in Canada: A moderated mediation model Presented by **ERIN MASON** MSc Student, University of Lethbridge	
B3.5 **(51)**	Predictors of functional improvement in children and adolescents treated at Child and Youth Mental Health and Addictions Services in the Saskatoon Health Region Presented by **MUZI LI** PhD Student, University of Saskatchewan	
B3.6 **(52)**	Substance use disorders, Overweight/Obseity and Co-morbid Major Depression Presented by **VIVIAN ONAEMO** PhD Student, University of Saskatchewan	
B4	BIOSTATISTICS	626 BMSB
B4.1	A mediation analysis to assess the impact of inhaled corticosteroids (ICSs) during pregnancy on birthweight Presented by **NADIA ARROUF** MSc Student, Université du Québec à Montréal (UQAM)	
B4.2	Modelling the Diagnostic Validity of Administrative Health Data Presented by **KRISTINE KROEKER** MSc Student, University of Manitoba	
B4.3	Conditional dependence models under covariate measurement error Presented by **KAIQIONG ZHAO** MSc Student, University of Manitoba	
B4.4 **(53)**	Use of the extreme value theory to select and study cardiovascular peaks: application in Quebec and Montreal, Canada. Presented by **YOHANN CHIU** PhD Candidate, Institut national de la recherche scientifique	
B4.5 **(54)**	Statistical Power in Sugar-Sweetened Beverage (SSB) Policy Evaluation Presented by **DAN PAPPO** MS in Nutrition Student, Columbia University	

NOTE: RAPID FIRE PRESENTERS CAN FIND THEIR POSTER NUMBER IN BRACKETS BESIDE THEIR PRESENTATION

Concurrent Sessions (3rd wave)
Friday, June 10 – 2:30pm -3:45pm

C1	WELL-BEING AND QUALITY OF LIFE	R160 REHABILITATION BUILDING
C1.1	Music therapy for Alzheimer's patients Presented by **JENNIFER ASSELSTINE** MHSc Student, Lakehead University	
C1.2	Examining the Association Between Emotional Well-being and Green Space Via the use of Twitter Presented by **FELIX BANG** Undergraduate Student, Applicant, Wilfrid Laurier University	
C1.3	Antibiotics versus Appendectomy for Uncomplicated Appendicitis: A Global Health Perspective Presented by **ROHIN KRISHNAN** 2nd year MSc student, Western University	
C1.4	The Influence of First Nations Ethnicity on Health-Related Quality of Life Presented by **LANA TENNENHOUSE** Undergraduate Student, University of Western Ontario	

C2	CANCER 2	R230 REHABILITATION BUILDING
C2.1	HPV Immunization Among 17-year-old Females in Manitoba: A Population-Based Study Presented by **ALEXANDREA ANDERSON** Undergraduate Student/Junior Epidemiologist, Department of Statistics, University of Manitoba/Public Health Branch, Manitoba Health, Healthy Living and Seniors	
C2.2	Telomere Length and Breast Cancer Prognostic Factors Presented by **KAOUTAR ENNOUR-IDRISSI** MSc Student, Laval University	
C2.3	Metabolite Set Enrichment Analysis about Prostate Cancer Presented by **ELHAM KHODAYARI MOEZ** PhD Student, University of Alberta	
C2.4	Exploring the health outcomes of various Pan-Canadian Cervical Cancer screening programs using microsimulation modeling Presented by **JASON LACOMBE** MSc Applicant, Canadian Partnership Against Cancer	

C3	GLOBAL HEALTH	R236 REHABILITATION BUILDING
C3.1	Predicting Length of Residence in Public Housing using Linked Population-Based Administrative Data Presented by **AYNSLIE HINDS** PhD Student, University of Manitoba	
C3.2	Influence of drop-in centres on health of street children in New Delhi: a qualitative study Presented by **RONITA NATH** PhD Student, McMaster University	
C3.3	In-hospital antibiotic exposure and transmission of MRSA to roommate contacts, 2005-2012 Presented by **WALLIS RUDNICK** PhD Student, University of Toronto	
C3.4	The double burden of malnutrition among adolescents in 70 low-income and middle-income countries: A meta-analysis and meta-regression Presented by **CHRISTOPHER TAIT** PhD Student, Dalla Lana School of Public Health, University of Toronto	

C4	SURVEILLANCE & SPATIAL/CLINICAL EPIDEMIOLOGY	626 BMSB
C4.1	Association Between Food Insecurity and HIV Viral Suppression: A Systematic Review and Meta-Analysis Presented by **WUSIMAN ABIBULA** PhD Student, McGill University	
C4.2	Investigating Ecological Determinants of Malaria Vector Distribution in Rural Tanzania â€" a Multi-Scalar Investigation Presented by **ESHA HOMENAUTH** MSc Student, University of Ottawa	
C4.3	Efficacy of biologics in juvenile idiopathic arthritis: A network meta-analysis Presented by **CHRISTINE SMITH** MSc Student, University of Ottawa	
C4.4	The role of social cohesion in the promotion of physical activity among adults in communities across Canada: a multilevel analysis Presented by **CALVIN YIP** MSc Student, Western University	

Concurrent Sessions Guide

Concurrent Sessions (1ˢᵗ wave)
Friday, June 10 – 10:45am -12:00pm

A1	CHRONIC DISEASES	R160 REHABILITATION BUILDING

A1.1 The relationship between depression and cognition in adults with diabetes mellitus

Presented by SOFIA DANNA MSc Epidemiology Student, McGill University

Background: Diabetes mellitus and depression are common diseases that pose high economic burden worldwide. Both are established risk factors for each other and for accelerated cognitive decline. Comorbid depression and diabetes is associated with poorer prognosis relative to diabetes alone, but its joint effects on cognition have received little attention.

Objectives: This study will quantify the independent and joint associations between diabetes and depression on subsequent cognitive performance. The aim is to determine whether the presence of both diseases is associated with greater cognitive decline than the combined effects of both diseases independently.

Methods: The Whitehall II study is a prospective, longitudinal study of approximately 10,000 British civil servants. It includes over 30 years of data on demographic, clinical, and neuropsychological variables. Linear regressions and Cox proportional hazards models will be fit to assess the associations of diagnosis group (diabetes and depression, diabetes alone, depression alone, neither diabetes nor depression) on subsequent cognition, adjusting for age, ethnicity, level of education, and physical activity. The association between comorbid diabetes and depression and subsequent cognitive performance will then be tested for statistical interaction on the additive scale.

Results: At the third wave of data collection, the remaining 8,815 participants had a mean age of 50.3 years, ranging from 39.6 to 64.1 years. Sixty-seven respondents reported a cognitive score on the Mini Mental State Exam indicating dementia and were removed from further analysis. One thousand one hundred and ten respondents reported General Health Questionnaire scores indicating depression cases, and 243 respondents reported a diabetes diagnosis or met WHO criteria for diabetes mellitus. Thirty-three respondents qualified as comorbid with diabetes and depression. Results of regression models are forthcoming.

Conclusion: Analysis is currently in progress; final results to be determined.

Co-Author(s): Sofia Danna, McGill University/ Norbert Schmitz, McGill University

A1.2 Paediatric to adult health care transition readiness and experiences of Canadian adolescents diagnosed with epilepsy in childhood and their parents

Presented by ALISON DASIEWICZ MSc Student, Western University

Background: Transition from paediatric to adult health care results in better long-term patient outcomes than transfer alone. Greater transition readiness is associated with successful transition. While there is increasing concern that current transfer practice is insufficient, the extent of transition readiness of youth with epilepsy has not been formally assessed.

Objectives: This research had 2 objectives: 1. to document the transition readiness of youth and young adults (YYAs) with epilepsy moving from paediatric to adult health care 2. to describe the experience of transition from paediatric to adult health care for YYAs with epilepsy and their parents.

Methods: As part of a prospective multi-centre cohort study, families enrolled in the Health-Related Quality of Life in Children with Epilepsy Study (HERQULES) were followed for ten years after their children were diagnosed. Data were collected from parents using mailed questionnaires and YYAs using mailed or online questionnaires. The YYAs are now aged 12 to 20. YYA report of transition readiness was measured using the Transition-Q, which has demonstrated sound psychometric properties. It quantifies transition readiness by assessing skills that are crucial to self-management of the YYAs' health. Questions about transition experiences were included in questionnaires for both parents and YYAs.

Results: Questionnaires were sent to 215 parents and 174 YYAs in December 2015. They are being returned and data entry has begun. Based on the response rates for the previous follow-up at eight years, responses rates for parents and YYAs of at least 80% are expected. The sample is diverse in terms of epilepsy severity. Preliminary analysis indicates that approximately one third of YYAs are still receiving epilepsy care from a physician. The study will assess the association between transition readiness and the transition experiences.

Conclusion: This is one of the first projects to measure the extent of transition readiness in YYAs with epilepsy using a psychometrically sound scale. The results will help inform further development of transition programs for YYAs with epilepsy as an essential step in achieving better long-term outcomes for people with epilepsy.

Co-Author(s): Alison Dasiewicz, Western University/ Guangyong Zou, Western University, Robarts Research Institute/ Kathy Nixon Speechley, Western University, Division of Children's Health and Therapeutics, Children's Health Research Institute, Lawson Research Institute

A1.3 Exposure to Diabetes in Utero Impairs Cardiac Relaxation in Youth with Type 2 Diabetes

Presented by LAETITIA GUILLEMETTE PhD Student, University of Manitoba

Background: At least 1 Canadian child per class of 20 was exposed to type 2 diabetes (T2D) or gestational diabetes (GDM) in utero and is therefore at a greater risk than his classmates for T2D and its cardiovascular complications himself.

Objectives: To determine if exposure to T2D or GDM in utero is associated with adverse changes in cardiac morphology and function in adolescents with T2D compared to adolescents with T2D not exposed to diabetes in utero.

Methods: We performed cross-sectional comparisons of echocardiography-derived cardiac morphology and function in 82 Indigenous adolescents stratified per maternal-reported diabetes status during pregnancy: T2D (n=37), GDM (n=13) or normoglycemia (n= 32). The main outcome measures were left ventricular (LV) morphology, mass, as well as diastolic and systolic function. The groups were similar for the following confounders: sex (62 vs 43 vs 71% female), age (~15 years), duration of diabetes (~3.0 years), adiposity (30-33% body fat) and blood pressure load (median [Q1-Q3]: 45 [22-74] vs 42 [24-53] vs 33 [19-61]% of wear time).

Results: We observed smaller LV mass (137 [112-174] vs 150 [130-183] vs 168 [140-190]; p=0.02 for trend) and impaired LV relaxation (early-to-late tissue relaxation ratio: 1.9 [1.6-2.3] vs 1.8 [1.6-2.3] vs 2.3 [1.8-3.0]; p=0.03 for trend) in those exposed to T2D and GDM compared to controls. No difference was observed in LV hypertrophy (interventricular septal wall thickness: 10.4 [9.4-11.6] vs 10.6 [9.7-12.0] vs 11.0 [10.2-12.5] mm; p=0.2); systolic function was reduced only in adolescents exposed to GDM (ejection fraction: 61.3 [57.0-64.2]%) compared to those exposed to T2D (64.3 [62.0-67.3]%) or normoglycemia (64.3 [62.0-65.7]%; p=0.02).

Conclusion: Adolescents with T2D exposed to T2D or GDM in utero exhibit smaller LV size and impaired LV relaxation in the absence of alterations in LV morphology or systolic function. Exposure to diabetes in utero may be associated with cardiomyopathy in adolescents with T2D.

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A1.4 The Effects of Multi-morbidity on changes in quality of life for patients with hip and knee replacement

Presented by LIXIA ZHANG PhD Student, University of Manitoba

Background: Multimorbidity is defined as the co-occurrence of two or more chronic diseases where one disease is not necessarily more important than the others. As the population ages, multimorbidity has become more common. Multimorbidity may affect health outcomes such as quality of life (QOL) and physical functioning.

Objectives: The research objective was to test the effect of multimorbidity on changes in QOL over a one-year period amongst patients having a primary hip or knee replacement.

Methods: Study data were from the Winnipeg Regional Health Authority Joint Replacement Registry for patients with a primary knee or hip surgery between 2009 and 2012. QOL was measured pre- and post-surgery using the Oxford Hip and Knee (OX) and twelve-item Short Form Survey (SF-12) Physical and Mental Component Summary (PCS, MCS) scores. Patient characteristics were obtained from medical records. Multimorbidity was defined as 2+ chronic conditions from a list of twelve conditions. Multivariable regression models were used to test the effects of multimorbidity on change in QOL after adjusting for age, sex, body mass index (BMI) and pre-operative QOL scores.

Results: The initial cohort was comprised of 8744 patients; 47.5% were lost to follow-up, leaving 4745 for analysis (39.9% hip replacement). The average age was 67.7 years (SD 10.6) and 40.9% were male. Almost two-thirds (60.7%) had multimorbidity, with hypertension being most common. The preoperative mean QOL scores were: MSC 50.6 (SD 12.1), PCS 28.4 (SD 7.9), OX 43.7 (SD 7.7). Multimorbidity had a statistically significant negative effect on change in QOL for all measures (p < .01); the size of the effect was largest for PCS in patients having either hip or knee replacement.

Conclusion: Multimorbidity impacts improvements in QOL after hip or knee replacement. Information about the impact of multimorbidity can provide guidance to health care providers about the management of patients with chronic diseases.

Co-Author(s): Lixia Zhang, University of Manitoba/ Lisa Lix, Department of Community Health Manitoba/ Richard Sawatzky, Trinity Western University Sciences, University of Manitoba/ Eric Bohm, Concordia Hip & Knee Institute, University of Manitoba

A1.5 Neonatal Group B Streptococcal Disease: Burden of Illness and Assessment of Preventability in British Columbia

Presented by PRISCILLA KARNABI, MSc Student, University of British Columbia

Background: Despite the implementation of preventive guidelines and advances in neonatal care, group B streptococcal (GBS) infections remain the leading infectious cause of neonatal morbidity and mortality. Maternal screening during the third trimester and the administration of intrapartum antibiotic prophylaxis (IPA) has led to an 80% reduction in the incidence of GBS disease, but these remain ineffective in certain areas such as preterm births. Maternal immunization has been examined as a potential intervention for reducing the colonization and transmission of GBS. Few Canadian studies have assessed the application of guidelines and the true residual burden of illness following their implementation.

Objectives: To examine the burden of illness of neonatal group B streptococcal infections, assess the effectiveness of current screening and prevention programs, and identify gaps in the implementation of guidelines and treatment in British Columbia. These objectives will set the stage for the assessment of the role of a maternal vaccine.

Methods: A case-control study will be conducted using retrospective population level data from April 1st 2004 to December 31st 2014 from the Perinatal Data Registry (PDR) of British Columbia (BC). A retrospective chart review will also be conducted at the BC Women's Hospital. These two data sources will be linked. All infants with a GBS related International Statistical Classification of Diseases (ICD-10-CA) code, and their mothers, will be included. A ratio of four controls to every one case (4:1) will be selected through random sampling of live births, matched on mothers' residential Health Authority (HA) and calendar year. Poisson regression analysis will be used to determine trends in incidence over a period of 9 years and between mothers' residential HA and Health Service Delivery Area. Logistic regression will be used to assess the effectiveness of the guidelines and GBS disease, and determine missed opportunities for prevention and identify where gaps remain.

Co-Author(s): Priscilla Karnabi, University of British Columbia/ Monika Naus, University of British Columbia/ Julie Bettinger, University of British Columbia/ Julie van Schalkwyk, University of British Columbia

A1.6 Sex differences in the association between dietary patterns and incident type 2 diabetes: A systematic review and meta-analysis

Presented by CHRISTOPHER TAIT PhD Student, Dalla Lana School of Public Health, University of Toronto

Background: A persistent finding in nutritional epidemiology is the protective effect of healthy dietary practices against many chronic outcomes including type 2 diabetes. However, less is known about whether the observed risk reduction varies between men and women, and the characteristics of the current studies that may account for this variation.

Objectives: The objective of this study is to systematically review the available literature and perform a meta-analysis of the association between dietary patterns and incident type 2 diabetes. Importantly, we specifically aim to describe this association differentially between men and women- a less studied phenomenon in the extant literature.

Methods: We systematically searched several databases including Ovid Medline, EMBASE, and CINAHL for studies prospectively examining the association between healthy dietary patterns and the incidence of type 2 diabetes. We included observational studies in which the exposure was an a priori or empirically derived dietary pattern. Studies were selected and critically appraised by 2 independent reviewers. A random effects meta-analysis was performed to determine the overall pooled risk reduction, as well as stratified first by sex, and then by many important subgroups within strata of males and females.

Results: A total of 39 dietary pattern exposure estimates were extracted from 23 cohort studies with a total of 630,609 subjects including 42,003 incident type 2 diabetes cases. The meta-analysis of unstratified estimates revealed a RR=0.87 (95% CI: 0.82-0.93) compared to the pooled effect in males of RR=0.85 (95% CI: 0.80-0.91) and in females RR=0.83(0.72-0.97). The risk of incident type 2 diabetes varied between geographic location within males and females, and the protective effect of healthy dietary pattern adherence increased with the duration of follow-up. Significant heterogeneity was detected in a large number of the subgroup analyses.

Conclusion: Our study makes important contributions with respect to the depth of sex-specific subgroup analyses we present. Our results identify a variety of healthy dietary patterns consistently associated with a risk reduction for type 2 diabetes. Despite increasing evidence upon which we build, the application of this knowledge has been limited.

Co-Author(s): Christopher Tait, Dalla Lana School of Public Health, University of Toronto

A1.7 Evolution of factors that could explain the increasing prevalence of type 2 diabetes in New Brunswick

Presented by VÉRONIQUE THIBAULT MSc Student, Université de Sherbrooke

Background: The prevalence of diabetes has been increasing for over the last decade in New Brunswick. The Department of Health is interested in identifying factors contributing to the increase in diabetes prevalence.

Objectives: The objective of this study is to describe the evolution of factors that could contribute to the increasing prevalence of type 2 diabetes in New Brunswick since 2000.

Methods: A critical literature review was conducted to identify factors potentially responsible for an increase in prevalence of diabetes. Data from various sources were obtained to draw a repeated cross-sectional (2001 to 2014) descriptive portrait of the evolution of these factors concurrently with observed changes in the prevalence of type 2 diabetes in New Brunswick.

Results: Factors identified in the review included risk factors, population incidence, mortality, detection, age at onset, conversion from prediabetes and environmental changes. Only results pertaining to risk factors were ready for presentation. Among those risk factors, we noted that changes in the prevalence of obesity, hypertension, ethnicity and urbanization evolved in the same direction as the prevalence of diabetes. Others risk factors, including eating habits, physical activity, smoking, alcohol consumption, socioeconomic status and education did not present similar trends.

Conclusions: We present a comprehensive overview of factors potentially responsible for population level changes in prevalence of diabetes. Recent increases in type 2 diabetes in New Brunswick may be attributable to changes in obesity, hypertension, ethnicity and urbanization. Better understanding potentially determinants helps make informed decisions about diabetes program and policies.

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A2	GENETIC & MOLECULAR EPIDEMIOLOGY	R230 REHABILITATION BUILDING

A2.1 The influence of the rs4149601, rs2288774, and rs576416 NEDD4L single nucleotide polymorphisms in the development of salt sensitive hypertension with age in a Canadian Caucasian population.

Presented by STEVEN KUTCHER MSc Student, University of Ottawa

Background: Hypertension, a leading risk factor for cardiovascular disease, exhibited in 17.7% of the Canadian population, is influenced by the environment and genetics. Salt-sensitivity is described at higher rates in the hypertensive population. The NEDD4-like (NEDD4L) protein is important in sodium reabsorption and has been implicated in essential hypertension and salt-sensitivity.

Objectives: Two variations (rs4149601/rs2288774) found in NEDD4L have been associated with salt sensitivity and hypertension; a third (rs576416) is in linkage disequilibrium with rs4149601. The purpose of this study is to assess the relationship between NEDD4L rs4149601, rs2288774, and rs576416 single nucleotide polymorphisms with sodium and age on blood pressure (BP).

Methods: Hypertensive patients were recruited through the University of Ottawa Heart Institute. Eligible subjects were studied off anti-hypertensive medications. Daytime BP was measured using 24hr ambulatory BP monitoring in 190 Caucasian hypertensives (BP â‰¥130/85 mmHg). 24hr urine Na+ was collected. DNA was genotyped on the GeneTitan Affymetrix Axiom platform and through TaqMan MGB probe-based RT-PCR. Simple and multivariate linear regression modelling with SAS 9.4.0 was used for genotypic comparisons affecting BP, combined with age and corrected urine sodium.

Results: Multiple linear regressive modelling failed to identify an overall statistical model that significantly described a positive relationship when analyzing the discrete association of the GG rs4149601, CC rs2288774, and AA rs576416 genotypes and BP in a modest sample size (n=190) aged 22 to 61 years. However, in the male hypertensives (n=120) the combination of the GG rs4149601 and AA rs576416 (Î²=0.021, P=0.03) and the GG rs4149601 and CC rs2288774 (Î²=0.020, P=0.04) genotypes showed significant associations with BP in borderline significant models (P=0.055 and P=0.094 respectively), when analyzed with urine sodium levels and age.

Conclusion: Multiple linear modelling describing borderline significant findings in the interaction of rs4149601 with rs576416, and rs4149601 with rs2288774 in male hypertensives suggests of the possible synergism between polymorphisms and development of salt-sensitive hypertension. Future research could evaluate the role of NEDD4L on the sex differences in early-onset salt-sensitive hypertension.

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A2.2 Influence of Antioxidant and Oxidant Properties of Diet on Leukocyte Telomere Length

Presented by ALEXIS MICKLE MSc Student, University of Calgary/Alberta Health Services Department of Cancer Epidemiology and Prevention Research

Background: Shorter telomeres have been implicated in the etiology of cancers. Telomeres form the ends of human chromatids, where they protect DNA from genomic instability, prevent end-to-end fusion, and limit the replicative capabilities of the cell. Telomeric attrition rates are affected by environmental/lifestyle factors. Shorter telomeres are precursors to carcinogenesis, and are influenced by oxidants, antioxidants and chronic inflammation. Dietary nutrients may influence telomeric DNA by acting either in an antioxidant or oxidant. Literature suggests that diets low in antioxidants, or containing processing chemicals, may negatively influence telomeric length leading to an increased risk for many cancers; however this is inconclusive.

Objectives: To determine the association between telomere length and consumption of: total antioxidants, omega-3 fatty acids, processed meat, non-diet soft drinks and alcohol.

Methods: A cross-sectional analysis within the Alberta Physical Activity and Breast Cancer Prevention (ALPHA) Trial will be conducted. Eligibility requirements included: Resident of Calgary or Edmonton; age 50-74; postmenopausal; no previous cancer diagnosis besides non melanotic skin cancer; no major comorbidities; inactive; BMI between 22 and 40 kg/m2; non-smoker; alcohol intake < 14 drinks/week; no medications or exogenous hormones. Self-reported diet data were obtained using the US National Cancer Institute's 124-item Diet History Questionnaire adapted for use in Canada. Telomere length was measured using quantitative polymerase chain reaction (qPCR) and reported as the ratio (T/S) of the amount of telomeric DNA (T) divided by the amount of a single-copy control DNA (S). Multivariable linear regression analyses will examine the relation between relative telomere length (T/S ratio), modeled as a continuous linear variable, and dietary measures of interest. Potential effect modification and confounding by other risk factors will also be examined.

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A2.3 Gene mapping for autism spectrum disorders using a multiple IBD clustering method

Presented by GARY TONG BSc Student, University of Manitoba

Background: Autism Spectrum Disorders (ASD) are a group of neurodevelopmental disorders characterized by impairments in social communication and interaction, and the presence of restricted, repetitive patterns of behaviour, interests or activities. Twin and family studies have shown that genetic factors play a very important role in the aetiology of ASD.

Objectives: Recently, Dr. Liu's group applied the population-based IBD mapping method to a dataset from the Autism Genome Project (AGP) and identified several known and novel ASD candidate genes. However, at two of the significant IBD mapping regions. Our goal is to identify a more specific chromosomal area related to ASD.

Methods: Population-based identity-by-descent (IBD) mapping methods have been proposed as complementary methods to genome-wide association studies for gene mapping of complex diseases. Compared to traditional family-based IBD mapping methods, population-based IBD mapping can estimate IBD sharing accurately between two randomly chosen individuals in an outbred population. We applied an IBD mapping method, efficient multiple IBD mapping (EMI), to provide a better IBD mapping resolution and distinguish the true ASD candidate genes from the others. The Illumina Human 1M BeadChips data on chromosomes 2 and 14 from 2,428 AGP individuals was analyzed using EMI.

Results: At the region on chromosome 2 which was statistically significant during pairwise IBD mapping method, we are able to narrow the significant region to a shorter segment using EMI but further analyses are needed to determine whether this is a true signal. The significant region found on chromosome 2 matched previous studies using other statistical methods.

Conclusion: We demonstrate that EMI could be applied to identify chromosomal regions related to ASD. Significant regions demonstrated high degree of haplotype sharing amongst ASD-affected individuals. Furth work will be done on another set of control individuals to determine if our results are replicable.

Co-Author(s): Gary Tong, University of Manitoba/ XiaoQing Liu, University of Manitoba/ Louise Simard, University of Manitoba/ Jillian Fazio, University of Manitoba

A2.4 Spatial modelling of lung and thyroid cancers in United States counties

Presented by LAURA FELDMAN MPH Student, Dalla Lana School of Public Health

Background: Lung and thyroid cancer have previously been found to have inverse spatial distributions in Canada. It is unclear whether an inverse distribution between lung and thyroid cancer exists in the United States, and whether the distribution of known risk and protective factors for lung and thyroid cancer explains that relationship.

Objectives: The objective of this study is to determine whether lung and thyroid cancer have an inverse distribution in United States counties, and whether this inverse distribution can be explained by the spatial distribution of cigarette smoking, median household income, health insurance coverage, rurality and access to endocrinologists.

Methods: Counts of incident female lung and thyroid cancer from 2003 to 2007 were obtained from public health surveillance repositories for counties in 12 American states. Univariate Besag, York and Mollié (BYM) models were fit to model age- and race-standardized incidence ratios (SIR) of lung and thyroid cancer as functions of adult female ever smoking prevalence, median household income, percentage of adult women with health insurance, rurality and access to endocrinologists. Censored Poisson models were used to account for differing data censoring approaches. Risk ratios (RR) and 95% credible intervals (95%CI) were calculated.

Results: The highest model-fitted SIRs occurred in different counties for lung and thyroid cancer; the highest were in Floyd County, Kentucky (lung cancer SIR: 1.78) and Lubbock County, Texas (thyroid cancer SIR: 1.56). Each 10.1% increase in smoking prevalence was associated with a 4% increase in the SIR for lung cancer (RR: 1.04; 95%CI: 1.02-1.06). Smoking was not associated with SIRs for thyroid cancer. Each $12,440 increase in median household income was associated with a 17% decrease in the SIR for lung cancer (RR: 0.93; 95%CI: 0.91-0.95) and a 5% increase in the SIR for thyroid cancer (RR: 1.05; 95%CI: 1.01-1.10).

Conclusions: Univariate BYM models did not support an inverse distribution between lung and thyroid cancer in the 12 American states studied. Only median household income was associated with lung and thyroid cancer in different directions. A bivariate BYM model will more clearly elucidate the spatial relationship between lung and thyroid cancer.

Co-Author(s): Laura Yin Feldman, Dalla Lana School of Public Health/ Hedy Jiang, Cancer Care Ontario/ Patrick Brown, Dalla Lana School of Public Health; Cancer Care Ontario

A2.5 Economic Analysis of Genetic Testing in Insurance Markets

Presented by AARON GLADSTONE MA Economics Student, Queen's University

Background: New technology is increasing the capacity to map genes. Deciding how to utilize these new scientific abilities requires careful consideration. The health/life insurance market has been criticized for its use of efficient, rather than equitable, pricing practices. For example, in cases of genetic diseases, applicants must pay unaffordable premiums.

Objectives: To create an empirical report that analyzes the recent history of genetic research and its social ramifications in multiple developed countries. The purpose is to gain a well-rounded understanding of the arguments, benefits, shortfalls, and possible solutions to the problems surrounding the use of genetic mapping by insurance firms.

Methods: This paper will analyze the current debate regarding the ethical and economic implications surrounding the use of genetic testing by insurance companies. Models for choices under uncertainty, asymmetric information, moral hazard, and efficiency-equity tradeoffs will be utilized to analyze the ethical and economic arguments. The individual, insurance firm, and society as a whole will be examined to determine how each entity is affected by the (un)availability of genetic information. The role of insurance in a modern society is examined. Statistical analysis on labor markets has shown how employers and employees respond to health risks and how genetic testing affects employment.

Results: Statistical analysis finds that many individuals have already been "genetically tagged" by society. Such tagging is found to be in conflict with the equity structure of the modern Canadian health industry. Macro and micro level policy solutions are proposed and critiqued through economic, ethical, and global health related lenses. The central finding from this work is that equity cannot be achieved without a loss of efficiency. However, the loss in surplus to the healthy majority is statistically insignificant (does not change living standards, consumption choices, etcetera), while the gain to the genetically tagged is literally a "life and death" change.

Conclusions: Banning the use of genetic information has short-run and long-run implications for the insurance market as well as implications in the broader economy. Through numerous examples it is clear that the science of genetic testing possesses the ability to greatly alter the current insurance market, social equity, and current paradigms.

Co-Author(s): Aaron Gladstone, Queen's University

A2.6 Total versus partial splenectomy in children and adolescents with hereditary spherocytosis: a systematic review and meta-analysis

Presented by LEONARDO GUIZZETTI PhD Student, Western University

Background: Hereditary spherocytosis is a rare hemolytic disorder, whose only treatment is splenectomy in moderate to severe cases, often performed in childhood.

Objectives: To compare the effectiveness of different types of splenectomy for the treatment of pediatric hereditary spherocytosis.

Methods: A systematic review was performed around clinically relevant and patient-important outcomes. A total of 1705 records were identified. After screening for relevance, and isolating those which report pre- and postoperative measurements, adverse outcomes or patient quality of life metrics, 23 studies were included. Furthermore, these studies were critically appraised for risks of bias, leaving 15 studies for meta-analysis. (Systematic review registration ID# PROSPERO CRD42015030056.)

Results: No clinical trials were identified in the search. Both total and partial splenectomy favourably improve anemia. Surgical techniques and patient management have led to rare adverse outcomes. One mortality was noted in the review, but no cases of overwhelming sepsis were noted.

Conclusions: There is a need to assess the utility of preserved immune function and long-term cardiovascular health outcomes by means of randomized clinical trial. There is a need to refocus study objectives around patient-important and patient-relevant outcomes to better assess the costs and benefits associated with splenectomy for hereditary spherocytosis.

Co-Author(s): Leonardo Guizzetti, Western University

A3	**AGING & WORK-RELATED HEALTH**	**R236 REHABILITATION BUILDING**

A3.1 Analysis of the association between personal and work-related exposures and occupational injury occurrences in the American aging working population

Presented by NAVNEETKAUR BAIDWAN MPH, PhD Student, University of Minnesota

A3.2 Is chronic pain an important determinant of Self-rated health among middle aged and older Canadians? A two-level countrywide analysis of the Canadian Community Health Survey on Healthy Aging.

Presented by BARTHOLOMEW CHIREH PhD Student, University of Saskatchewan

Background: Pain is an important health problem adversely affecting function and quality of life. Though self- rated health (SRH) has been found to be a major independent predictor of mortality, its relationship with pain is not well understood. Early detection and treatment of pain can enhance well-being and SRH.

Objectives: The purpose of this study was deeply grounded in two major objectives. These include the following; 1) To explore how pain and age interact to influence senior's Self-rated health (SRH). 2) To measure geographical variations in Self-rated health (SRH) across Canada.

Methods: The data was from the Statistics Canada's national Canadian Community Health Survey (CCHS) on Healthy Aging (N=30685). The survey targeted those >45years living in private dwellings in the ten provinces and was conducted from 01/12/2008 through 30/11/2009, using computer-assisted personal interviewing. The topics covered included socio-demographics, well-being, chronic diseases and other related topics. The analysis used weighting and bootstrap and a two-level logistic regression mixed model with provincial differences (first level) and individual differences (second level). The focus was age and pain and their influences on SRH using pair wise comparison.

Results: In the unconditional analysis, those experiencing daily pain were 4.34 times (95%CI: 4.09-4.59) more likely to rate their health as poor compared to those with no pain. Those married, living in rural, with normal weight, not stressed, not using analgesic, not lonely, without depression and non-smokers were less likely to rate their health as poor (p<0.001). In multivariate analysis being a female was protective (OR, 0.62; 95%CI: 0.57-0.66). The East-West gradient in the predicted probability of reporting poor health was evident. In pair-wise comparisons, the odds of reporting pain decreased with age with pain being more problematic among young-old.

Conclusion: Pain and SRH are important determinants of health. Our findings reinforces SRH as important source of information for clinicians and provide relevant insight for effective health education and promotion. Individuals in rating their health, use a variety of factors, some of which may not be easily known by health providers.

Co-Author(s): Bartholomew Chrieh, University of Saskatchewan

A3.3 Health and Injury Study of Janitorial Service Employees

Presented by DEIRDRE GREEN MS, PhD Student, University of Minnesota

A3.4 Specialized care and recurrent traumatic brain injury: a retrospective cohort study

Presented by OLIVER LASRY PhD Student, McGill University

Background: Several patients with a traumatic brain injury (TBI or concussion) will suffer a recurrent TBI (rTBI). These patients are at a higher risk of poor cognitive and functional outcomes compared to patients with a single injury. However, interventions that may mitigate this risk are currently not known.

Objectives: To determine whether the care provided for an index mild TBI (mTBI) in neurotrauma centre emergency departments (specialized care) is associated with a lower risk of rTBI at 1-year follow-up when compared to the care provided in non-neurotrauma centre emergency departments (non-specialized care).

Methods: A retrospective cohort study of all patients incurring a mild TBI and being treated in an emergency department from 1998-2014 was completed. Administrative data for a 25% random sample of the Greater Montreal Area were used to ascertain cases, outcomes and covariates. A time-to-event analysis was conducted using Cox Proportional Hazards model, taking into account the time-dependent effects of the type of care received. Important confounders were included in the model to adjust for confounding. A sensitivity analysis using an instrumental variable (differential distance between a patient's closest neurotrauma and non-neurotrauma centre) was used to assess for residual confounding.

Results: There were a total of 24,292 (19,516 non-specialized care and 4776 specialized care) mTBI patients that presented to an emergency department during a 1-year follow-up. A total of 1384 rTBI (5.7%) cases occurred. After adjusting for confounders and the time-dependent effects of covariates, patients treated in a neurotrauma centre ED had a 36% reduction in the hazard of rTBI at 1-year (HR 0.64, 95% CI 0.51-0.80) in the first week after the index injury. This protective effect persisted for the first 6 weeks after the index injury. The instrumental variable analysis supported these primary findings.

Conclusion: The treatment of mTBI patients in the emergency department of neurotrauma centres is associated with an important decrease in the occurrence of rTBI. Further research that identifies the mediators of this association is warranted so that specific interventions that lower the risk of rTBI can be implemented.

Co-Author(s): Oliver Lasry, McGill University/ David Buckeridge, McGill University

A3.5 Impact of drop-in centres on health of street children in New Delhi

Presented by RONITA NATH PhD Student, McMaster University

Background: Street children experience ill health, yet there is little research on interventions that aim to improve their health outcomes. Drop-in centres are one of the most common programs for street children globally; however, they have not been evaluated for how they influence the health of street children.

Objectives: We aimed to understand how drop-in centres influence the physical health, substance use status, and mental health of street children in New Delhi, India, using interpretive description methodology.

Methods: We conducted face-to-face interviews with 23 street children and two drop-in centre staff members in New Delhi using semi-structured interview guides. We asked participants to describe how they believed drop-in centres worked or did not work to influence street children's physical and mental health, and substance use status. We analyzed the interviews using constant comparative methods.

Results: Participants believed that because street children regularly visited drop-in centres, their health outcomes improved. Street children participated in drop-in services rather than services provided by other facilities, because the staff at the centres were nonjudgmental, they were free to be a child, their daily struggles were lessened and they received protection. Staff at drop-in centres also provided children with moral direction and an opportunity for a better life. However, children continued to live on the streets despite what centres offered because street life had become normal for them.

Conclusion: According to street children and drop-in centre staff members, drop-in centres positively influence the physical health, mental health and substance use status of street children by providing services in an environment tailored for street children.

Co-Author(s): Ronita Nath, McMaster University

A3.6 Sleep deprivation and anxiety in healthy interns

Presented by VIVIAN ONAEMO PhD Student, University of Saskatchewan

Background: Shift work has been known to have adverse effects on health, mood, concentration and metabolism secondary to both sleep deprivation and deregulation of the circadian rhythm. It has implications not only in work performances, but also the career longevity and workforce turnover. The economic and health outcomes are a concern.

Objectives: The primary objective of this study was to examine an association between sleep deprivation and anxiety in healthy veterinary interns in Saskatchewan by monitoring them through their normal work schedule.

Methods: Nineteen veterinary interns participated in the study from the University of Saskatchewan. Anxiety was measured using the profile of mood state tool (POMS-SF).Other measures were Psychomotor Vigilance Test (PVT) and Stanford Sleepiness Scale (SSS). Each participant was evaluated at least once a week for three consecutive weeks - the normal week, the night shift week and the recovery week. Information on caffeine, sleep aid drugs and energy drinks consumption were collected at the time of each measurements. Data were analyzed using linear mixed models with an exponential correlation structure to account for unequal time intervals among repeated measures (STATA 13.0).

Results: Stanford sleepiness scale number (SSSNumber) OR (95%CI); 0.46(0.12-0.81), the consumption of caffeinated or stimulant drinks and sleep aids 0.71 (0.004-1.42) were associated with anxiety in veterinary interns.

Conclusions: Sleep is an important concept in human survival and its deprivation could result in anxiety symptoms

Co-Author(s): Vivian Onanemo, University of Saskatchewan/ Monique Mayer, University of Saskatchewan/ Cheryl Waldner, University of Saskatchewan/ Josh Lawson, University of Saskatchewan/ Niels Koehncke, University of Saskatchewan/ Rafael Eduardo S.O. Santos, School of Veterinary Medicine and Animal Science, University of Sao Paulo

A3.7 Exploring Pathways to Health Equity for South African Gold Mining Communities

Presented by JESSICA YU PhD Student, University of British Columbia

Background: South African gold mineworkers have the highest tuberculosis rates among all working populations in the world. Yet many migrant mineworkers (for example from Swaziland, Lesotho, and Zimbabwe) cannot access basic amenities and health facilities. As such, novel methodologies and interventions are required to address the needs of these marginalised populations. This project, Pathways to Health Equity for South African Mining Communities, will be tied with the work of our local partners at the Department of Health in South Africa to revitalise "distressed mining communities".

Objectives: This project seeks to understand how to address the health effects of structural inequities by making health services as responsive as possible for marginalised occupational groups. Our findings can have practical applications especially in mobilising the social forces of mineworkers in similar conditions in South Africa and beyond.

Methods: A pilot study will be conducted in Carletonville, South Africa, where the project's local partners have established a field site for public health. In the first phase of an exploratory mixed methods design, this study will use participant observations and semi-structured interviews with current and former gold mineworkers in Carletonville. Particularly, we will document the relationship of the mineworkers' living and working conditions with their health status. The findings will lead to the development of an instrument (e.g. household survey) in the second phase of the design, which will be administered in Carletonville and other labour-sending communities.

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A4	EPIDEMIOLOGIC METHODS	626 BMSB

A4.1 Evaluation of Sexual Orientation Questions in Population Health Surveys on Canadians: A Mixed Methods Approach

Presented by CHRISTOFFER DHARMA MSc Student, Western University

Background: To identify patterns of health disparities in the population, many Canadian health surveys have incorporated sexual orientation questions. There are multiple ways that exist to identify one's sexual orientation from a survey, but the performance of these measures have never been assessed within the diversity of the Canadian population.

Objectives: 1. To determine the strengths and limitations of the different sexual orientation measures that are commonly used in large population studies 2. To identify particular characteristics of Canadian respondents for which these measures work and do not work

Methods: This is a mixed method, cross sectional study that evaluates two sexual orientation questionnaires, a single item question used by Statistics Canada and a multi-part question that includes sexual behaviour, attraction and identity recommended by a US committee. To allow generalizability, anyone who resided in Canada and was above 14 years of age was eligible to participate. Participants were first recruited online and asked to fill in demographic information. Approximately 70 participants with maximum variation on language, ethno-racial background, age, sexuality, gender, residence, education, immigration status and religion were selected for a cognitive interview

Results: Preliminary results indicated that the single item question from Statistics Canada has an 86.7% sensitivity [95% CI: 81.1% to 92.3%] and 100% specificity in identifying sexual minorities as categorized by the broadest definition from the multi part questions. A Kappa Statistic of 0.90 [95% CI: 0.86 to 0.94] was also found between the two sexual identity questions. Qualitative results indicate that trans and some cisgender (non-trans) participants do have difficulty in classifying themselves in the sexual orientation categories available. For cisgender heterosexual participants, questions on sexual identity were straight forward, however some do problematize questions on sexual behaviour and attraction.

Conclusion: The performance of the two sexual identity measures were identical, however identity measures alone are not enough to capture the wide variety of sexual minorities. Our results also suggest that these measures do not work for certain subgroups. More conclusive results will be obtained as data collection is completed.

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A4.2 A Meta-Epidemiological Study Examining the PEDro and Cochrane Risk of Bias Tools in Assessing Bias among Randomized Controlled Trials on Physical Interventions

Presented by PRINON RAHMAN MSc Student, Dalhousie University

A4.3 Establishing Quality of Life in Minimally Conscious and Covertly Aware Vegetative Patients: An Online Multidisciplinary Delphi Consensus Process

Presented by JASMINE TUNG MSc Student, Western University Department of Epidemiology and Biostatistics

Background: In the last decade, functional magnetic resonance imaging (fMRI) has emerged as a tool to detect covert consciousness in individuals with disorders of consciousness after severe brain injury. More recently, neuroimaging has been utilized to establish communication, using a brain-computer interface, with select minimally conscious and covertly aware vegetative patients who lack the ability to functionally communicate at bedside. With the brain-computer interface and communication paradigms there is an opportunity to gain insight into the quality of lives led by these patients. However, traditional techniques for developing quality of life instruments cannot be applied to vegetative and minimally conscious patients.

Objectives: The challenges involved with evaluating quality of life in these patients require that an innovative approach be developed. The objective is to design and execute a preliminary project to establish the dimensions of quality of life that are most relevant and important to minimally conscious and covertly aware vegetative patients.

Methods: The project will be conducted using a three-stage Delphi group consensus technique. This method involves the systematic gathering of information from participants within their domain of expertise, using a series of purposefully designed questionnaires. An analysis of existing quality of life instruments in use will form the basis of the items for the questionnaires. Data will be collected from three consecutive online surveys. The multidisciplinary expert group will consist of neurologists, health care providers, philosophers, quality of life methodologists, and family advocates. An adaptation of the Borgiel recruitment method will be utilized to enroll experts into the study. The experts will determine the dimensions of quality of life they perceive as the most important for minimally conscious and covertly aware vegetative patients. The findings will aid the larger project of developing a quality of life instrument that can be administered to these patients through the fMRI brain-computer interface.

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A4.4 Income inequality and access to primary prevention in Colombia: Evidence from 2013 Quality of Life National Survey

Presented by ADRIANA ANGARITA-FONSECA PhD Student, University of Saskatchewan

Background: Although the Colombian health system reform has increased health coverage since 1993, socioeconomic factor still are potential barriers to health-care access.

Objectives: To determine whether socioeconomic status affect the access to primary prevention in Colombian population.

Methods: A secondary analysis of the 2013 Quality of Life National Survey was performed. 50,532 persons aged over 15 representing 31,968,124 Colombians were included. The dependent variable was: Without being sick, did you make an appointment with a doctor, dentist or both for prevention purposes? Socioeconomic status was defined as total monthly household income (quintiles). We used simple and multiple generalized linear models for complex samples, where the link function was log of proportion of the dependent variable and the distribution was Poisson. The final model was obtained through manually backward elimination. The software used was Stata 13.1.

Results: 64% had access to primary prevention. Multivariate data analysis showed that being in the fourth [Prevalence Ratio (PR) =1.05, Confidence interval at 95% (CI 95%) 1.03-1.08] and fifth quintile [PR= 1.10, CI 95% 1.08-1.12] was associated with an increasing in access to primary prevention adjusted by gender, age, civil status, education, ethnicity, job, deficit in household, socio economic strata, health problems, health regimen, residence, permanent limitations, health status, municipalities' activities in health promotion and prevention, legal action, and receiving subsidy. Linktest= 0.401.

Conclusions: Inequities in access to care along the socioeconomic status exist in Colombia. Understanding the relationship between socioeconomic status and access to primary prevention will help policy makers to target interventions appropriately.
Disclosure: This research was funding by Universidad de Santander, Colombia. The authors have no competing interests.

Co-Author(s): Adriana Angarita-Fonseca, University of Saskatchewan/ Maria Isabel Pinzon-Ochoa, Universidad de Santander/ Rocio del Pilar Martinez-Marin, Universidad de Santander

A4.5 Does Adherence to the 2015 Dietary Guidelines for Americans (DGA) Relate to the Risk of Obesity and Other Chronic Diseases in Canada?

Presented by MAHSA JESSRI PhD Student, University of Toronto, Faculty of Medicine

Background: A premise of the most updated North American dietary guideline, namely the 2015 Dietary Guidelines for Americans (DGA), is prevention of obesity and other chronic diseases at the population level.

Objectives: The goal was to determine whether a diet meeting the 2015 DGA, as measured by the 2015 DGA Adherence Index (DGAI), is associated with lower risk of obesity with and without chronic diseases, including diabetes, hypertension, and heart disease (i.e., healthy and unhealthy obesity).

Methods: Dietary recalls from 11,748 participants aged â‰¥18 years in the Canadian Community Health Survey 2.2 was used. Weighted multinomial logistic regression was used to examine the associations between the 19-score DGAI score obesity risk.

Results: Canadians adhered to less than 50% of dietary recommendations in the 2015 DGA (mean score: 8.82/19 (Â±0.051)). Lack of adherence to the 2015 DGA recommendations was associated with 2.413 (1.732-3.361) times higher risk of unhealthy obesity in the first quartile of the 2015 DGAI score, compared to the fourth quartile (healthiest diet)(p-trend<0.0001). In addition, the odds of being healthy obese as well as being non-obese with at least one chronic disease was the highest in the first quartile of the 2015 DGAI score ((2.29 (1.482-3.539)) and 1.424 (1.031-1.966), respectively), as compared to the fourth quartile (p-trend<0.0001).

Conclusions: Obese individuals with metabolic disorders may benefit the most from following the DGA, even though other phenotypes were also reduced markedly, albeit not as strongly as unhealthy obesity phenotype. Overall, differentiating obesity phenotypes has important implications for public health policy and should be considered in management of obesity.

Co-Author(s): Mahsa Jessri, University of Toronto, Faculty of Medicine

A4.6 Hepatitis C in Thunder Bay: Analysis of an Outbreak

Presented by CHARLOTTE MCEWEN BScN Student, Lakehead University

Background: Hepatitis C is a preventable and curable blood-borne disease that affects the liver (Public Health Agency of Canada, 2014). In the latest surveillance report released by Public Health Ontario (PHO) Thunder Bay had the highest rate of Hepatitis C (HCV) cases in Ontario (PHO, 2014). Though national reports of HCV epidemiology have been conducted (Archibald, Payne & Totten, 2014), the Thunder Bay HCV epidemic has not yet been investigated or analyzed. This proposed project will investigate the region's high rate of disease and use an ecological study method to understand risk-modifying factors in this population.

Objectives: Examine HCV trends in Thunder Bay over time, and analyze to determine risk-modifying factors in this population.

Methods: Since HCV is a reportable disease, each case in a region is tracked and de-identified information about each case is made available to researchers. This data is stored in the Integrated Public Health Information System, and will be used to determine the exact prevalence of HCV over time in the region. This study's intention is to study the relationship between HCV in the city and city-level population exposure to HCV-acquisition risk factors. A longitudinal ecological study method has been proposed. Regression analysis is planned, but methods will be refined as the project is further developed.

Co-Author(s): Charlotte McEwen, Lakehead University

A4.7 Impact of survey and demographics on performance measurement of population health: comparison of national and international metrics

Presented by YAN XU Medical Student, Queen's University

B1	MATERNAL AND CHILD HEALTH	R160 REHABILITATION BUILDING

B1.1 Prenatal and Early Childhood Antibiotics Exposure and Risk for Neurodevelopmental Disorders

Presented by AMANI HAMAD PhD Student, University of Manitoba

Background: Attention deficit/hyperactivity disorder (ADHD) and autism spectrum disorders (ASD) are the most commonly diagnosed neurodevelopmental disorders and are major causes of disability in children and adults with long term adverse medical and social outcomes. Over the past decades, prevalence rates for both disorders had increased significantly. Yet, no clear, dominant causes have been identified. Microbiota is critical for the development of infant's immune system and brain and is suggested to have a role in neurodevelopmental disorders etiology. Early life antibiotics exposure can induce long term changes to microbiota composition, an effect that has been linked to several childhood diseases.

Objectives: The study aims to investigate whether prenatal and/or early childhood antibiotic exposure is associated with increased risk for ADHD or ASD.

Methods: This is a population-based longitudinal cohort study utilizing the Manitoba Population Health Research Data Repository. The cohort will include all Manitoba children aged 0 to 18 years within 19 fiscal years data (1996/1997 to 2015/2016). Prenatal antibiotic exposure is defined as having at least one antibiotic prescription dispensed during pregnancy. Early childhood exposure is defined as having at least one antibiotic prescription dispensed during the first year of life. Data on the number of antibiotic courses and the type of antibiotic received will be also collected.
A diagnosis of ADHD or ASD will be attained from hospital discharge abstracts, physician claims and drug program information network. A multivariate logistic regression will be used for results analysis after controlling for appropriate maternal and child related covariates. Hazard ratios will be calculated to compare disease risks among different groups.

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B1.2 The effect of paid maternity leave policies on early childhood growth in low and middle-income countries

Presented by DEEPA JAHAGIRDAR PhD Student, McGill University

Background: Undernutrition remains a major cause of child mortality in low and middle-income countries (LMICs). Previous work suggests that improved access to maternity leave may improve children's growth by facilitating breastfeeding, use of social services, and better caring practices. However, maternity leave policies' impact on children's growth has not been evaluated.

Objectives: This study used data from 576,919 live births in 38 LMICs surveyed as part of the Demographic and Health Surveys (2000 to 2014) to estimate the effect of paid maternity leave on children's growth using a quasi-experimental difference-in-differences design.

Methods: We compared the change in children's growth in five countries that increased their legislated duration of paid maternity leave between 2002 and 2006 (Uganda, Zambia, Zimbabwe, Bangladesh, Lesotho) relative to 33 other countries that did not. The exposure was the length of paid maternity leave in the child's birth year, and the outcome was children's growth, i.e. height-for-age z-scores. We used linear regression to estimate the effect of maternity leave on children's growth. Fixed effects for country and birth year accounted for unobserved, time-fixed confounders that varied across countries; we also adjusted for time-varying covariates such as GDP per capita.

Results: The overall mean height-for-age z-score was -1.39 (SD = 1.58), while the mean in countries with policy changes was slightly lower (m = -1.70; SD = 1.63). A one-week increase in the duration of paid maternity leave increased the mean height-for-age z-score by 0.07 (95% CI 0.06 to 0.08).

Conclusion: Paid maternity leave legislation has the potential to improve early childhood growth.

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B1.3 Stillbirth associated with birth weight discordance in twin gestations

Presented by SHAYESTEH JAHANFAR PhD Student, University of British Columbia

Background: Birth weight discordance (BWD) occurs when there is a disparity in birth weight between larger and smaller infants of a twin set and is a common phenomenon in twin gestation. One to most important adverse outcomes related to growth discordance in twin gestation is stillbirth.

Objectives: 1) To estimate the association between BWD and stillbirth, in twins born in a hospital cohort, in BC and to compare the two cohorts 2)To determine the stillbirth risk differences between twins in various strata based on fetal growth, parity, sex-discordance, gestational age, twin size and chorionicity.

Methods: We carried out two retrospective cohort studies including all twin births registered in Children and Women Hospital (n=2986) and those registered in the British Columbia perinatal database (n=12,814) in Canada from 2000 to 2010. The first cohort contained placental pathology data which provided an opportunity to analyse the impact of chorionicity on the relationship between BWD and stillbirth. Sex-discordance was used as a proxy to analyse the same relationship between stillbirth and BWD in province-based data. Generalized estimating equation models for binary outcome were used to account for the correlation in twin outcomes.

Results: The adjusted odds of stillbirth in hospital cohort (n=2986) were 7.78 (95%CI 3.39-17.86) among twins with growth discordance. This odd in MC twins was relatively much higher than that of the DC twins. BWD was found to be associated with an increased risk of stillbirth even in BC cohort (13.69; 95%CI 7.32-25.62). In the analysis stratified by fetal growth, the stillbirth rate was determined to be higher in subjects with a birth weight discordance ≥30% than in the reference group (birth weight discordance <30%). BWD-related stillbirth was dependent on fetal growth, parity, gestational age, twin size, sex-discordance and chorionicity.

Conclusion: Our analysis revealed a substantially increased fetal mortality with a BWD of ≥30%, indicating that this value is an important cut-off to be considered by clinicians. In screening twin pregnancies, special attention should be paid to fetal growth, parity, gestational age, twin size, and chorionicity.

Co-Author(s): Shayesteh Jahanfar, University of British Columbia

B1.4 Teenage pregnancy: The impact of maternal adolescent childbearing and older sister's teenage pregnancy on a younger sister

Presented by ELIZABETH WALL-WIELER PhD Student, University of Manitoba

Background: The risks and realities associated with teenage motherhood are well documented, with consequences starting at the childbirth and following both mother and child over the life span. A family history of teenage pregnancy has been shown to increase the risk of teenage pregnancy.

Objectives: Controlling for a variety of social and biological factors, and using a strong statistical design, this study aims to determine whether teenage pregnancy is more strongly predicted by having an older sister who had a teenage pregnancy or by having a mother who bore her first child before age 20.

Methods: This study used linkable administrative databases housed at the Manitoba Centre for Health Policy (MCHP). The original cohort consisted of 17,115 women born in Manitoba between April 1, 1979 and March 31, 1994, who stayed in the province until at least their 20th birthday, had at least one older sister, and had no missing values on key variables. Propensity score matching (1:2) was used to create balanced cohorts for two logistic regression models; one examining the impact of an older sister's teenage pregnancy and the other analyzing the effect of the mother's teenage childbearing.

Results: The adjusted odds of becoming pregnant between ages 14 and 19 for teens with at least one older sister having a teenage pregnancy were 3.06 (99% CI 2.53 - 3.64) times higher than for women whose older sister(s) did not have a teenage pregnancy. Teenage daughters of mothers who had their first child before age 20 had 1.51 (99% CI 1.29 - 1.78) times higher odds of pregnancy than those whose mothers had their first child after age 19.

Conclusion: Although both were significant, the relationship between an older sister's teenage pregnancy and a younger sister's teenage pregnancy is much stronger than that between a mother's teenage childbearing and a younger daughter's teenage pregnancy. This study contributes to understanding the broader topic of who is influential about what within the family.

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B1.5 Household Food Insecurity and Obesity in First Nations living on-reserve in Canada

Presented by ASHLEIGH DOMINGO MSc Student, University of British Columbia

Background: Food insecurity for Aboriginal households across Canada is an ongoing challenge and the associated impacts on health and wellness represent a public health issue. For Aboriginal populations living both on and off-reserve, the diet-related health concerns associated with food insecurity include obesity, poor dietary quality and chronic diseases.

Objectives: To better understand the factors underlying food insecurity and obesity in First Nations living on-reserve. By pursuing research that addresses food-health related issues, this study will facilitate an evidence-based discussion of strategies for protecting traditional food practices and addressing inequalities in health and nutrition.

Methods: Secondary data analysis was conducted from the, First Nations Food Nutrition and Environment Study (FNFNES), a cross-sectional study design, intended to be representative of First Nations living on-reserve in Canada (south of 60th parallel). Data were analyzed from the social, health and lifestyle questionnaire and food security questionnaire components of the FNFNES. Multivariate logistic regression, approached within a holistic framework of First Nations health and wellness, was used to examine the determinants of food insecurity and associations with obesity among individuals living in food insecure households. Analyses were conducted from First Nations communities in British Columbia, Manitoba, Ontario and Alberta.

Results: Forty-six percent of First Nations households were food insecure, with 9.54% of households classified as marginally food insecure, 27.93% moderately food insecure and 8.91% severely food insecure. Socio-demographic characteristics significantly associated with food insecurity included age, gender, region, main source of income, years of education, presence or absence of children in the household, road access and household traditional food activity. Prevalence rates of obesity were highest among marginally food insecure households (55.96%). Compared with food secure households, marginally food insecure households had significantly higher odds of obesity (OR 1.5, 95% confidence interval 1.19, 1.97), after adjustments for socio-demographic variables.

Conclusions: Food insecurity and obesity are serious public health issues for First Nations living on-reserve. The relationship between food insecurity and obesity highlight the need for integrated approaches that target both income and the promotion of healthy food environments that involve a consideration of socially and culturally appropriate foods.

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B1.6 Children with Autism Spectrum Disorder in Manitoba: Prevalence, Population Characteristics and Psychotropic Medication Use

Presented by LORENA VEHLING MSc Student, University of Manitoba

Background: Autism Spectrum Disorder (ASD) is a neurodevelopmental disability diagnosed in an increasing number of children. ASD has few effective treatment options.

Objectives: This study describes ASD prevalence and use of psychotropic medications in the pediatric population of Manitoba.

Methods: Administrative data from the Repository at the Manitoba Centre for Health Policy (MCHP) were used to create a cohort of children born in Manitoba. Diagnoses of ASD were based on medical claim records, hospital abstracts, or special education funding data.

Results: Between 2010 and 2014, 3079 Manitoba children aged 0-14 had an ASD diagnosis- 1% prevalence. Among children with ASD aged 0-18, 80% are boys and almost 60% were diagnosed before age 5, with 85% diagnosed before age 10, and almost 50% received special education funding. Close to 50% of all children with ASD received a psychotropic prescription before age 18. Compared with children in Manitoba without ASD or an intellectual disability (ID), children with ASD are more likely to live in Winnipeg, be involved with child welfare services, and receive psychotropic medications.

Conclusions: In Manitoba, ASD is diagnosed in preschool or early school years, when services can have the greatest impact on functioning. Epidemiological information is important to understand risk factors, assess current strategies, and direct interventions.

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B2	CANCER 1	R230 REHABILITATION BUILDING

B2.1 Routine follow-up care after curative treatment of head and neck cancer: An analysis of patients' information needs and preferences for organization of healthcare services

Presented by KELLY BRENNAN MSc Epidemiology Student, Queen's University

Background: Evidence suggests that cancer patients' follow-up needs vary, indicating that a single follow-up regimen may not be suitable. Head and neck cancer patients' follow-up care requirements are understudied. Identification of subgroups of patients with specific follow-up needs would allow for hypotheses to be generated for enhancing follow-up care.

Objectives: The study objectives were to describe head and neck cancer patients' follow-up needs and preferences, to identify which patient characteristics predict needs and preferences, and to evaluate how needs and preferences change over time.

Methods: This prospective cohort study included 175 head and neck cancer patients who completed treatment between 2012 and 2013 in Kingston and London, ON. A survey was completed at follow-up appointments at one year and two years after treatment to collect information on patient characteristics, needs and preferences. Bivariate analyses were used to identify predictors individually, and ordinal logistic regression models were used to collectively study predictors of follow-up needs and preferences. Odds ratios and 95% confidence intervals were estimated. Needs and preferences at one and two year anniversaries were compared using the Wilcoxon-Mann-Whitney test.

Results: A diverse range of information needs and preferences for follow-up care was found, with the exception that most patients needed to receive information on their own prognosis (95.4%). Follow-up needs varied for undergoing tests, receiving information on healthy living, and discussing fear. Preferences for the frequency of appointments and providers of care were mixed. Patient characteristics such as psychosocial measures, attitudes towards follow-up, demographics and clinical characteristics predicted needs and preferences for follow-up care (p<0.05). Significant reductions in needs and preferences for frequency of appointments were found as patients transitioned from one year to two years after treatment (p<0.05).

Conclusion: Patient characteristics should be considered when planning alternative follow-up regimens to personalize care and better address individual patient needs where possible. Patients value their current follow-up care. Needs decline over time, though they do not diminish altogether. Delivering adequate patient education is crucial to ensure realistic expectations for follow-up care.

Co-Author(s): Kelly Brennan, Queen's University/ Stephen Hall, Queen's University / Deb Feldman-Stewart, Queen's University / Yingwei Peng, Queen's University / John Yoo, Western University

B2.2   Quality of life trajectories after prostate cancer diagnosis: the role of physical activity and prognostic factors

Presented by MEGAN FARRIS MSc Student, University of Calgary

Background: Living longer with prostate cancer may be associated with factors that negatively impact quality of life (QoL). To date, no research determining QoL trajectory groups in prostate cancer survivors and the impact of changes in physical activity and prognostic factors on QoL trajectory groups has been done.

Objectives: The aim of this study is to identify physical and mental QoL trajectory clusters of prostate cancer survivors based on physical activity and prognostic factors in order to target subgroups of survivors with poor QoL after their diagnosis.

Methods: 830 prostate cancer survivors were derived from a prior case-control study in Alberta, with histologically confirmed, invasive stage T2 or greater, identified through the Alberta Cancer Registry and followed up for cancer outcomes until 2014. Three repeated assessments, taken approximately every two years, collected information on physical activity and QoL, while demographic and prognostic factors were collected at baseline. Further, medical chart abstractions were completed to confirm treatments, record new progressions, reccurrences and mortality. To assess QoL trajectories of prostate cancer survivors, group-based trajectory modeling was used taking into account physical activity changes over time and prognostic factors at diagnosis.

Results: Three trajectories of physical QoL were identified including: consistently average QoL 34.1% (in comparison with the standardized normal values), decreased QoL 40.2% and consistently low QoL 25.7%. In addition, three trajectories for mental QoL were identified: average to slightly increased QoL 71.3%, average to decreasing QoL 16.0% and low to increasing QoL 12.7%. In both physical and mental QoL, dropout (due to morality) was different between trajectories, thus confirming QoL and mortality were closely related. Further, both physical activity and prognostic factors were associated with physical QoL group membership but not consistently associated with mental QoL group membership.

Conclusion: It was possible to define three sub-groups of prostate cancer survivors related to physical and mental QoL, while taking into account physical activity and prognostic factors at diagnosis. This project will provide insights regarding the identification of subgroups of prostate cancer survivors with lower QoL after diagnosis for further intervention.

Co-Author(s): Megan Farris, University of Calgary, Alberta Health Services/ Karen Kopciuk, Alberta Health Services/ Kerry Courneya, University of Alberta/ Elizabeth McGregor, Alberta Health Services/ Christine Friedenreich, Alberta Health Services

B2.3   Childhood Infections and the Risk of Childhood Acute Lymphoblastic Leukemia: a Systematic Review

Presented by JEREMIAH HWEE PhD Student, University of Toronto, Dalla Lana School of Public Health

Background: The most common type of pediatric cancer is acute lymphoblastic leukemia (ALL), but its etiology remains unknown. One enticing but controversial hypothesis is immunological development, which suggests that delayed exposure to infections in childhood leads to abnormal immune responses that trigger the development of pediatric ALL.

Objectives: Using a systematic review to determine whether early childhood infections decrease the risk of childhood ALL, and whether the timing of infections is important to consider.

Methods: Data Sources: Electronic searches of Ovid MEDLINE, EMBASE, Web of Science and Scopus from inception until July 24, 2015. Study Selection: We included observational studies that assessed early childhood infections at the individual level, and risk of ALL. All languages were included.
Data Extraction: Two reviewers independently screened, reviewed and appraised the studies.

Results: There were 25 studies included. Five studies found early childhood infections significantly decreased the risk of ALL, and 3 studies found infections significantly increased the risk of ALL. Stratifying the studies by self-report and medical record data collection for infections suggested studies using self-report showed infections were protective against ALL (n=13 studies), while studies using medical records suggested infections were a risk factor for ALL (n=6 studies). Because of the research question, we were limited to observational studies, which are vulnerable to selection, recall, and reporting biases. However, 72% of the studies were appraised as low- to moderate-risk of bias.

Conclusion: Early childhood infections may play a role in the etiology of childhood ALL. Future research will need to address the challenges in measuring infectious exposures, whether the severity of the infectious disease is important in the etiologic mechanism of ALL, and to determine the critical exposure time period for infections.

Co-Author(s): Jeremiah Hwee, University of Toronto, Dalla Lana School of Public Health/ Christopher Tait, University of Toronto/ Lillian Sung, University of Toronto/ Jeffrey Kwong, Institute for Clinical Evaluative Sciences/ Jason D Pole, Pediatric Oncology Group of Ontario

B2.4 Update of Cancer in Ontario Métis people: Risk Factors and Screening Behaviours

Presented by CAROLINE CAWLEY MPH Student, University of Toronto, Cancer Care Ontario - Aboriginal Cancer Control Unit

Background: In 2015, a report on the prevalence of cancer risk factors and screening uptake in Métis Ontarians compared with non-Aboriginal Ontarians was produced by Cancer Care Ontario in collaboration with the Métis Nation of Ontario. The report used data from the Canadian Community Health Survey (2007-2012).

Objectives: The objective of the present work is to update the estimates of modifiable cancer risk factor prevalence and screening uptake from the existing report through to 2014 to support ongoing strategic planning.

Methods: Data will be updated to include two additional survey years of the Canadian Community Health Survey (2013 and 2014). There were 1,375 Ontario Métis in the 2007-2012 sample; 502 will be added for 2013-2014. The update includes estimates for the prevalence of cigarette-smoking, second-hand smoke exposure, obesity, sedentary behaviour, fruit and vegetable consumption, and participation in breast, cervical and colorectal cancer screening. Prevalence estimates were age-standardized to the 2006 Ontario Aboriginal identity population and stratified by sex, age-groups, geography, education, income. Smoking and obesity were measured over time.

Results: Preliminary updated results indicate prevalence of smoking remains significantly higher among Métis adults (36%) than among non-Aboriginal adults in Ontario (21%); however, it is significantly decreasing over time. Second-hand smoke exposure in one's home or vehicle was significantly higher in Métis teens (37%) than in non-Aboriginal teens (17%). Obesity was significantly more common among Métis (25%) adults than non-Aboriginal (18%) adults. Cancer screening participation was similar in both populations. This presentation will include updated results, including stratification by age, geography, education, income.

Conclusions: Métis Ontarians experience high prevalence of cigarette-smoking and obesity. The 2015 report emphasized the need for more health data for the Métis population. Updating these results increases the collective ability to accurately determine and effectively address cancer prevention priorities in the Métis population.

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B2.5 Lifetime cumulative exposure to estrogen and postmenopausal IGF-1 levels

Presented by CARMEN CHAN MSc Student, Queen's University

Background: Mechanisms underlying the effect of long term estrogen exposure on breast cancer risk remain unclear. Insulin-like growth factor-1 (IGF-1) levels have been positively associated with breast cancer and are a potential mechanism.

Objectives: This study sought to explore whether the lifetime cumulative number of menstrual cycles (LCMC), a measure for total exposure to endogenous estrogens; and, the individual breast cancer hormonal risk factors, are associated with IGF-1 levels in postmenopausal women.

Methods: To address the objectives, a cross-sectional study of 567 postmenopausal women nested within the MAP.3 chemoprevention trial was conducted. Anthropometric measurements, lifestyle factors, reproductive characteristics and serum IGF-1 concentrations were collected at baseline. The LCMC was computed as a composite measure of the reproductive characteristics. Multivariable linear regression models were used to assess the association between IGF-1 levels and LCMC and the hormonal risk factors, while adjusting for potential covariates. Potential covariates included baseline demographic and clinical characteristics.

Results: For every 100 LCMC, IGF-1 levels increased 9.71 ng/mL (95% CI: 3.99, 15.43). Women at age 55 years or older at menopause had 16.26 ng/mL (95% CI: 1.76, 30.75) higher IGF-1 levels compared to women less than age 50 years at menopause. Compared to never users of hormone replacement (HRT), women who have used HRT for less than 5 years, 5-10 years and greater than 10 years had -5.88 ng/mL (95% CI: -32.13, -3.44), -19.02 ng/mL (95% CI: -34.03, -4.01), and -17.78 ng/mL (95% CI -18.25, 6.47) lower IGF-1 levels.

Conclusions: Larger number of menstrual cycles and a later age at menopause are positively associated with IGF-1. IGF-1 may be one mechanism by which prolonged estrogen exposure increases cancer risk. IGF-1 decreased with longer HRT use, suggesting that HRT likely affects breast cancer risk through a mechanism unrelated to IGF-1.

Co-Author(s): Carmen Chan, Queen's University/ Will King, Queen's University/ Harriet Richardson, Department of Public Health Services

B3	ADDICTIONS, MENTAL & PSYCHOSOCIAL HEALTH	R236 REHABILITATION BUILDING

B3.1 Connection with a Screen: The Impact of Computer-Mediated Communication on the Health of Canadian Young People

Presented by LINDSAY FAVOTTO MSc Student, Queen's University

Background: Canadian young people are increasingly more connected through computers, tablets and phones. This computer-mediated communication (CMC) can result in heightened connection and social support but can also lead to inadequate personal and physical connections. As technology evolves, its influence on health and well-being is important to investigate especially among youth.

Objectives: The epidemiological aspect of this study assesses the association between use of computed-mediated communication and feelings of loneliness, while taking into consideration the potential modifying effects of family communication quality. Qualitatively, the objective is to understand adolescents' views and experiences related to the potential influences of CMC on their health.

Methods: This mixed-methods study utilized data from the 2013-2014 (cycle 7) of the Health Behaviour in School-aged Children (HBSC) survey for Canada (n=30,117) and focus group data involving Ontario youth (n=40). A modified Poisson regression was applied to the survey data with a log link for each CMC exposure to identify the independent effects of utilizing each method on loneliness. All models were further stratified by high and low family communication quality. An inductive content analysis was applied to the focus group transcripts. Through open line-by-line coding followed by axial coding, codes were organized to identify main categories and themes.

Results: For both males and females, no strong association was observed between daily use of verbal, messaging or social media CMC. No significant effect modification was observed but consistent trends showed that for males and females, regardless of CMC use, experiencing low family communication quality increased their risk of loneliness. Qualitative analysis identified three overarching themes to identify the influence of CMC on health: (1) mental and emotional impact, (2) physical health elements and (3) a diverse social influence.

Conclusion: CMC use is not associated with loneliness; family factors elucidate risk of loneliness more strongly. The technologically rich world in which young people live has a complicated impact on their health. For youth, their relationships with others and the context of CMC use shapes the overall influence to their health.

Co-Author(s): Lindsay Favotto, Queen's University/ Colleen Davison, Queen's University/ Valerie Michaelson, Queen's University

B3.2 Exposure to parental psychopathology and offspring's risk of suicidal ideation, suicide attempt and suicide: A systematic review

Presented by SARAH GOODDAY PhD Candidate, University of Toronto

Background: Parental psychopathology is linked to offspring suicidal behavior. However, the mechanisms explaining this association, and whether or not exposure to parental illness impacts risk, beyond genetic susceptibility, are not well understood.

Objectives: The objectives of this systematic review are to determine the association between exposure to parental psychopathology and risk of subsequent suicidal ideation (SI) and behavior in offspring and determine how this association differs by methodological, demographic and clinical features in both parent and child.

Methods: A systematic review was conducted using principles form the PRISMA statement. MEDLINE, CINAHL, EMBASE, psycINFO, Web of Science and grey and fugitive literatures sources were searched. Studies were included if they examined 1) any parental psychiatric disorder according to Diagnostic and Statistical Criteria for Mental Disorders or SI and suicidal behaviors and 2) offspring SI and suicidal behaviors occurring from birth < 25 years of age and 3) if they were not qualitative, case-studies, or reviews. Risk of bias (ROB) was assessed using criteria from the AROBAT-NRSI.

Results: 8814 studies were identified and 42 were included in the review. Studies were suggestive of an increased risk of offspring SI, and suicide attempt (SA) among those exposed to parental SA's, and the risk appeared to be elevated when the mother attempted suicide compared to the father. Findings were suggestive of an increased risk of offspring SA when the exposure was earlier in childhood compared to later in childhood but too few studies examined mediation and effect modification of contextual variables to draw firm conclusions. Studies were clinically and methodologically heterogeneous with 81% meeting criteria for high or critical ROB.

Conclusion: Offspring exposed to maternal SA's are at an increased risk of SA's. More cohort studies examining intermediate pathways to SI and SA onset is needed to confirm if other forms of parental psychopathology are associated with offspring suicide outcomes. The current state of the literature is of low methodological quality.

Co-Author(s): Sarah Goodday, University of Toronto/ Susan Bondy, University of Toronto/ Anne Rhodes, McMaster University

B3.3 Untangling the relationships between autism spectrum disorders and non-genetic risk factors

Presented by ANGELA KRUTISH MSc Student, University of Manitoba

Background: Autism spectrum disorders (ASD) are attributed to genetic and non-genetic risk factors. Of the non-genetic factors, prenatal and perinatal complications have been extensively investigated, though few associations have been replicated consistently. Most of these studies did not adjust for the effects of confounding factors, which may lead to false associations.

Objectives: The objective of this study was to examine the associations between prenatal and perinatal complications and ASD, while adjusting for the effects of confounding factors.

Methods: We selected 2,562 families with at least one ASD-affected individual and one unaffected sibling from the Manitoba Population Health Research Data Repository. Siblings were used in our study because they are better matched for both known and unknown confounding factors than unrelated individuals. We compared the occurrence of prenatal and perinatal complications, as well as 1- and 5-minute Apgar scores, between the affected and unaffected siblings using generalized linear mixed models. The models were adjusted for sex, twin status, maternal age, birth year, birth order, gestational age, and birth weight percentile (to avoid collinearity with gestational age).

Results: After adjustment for the effects of the confounders, haematological disorders of the newborn and lower 1- and 5-minute Apgar scores were significantly associated with an increased risk of ASD, with odds ratios of 2.80 (95% CI: 1.62-4.84), 0.95 (95% CI: 0.92-0.99), and 0.86 (95% CI: 0.79-0.92), respectively. In contrast, without adjustment for the effects of the confounders, three prenatal complications, five perinatal complications (including haematological disorders), and lower Apgar scores were associated with ASD. This underscores the importance of adjusting for confounding factors when examining the relationships between ASD and prenatal and perinatal complications.

Conclusion: We identified perinatal risk factors that are significantly associated with ASD. The results from this study allow us to disentangle the heterogeneous nature of ASD and will facilitate identification of other major risk factors for ASD in future studies.

Co-Author(s): Angela Krutish, University of Manitoba/ Louise Simard, University of Manitoba/ Xiao-Qing Liu, University of Manitoba

B3.4 The role of social environments on binge drinking among Aboriginal youth in Canada: A moderated mediation model

Presented by ERIN MASON MSc Student, University of Lethbridge

B3.5 Predictors of functional improvement in children and adolescents treated at Child and Youth Mental Health and Addictions Services in the Saskatoon Health Region

Presented by **MUZI LI** PhD Student, University of Saskatchewan

Background: Children's mental health problems substantially impact their daily functioning. The Child and Adolescent Functional Assessment Scale (CAFAS) is a widely used standardized tool for assessing mental health treatment outcomes in child and youth. Child and Youth Mental Health and Addictions Services (CYMHAS) in most Saskatchewan health regions use the CAFAS.

Objectives: The objectives of this project are: (1) to understand the impact of mental health services on functional improvement; (2) to identify predictors of functional improvement in children and youth who received services from CYMHAS in the Saskatoon Health Region; and (3) to make suggestions regarding improving the effectiveness of services.

Methods: This is a secondary analysis of routinely collected, anonymized clinical assessment data for a prospective case cohort. The established measure of client functioning includes a global measure of impairment/functioning and subscales on school, home, and community performance, behavior towards others, moods/emotions, self-harmful behavior, substance use, and thinking problem. Sign tests for paired data were used to compare median scores as measured at baseline and exit from treatment. Multivariate logistic regression models were fitted to examine predictors of the improvement of level of dysfunction. Clients' socio-demographic and clinical characteristics are independent variables. Comparisons between child and youth were conducted.

Results: A total number of 645 children (aged 6-11 years) and 682 youth (aged 12-17 years) were included in the analysis. The exit total and subscales scores elicited statistically significant decrease for both children and adolescents, compared to their initial scores, which indicates that their functioning had improved by the time clients exited treatment. Initial level of dysfunction, length of stay, and pervasiveness of behavioral impairment are shared predictors for improvements in functioning among children and youth. Primary presenting problem, caregiver support and area of residence are associated with the improvement of level of dysfunction among children only.

Conclusions: This analysis provides robust evidence about the effectiveness of current services and some factors involved in functional improvement. Treatment does make a difference. Clients who have a high level of dysfunction at intake and have pervasive behavioral problems appear to require more treatment in order to reach appropriate functioning outcome.

Co-Author(s): Muzi Li, University of Saskatchewan/ Xiangfei Meng, McGill University and the Douglas Mental Health University Institute/ Carl D'Arcy, University of Saskatchewan

B3.6 Substance use disorders, Overweight/Obesity and Co-morbid Major Depression

Presented by VIVIAN ONAEMO PhD Student, University of Saskatchewan

Background: Studies have shown that an inverse relationship exists between substance use disorders (SUDs) and obesity/overweight, however, this association is often complicated by co-morbid depression which might impede treatment effectiveness.

Objectives: This study aims to examine the association between SUDs and overweight/obesity: and the effects of co-occurring major depression.

Methods: Data came from the Canadian Community Health Survey (CCHS) – Mental Health, 2012. A cross sectional survey of individuals (n = 25,113) aged 15 years and older living in the ten Canadian provinces between January and December, 2012 were utilized for this study. DSM-IV criteria are used here. Twelve month disorders were considered here for SUDs and major depression. Analysis was done using multilevel mixed effects logistic regression model.

Results: Adults with co-morbid alcohol use disorder and major depression were less likely to be overweight/obese vs. normal weight/underweight (OR = 0.63, 95% CI = 0.41-0.96). However, there are no significant differences with co-morbid cannabis (excluding other substances) use disorder and major depression (OR = 0.53, 95% CI = 0.26-1.07) with overweight/obese; as well as comorbid drug (excluding cannabis) use disorder and major depression (OR= 0.78, 95% CI= 0.46 – 1.32) with overweight/obese.

Conclusion: The inverse relationship between alcohol and overweight/obesity continued to exist in the presence of major depression in this population. Further studies on this association are needed in order to plan a comprehensive treatment plan for individuals with comorbid depression in future.

Co-Author(s): Vivian Onaemo, University of Saskatchewan/ Timothy O. Fawehinimi, Yukon Territory/ Carl D'Arcy, University of Saskatchewan

B4	BIOSTATISTICS	626 BMSB

B4.1 A mediation analysis to assess the impact of inhaled corticosteroids (ICSs) during pregnancy on birthweight

Presented by NADIA ARROUF MSc Student, Université du Québec à Montréal (UQAM)

Background: Asthma is one of the most common medical conditions affecting pregnant women, with prevalence of up to 14%. Although inhaled corticosteroids (ICSs) are the first-line asthma control therapy, doubts remain concerning the safety of higher ICS doses with regards to newborn birthweight

Objectives: Investigate the dose-response relationship between ICSs and birthweight when gestational age is considered as a potential mediator.

Methods: An administrative cohort of 6,197 asthmatic women who gave birth in Quebec (Canada) in 1998-2008 was considered. The total, natural direct (NDE) and indirect (NIE) effects of ICS daily doses (0, >0-125, >125-250, >250 μg/day, fluticasone-equivalent) during pregnancy on birthweight were estimated using the classical counterfactual mediation model. Twenty seven risk factors for low birthweight and prematurity were considered as potential confounders in the model.

Results: The cohort included 7,374 pregnancies, with 56.9% exposed to ICSs. A small negative NDE was found for the higher doses of ICSs, but no significant NIE. The NDE estimates (g) for the three levels of ICSs doses were 3.6 (CI: -21.0 to 28.0), 15.4 (CI: -26.8 to 58.8) and -57.0 (CI: -109.4 to -3.0), respectively. The NIE estimates (g) were 14.0 (CI: -6.7 to 35.1), 0.6 (CI: -37.8 to 39.3) and 5.6 (CI: -38.1 to 50.2), respectively. The total effect, equal to the sum of the direct and indirect effects, was non-significant at all levels of ICSs doses.

Conclusion: Despite the possibility of residual confounding due to uncontrolled confounders, higher doses of ICSs were directly associated with a small reduction in birthweight. However, no evidence was found suggesting that ICSs decrease birthweight through a diminution in gestational age.

Co-Author(s): Lucie Blais, Université de Montréal/ Genviève Lefebvre, Université du Québec à Montréal/ Maria Samoilen, Université du Québec à Montréal/ Nadia Arrouf, Université du Québec à Montréal

B4.2 Modelling the Diagnostic Validity of Administrative Health Data

Presented by KRISTINE KROEKER MSc Student, University of Manitoba

Background: Diagnostic validation studies are used to develop definitions to ascertain disease cases in administrative data, such as hospital and physician records. Most validation studies compare multiple definitions, to identify the one(s) with the greatest accuracy. Descriptive statistics, routinely used for these comparisons, fail to account for uncertainty in the estimates.

Objectives: The purpose was to develop and compare regression-based methods to select a disease case definition for administrative data. The objectives were to: (1) compare the performance of three regression models to test for differences in diagnostic validity estimates, and (2) demonstrate how to apply and use these models.

Methods: Computer simulation was used to compare the performance (e.g., bias, mean squared error [MSE], 95% confidence interval [CI] coverage) of: (a) univariate fixed-effects regression to model estimates of case definition sensitivity (i.e., true positive rate) and specificity (i.e., true negative rate); (b) univariate fixed-effects regression for Youden's index, which is computed as the average of sensitivity and the complement of specificity; and (c) bivariate random-effects regression to jointly model sensitivity and specificity. For objective 2, we applied the models to estimates of diagnostic accuracy from a published rheumatoid arthritis (RA) validation study with 61 case definitions.

Results: Univariate models of sensitivity and specificity had lower bias than the bivariate model (e.g., univariate sensitivity=1.8%, bivariate sensitivity=2.2%). When the number of case definitions increased, all models had smaller bias and MSE (univariate sensitivity e.g., N=40: bias=2.1%, MSE=3.6%; N=75: bias=1.6%, MSE=1.9%). Across all scenarios, the univariate model for Youden's index showed small bias (average=2.4%) and small MSE (average=2.1%). For objective 2, the univariate models of sensitivity, specificity, and Youden's index revealed multiple case definition features that were associated with estimates of RA diagnostic accuracy, including at least one diagnosis in hospital records and increasing the number of physician diagnoses.

Conclusion: Based on the simulation, we recommend the bivariate model when the data contain a large number of case definitions. When the data contain a small number of case definitions, univariate models are recommended. Regression-based methods can contribute to better decision making about choosing valid case definitions for administrative data.

Co-Author(s): Kristine Kroeker, University of Manitoba/ Lisa Lix, University of Manitoba/ Depeng Jiang, University of Manitoba/ Saman Muthukumarana, University of Manitoba

B4.3 Conditional dependence models under covariate measurement error

Presented by KAIQIONG ZHAO MSc Student, University of Manitoba

Background: In epidemiologic studies, covariates such as physical activity, nutrition intake or environmental pollutants are often subject to measurement error. Although there is a vast literature on measurement error problems in regression, very little is known about the impact of covariate measurement error on the dependence parameter estimation in multivariate models.

Objectives: This study aims (i) to assess the bias in the estimated dependence parameter due to the covariate measurement error, and (ii) to introduce a bias correction technique for more reliable inference of dependencies in conditional multivariate models.

Methods: We address the problem using a conditional copula model with additive covariate measurement error. The exact bias expression for the naive estimator, obtained by ignoring the covariate measurement error, is derived for the case of the Gaussian copula. For more general conditional copula models, a likelihood-based correction method is proposed, in which the likelihood function is computed via Monte Carlo techniques. A series of simulations is conducted to evaluate the performance of this bias-corrected dependence parameter estimate. Additionally, we apply the proposed correction method to analyze a subset of the SWAN (Study of Women's Health Across the Nation) data.

Results: For bivariate conditional models, the dependence parameter estimates can be significantly biased under the covariate measurement error. When the dependence parameter is positive (negative), the marginal effects with opposite (same) directions lead to an underestimation (overestimation) of the dependence parameter. The magnitude of bias increases as the marginal effect sizes and the measurement error variance increase. Our proposed likelihood-based method significantly reduces the bias and gives consistent estimates for the dependence parameter. The bias-corrected analysis of the SWAN data yields a stronger dependence between hip and bone mineral densities given the reported absolute sodium intake, compared to the naïve analysis.

Conclusion: The naïve analysis ignoring the presence of covariate measurement error may lead to misperceptions of the underlying dependencies in bivariate response modeling. Our proposed likelihood-based technique can correct the bias in dependence parameter estimates. These findings are promising to develop efficient bias correction methods for more general conditional dependence models.

Co-Author(s): Kaiqiong Zhao, University of Manitoba / Elif Acar, University of Manitoba

B4.4 Use of the extreme value theory to select and study cardiovascular peaks: application in Quebec and Montreal, Canada.

Presented by YOHANN CHIU PhD Candidate, Institut national de la recherche scientifique

Background: Cardiovascular diseases (CVDs) are one of the leading causes of hospitalisations and deaths in Canada. Therefore, an important body of literature exists about CVDs. Studies usually focus on mean events. However, the corresponding techniques are not appropriate for peaks. These events represent a heavy burden on the public health services.

Objectives: This study investigates how to select and analyze health peaks. They are far from the mean and much less probable, thus they need to be dealt with appropriate tools. This is rarely performed hence a general and objective methodology is needed, as a support to the public health authorities.

Methods: The Extreme Value Theory (EVT) is used to extract hospitalisations and deaths peaks. Although EVT is well-suited to study any series of "peaks" (e.g. water level rise in hydrology), it has been seldom used in a public health context. First, declustering and data separation procedures are applied to the raw data (n>10000) in order to meet EVT requirements. Then, extreme series are extracted through the threshold and block methods. Appropriate thresholds and blocks are selected with various statistical tests and criterion. Finally, the selected peaks (n<100) are fitted with extreme distributions and their characteristics are analyzed, in particular return levels.

Results: Extreme distributions fitting results in return levels for hospitalisations in Montreal and deaths in Quebec (Canada). Up to 198 hospitalisations and 8 deaths per day are expected to be reached or exceeded once a year, on average over a long time period. These numbers are to be put into perspective with the averages, which hover around 131 hospitalisations and 3 deaths per day. This type of information can be used by hospital managers for planning facilities use or development and personnel needs, for instance. Besides, peaks study could help public health surveillance to set up critical thresholds in protection interventions.

Conclusions: In classical studies, peaks are not studied as such but the obtained results show interesting possibilities for planning. This indicates that peaks and classical studies should be carried out together, providing more complete information for hospital managers. The proposed procedure is also valid for other chronic diseases and other regions.

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B4.5 Statistical Power in Sugar-Sweetened Beverage (SSB) Policy Evaluation

Presented by DAN PAPPO MS in Nutrition Student, Columbia University

Background: Canada is in the midst of an obesity epidemic directly linked to adverse health outcomes, such as heart disease, diabetes, and diminished quality of life. Some 7-8% of Canadian's total energy intake come from SSBs; food products that are calorie-dense and nutrient-poor. Evidence has shown that reducing SSB intake can improve public health. There is ongoing debate regarding the specific methods that policy makers should employee to combat the development of non-communicable diseases through SSB policy. Preliminary results of numerous policy shifts are emerging in scientific literature and have yet to be critically analyzed.

Objectives: Provide comparative statistical evidence regarding the effects of various public health initiatives that target SSB consumption; including taxing SSBs, adding warning labels to SSB containers, regulating consumption of SSBs in federal nutrition programs, and increasing access to water.

Methods: Phase 1: A comprehensive literature review of multiple domains of SSB policy interventions was undertaken in part of an M.S. in Nutrition degree requirement. Ongoing and past SSB policies were identified and results were examined when available. This work was done in conjunction with an academic tutorial overseen by the Director of Policy at the American Heart Association. Phase 2: Development of comparative statistical analysis is proposed. This accumulation of public data will take an outcome oriented approach towards weighing the various public health approaches regarding SSB policy. Ongoing initiatives, such as including taxing SSBs, adding warning labels to SSB containers, regulating consumption of SSBs in federal nutrition programs, and increasing access to water will be compared. The aim of this project is to use available data on SSB policy outcomes to provide a foundation for statistical inference. Results will be compiled in a manuscript for publication.

Co-Author(s): Dan Pappo, Columbia University

C1	WELL-BEING AND QUALITY OF LIFE	R160 REHABILITATION BUILDING

C1.1 Music therapy for Alzheimer's patients

Presented by JENNIFER ASSELSTINE MHSc Student, Lakehead University

Background: Music therapy (MT) is an attractive non-pharmacological treatment for many individuals suffering from dementia. It is well established that MT is responsible for many mood-boosting effects in Alzheimer's disease (AD) patients, however it is unclear whether these benefits extend to cognitive outcomes. Literature focused on the efficacy of MT for treatment of AD is riddled with problematic and inconsistent methodologies, non-specific measurements of outcome, and a failure to control for varying levels of dementia and type of MT between study participants. Issues concerning the feasibility of this study in regards to a master student's limitations will also be discussed.

Objectives: The central purpose of this study will be to compare MT treatments in a randomized fashion and assess changes (if any) in cognitive functioning that occur between passive, active and no (control) MT groups. Secondary objectives include modifying the proposed methodology to make the study feasible at a master's level.

Methods: This idealized study will utilize a three armed randomized control trial (RCT) design. Three long-term care facilities will be selected and randomized to a treatment type: active MT, passive MT, or a control. Participants within each home will be selected based on AD severity determined by the Global Deterioration Scale, as defined by the Alzheimer's Society of Canada. The MT sessions will be conducted by an accredited music therapist twice a week at each location, over a period of six weeks. Three cognitive outcome measures will be collected at each session. Measurements will include the mini-state mental examination (MMSE), the new Music in Dementia Assessment Scale (MiDAS) as proposed by McDermott et al. (2015), and the Alzheimer's disease Assessment Scale (ADAS), with the latter serving as a highly sensitive measurement for cognitive change over time. Following collection, data will be analyzed to explore relationships between treatment type and cognitive outcomes.

Co-Author(s): Jennifer Asselstine, Lakehead University

C1.2 Examining the Association Between Emotional Well-being and Green Space Via the use of Twitter

Presented by FELIX BANG Undergraduate Student, Applicant, Wilfrid Laurier University

Background: Emotional well-being can predict the long-term prognosis of physical illnesses. The effect green spaces have on mental health and emotional well-being has been underestimated, and most health research focuses on the association of green space with physical health. Green space can act as buffer against stressful life events and has restorative effects on mental and emotional well-being. The body of knowledge relating green space to mental and emotional well-being is small in comparison to that relating to physical health. Additionally, previous studies in the field have been limited to the use of self-reported data.

Objectives: The primary objective of the study is to examine the association between proximity to green space and emotional well-being. The secondary objective of the study is to examine whether socio-economic status modifies the effect of proximity to green space and emotional well-being.

Methods: A sample of approximately 1.29 million tweets originating in Toronto collected in summer/winter of 2014. The measurement of emotional well-being is through the use of Emotive Ontology software. This software analyzes the message in the tweet to determine the fine-grained emotions that is behind the tweet. Green space data, parks and tree coverage, was sourced from the open data provided by the City of Toronto. While socioeconomic status will be determined through proxy by determining the income levels of locations where a user has made tweets. Data analysis will be performed through spatial analysis in ArcGIS and multi-level modeling in SPSS. The analysis will determine the level of association of both proximity and coverage of green space in a buffer zone to the emotional valence of tweets.

Co-Author(s): Felix Bang, Wilfrid Laurier University/ Ketan Shankardass, Wilfrid Laurier University/ Courtney Jones, Wilfrid Laurier University / Colin Robertson, Wilfrid Laurier University

C1.3 Antibiotics versus Appendectomy for Uncomplicated Appendicitis: A Global Health Perspective

Presented by ROHIN KRISHNAN 2nd year MSc student, Western University

Background: Traditionally, emergency appendectomy has been viewed as the treatment of choice for uncomplicated acute appendicitis. However, surgery is not without risks, and surgical resources are not always accessible. Thus, interest has grown in exploring conservative management of acute appendicitis with antibiotics alone, instead of surgical appendectomy.

Objectives: The objective of this study was to determine, through meta-analysis of randomized trials, whether management of uncomplicated appendicitis with antibiotics alone provides similar outcomes compared with appendectomy. We hypothesize that patients treated with antibiotics will not experience higher rates of treatment failure compared to patients treated with appendectomy.

Methods: We conducted a random-effects meta-analysis of RCTs comparing appendectomy versus conservative treatment with antibiotics for suspected uncomplicated acute appendicitis. We searched Ovid MEDLINE, EMBASE, international clinical trials registries, and the Cochrane Library from 1950 to December 2015.In addition to the primary outcome of treatment failure (defined as the composite of recurrence, sepsis, death, or unnecessary surgery due to negative findings), secondary outcomes included peritonitis or perforated appendix, complications, and mortality within 1 year of follow up. Subgroup analyses were planned to explore the relationship between type of imaging used and risk of adverse events.

Results: A total of 5 randomized trials and 1 quasi-randomized trial met the inclusion criteria (1451 patients). Meta-analysis suggested that fewer patients undergoing surgery experienced treatment failure at 1 year compared to those receiving antibiotics alone (OR 0.09; 95% CI 0.04-0.18; $p < 0.001$; NNH=3). Reoccurrence was the main subcomponent that contributed to the significant difference in our primary outcome. Roughly, 33% of patients in the conservative management group experienced recurrent appendicitis, suggesting that, on average, 2 out of 3 patients will be spared surgery in the first year. No significant difference was detected for all secondary outcomes.

Conclusion: Current evidence suggests that either immediate surgery or antibiotics alone may be suitable for management of uncomplicated appendicitis, and the choice of treatment may be best informed by patient preferences and available resources. Adequately-powered studies should be encouraged to further define the efficacy and safety of conservative versus immediate surgery.

Co-Author(s): Rohin Krishnan, Western University/ Matt Chong, Western University/ Janet Martin, EPiCOR Group, MEDICI Centre, Department of Anesthesia and Perioperative Medicine, Western University

C1.4 The Influence of First Nations Ethnicity on Health-Related Quality of Life

Presented by LANA TENNENHOUSE Undergraduate Student, University of Western Ontario

Background: Health-related quality of life (HRQOL) is a multi-dimensional measure that has rarely been compared across the general Canadian population of First Nations and Caucasian individuals, despite its usefulness in providing a comprehensive picture of health status from the individual's perspective.

Objectives: The study objective was to compare HRQOL between First Nations and Caucasian women, and to test the association of socio-demographic characteristics and health risk behaviours with HRQOL.

Methods: Data were obtained from the First Nations Bone Health Study-II, a population-based study designed to assess skeletal health in First Nations and Caucasian women. HRQOL was measured by the Rand 36-Item Short Form Health Survey (SF-36) in all women. Socio-demographic and health risk behaviours of the study cohort were collected by self-report and physical measurement. Scores for the eight domains of the SF-36 were compared between the ethnic groups using multiple regression models. Covariates included age, employment status, education, income, body mass index, physical activity level, medical diagnoses, and alcohol and tobacco usage.

Results: There were 300 study participants with complete data. Socio-demographic and health risk behaviours differed between the two groups. First Nations women had significantly higher scores on the SF-36 bodily pain domain than Caucasian women (p < 0.05) before adjusting for socio-demographic and health risk behaviours. After adjustments, Caucasian women had significantly higher scores on the SF-36 domain of emotional role functioning than First Nations women. Covariates that had a statistically significant association with low HRQOL in women of both ethnicities included lack of physical activity, high body mass index, and the presence of a disorder of the skeletal system.

Conclusion: Ethnicity impacted selected HRQOL domains before and after adjustment for socio-demographic and health risk behaviours. This demonstrates how ethnicity and other personal characteristics can influence health perceptions.

Co-Author(s): Lana Tennenhouse, University of Western Ontario / Lisa Lix, University of Manitoba/ William Leslie, University of Manitoba

C2	CANCER 2	R230 REHABILITATION BUILDING

C2.1 HPV Immunization Among 17-year-old Females in Manitoba: A Population-Based Study

Presented by ALEXANDREA ANDERSON Undergraduate Student/Junior Epidemiologist, Department of Statistics, University of Manitoba/Public Health Branch, Manitoba Health, Healthy Living and Seniors

Background: In 2008, Manitoba initiated a publicly-funded human papillomavirus (HPV) immunization program for grade six females born on or after January 1, 1997. Without a population-based study to describe HPV immunization coverage following the implementation of this vaccination program, the impact was not understood.

Objectives: To describe 1) HPV immunization complete for age (CFA) coverage for 17-year old females, and 2) the number of HPV doses administered to those aged 17 years or younger (females and males) by provider type, in Manitoba and in each of the five regional health authorities (RHAs) in 2014.

Methods: A population-based analysis was conducted to describe the providers of HPV immunizations, and the CFA coverage of 17-year-old females in Manitoba in 2014. CFA was defined as a female receiving three doses of this vaccine by age 17 years. Immunization data was obtained from the Manitoba Immunization Monitoring System (MIMS). The crude rate was calculated with a numerator of the number of females CFA by age 17 years, in a given RHA, and a denominator of the number of 17-year-old females in that RHA. The providers were separated into three categories: 1) physicians, 2) public health nurses, and 3) other.

Results: In Manitoba, 57.6% of 17-year-old females were complete for age for the HPV vaccine in 2014. Prairie Mountain Health had the highest percentage of 17-year-old females complete for age for this vaccine (68.3%), while Southern Health (Santé Sud) had the lowest percentage of 17-year-old females complete for age for this vaccine (49.6%). Within 2014, 17,825 doses of HPV vaccine were administered to children aged 17 years or younger; 87.5% of doses were administered by public health nurses, 11.3% by physicians, and 1.2% by other providers.

Conclusion: As the first cohort eligible to receive the HPV vaccine, the uptake was relatively high. The majority of vaccine doses were provided by public health nurses, indicating most children received this vaccine as part of the grade six school-based HPV immunization program in Manitoba.

Co-Author(s): Alexandrea Anderson, Department of Statistics, University of Manitoba/ Public Health Branch, Manitoba Health, Healthy Living and Seniors/ Joy Wei, Public Health Branch, Manitoba Health, Healthy Living and Seniors/ Carol Kurbis, Public Health Branch, Manitoba Health, Healthy Living and Seniors/ Penny Klassen, Public Health Branch, Manitoba Health, Healthy Living and Seniors/ Kellie Navitka, Public Health Branch, Manitoba Health, Healthy Living and Seniors/ Inga Hossack, Public Health Branch, Manitoba Health, Healthy Living and Seniors/ Mostafizur Rahman, Public Health, Manitoba Health, Healthy Living and Seniors/ Carla Ens, College of Medicine, University of Manitoba/ Public Health, Manitoba Health, Healthy Living and Seniors/ Songul Bozat-Emre, College of Medicine, University of Manitoba/ Public Health, Manitoba Health, Healthy Living and Seniors

C2.2 Telomere Length and Breast Cancer Prognostic Factors

Presented by KAOUTAR ENNOUR-IDRISSI MSc Student, Laval University

C2.3 Metabolite Set Enrichment Analysis about Prostate Cancer

Presented by ELHAM KHODAYARI MOEZ PhD Student, University of Alberta

Background: Encouraged by the recent advances in metabolomics technologies and motivated by this finding that cancer alters cellular metabolism, metabolomics begins to serve a critical role in better understanding of the complex nature of the cancers.

Objectives: Akt and Myc are the most prevalent oncogenes causing prostate cancer. This study aims to investigate if any alteration in these oncogenes expressions deregulates or activates any metabolic pathway.

Methods: We used generalized Linear Combination Test (LCT) for multiple continuous outcomes to find any association between metabolite sets and oncogenes expressions after accommodating the correlation between Akt and Myc expressions and correlation between the metabolites in a metabolite set. We accessed Akt and Myc expressions and 228 metabolites from 61 human tumor samples. This gave us the opportunity of studying 70 metabolite sets defined by KEGG annotation.

Results: We showed that metabolite fingreprints indicate Myc and Akt alteration in prostate cancer. This study found that a linear combination of Akt and Myc is associated with D-Glutamine and D-glutamate (p-value=0.026), Fructose and mannose (p-value=0.031), Purine (p-value<0.01) and Pyrimidine metabolism (p-value<0.01), Fatty acid (p-value=0.03), Valine, leucine and isoleucine degradation (p-value=0.032) and also Nitrogen metabolism (p-value=0.029).

Conclusion: While studies aiming at characterizing altered cellular network mostly used a large number of genes, transcripts or proteins, our work brings additional insight by studying a few numbers of metabolites known. Our findings can contribute significantly in introducing metabolic changes as the early indicators of prostate cancer.

Co-Author(s): Elham Khodayari Moez, University of Alberta/ Saumyadipta Pyne, University of Heydarabad/ Irina Dinu, University of Alberta

C2.4 Exploring the health outcomes of various Pan-Canadian Cervical Cancer screening programs using microsimulation modeling

Presented by JASON LACOMBE MSc Applicant, Canadian Partnership Against Cancer

Background: There is increasing dialogue in Canada on the potential effectiveness of changing from cytology (Pap) to human papillomavirus (HPV) DNA testing for primary screening of cervical cancer. However, the Canadian Task Force on Preventive Health Care has not yet made a recommendation, concluding the evidence is insufficient.

Objectives: This presentation aims to evaluate the clinical impact of Pap, HPV DNA, and combined Pap-HPV DNA testing in the Canadian context using microsimulation through the Cancer Risk Management Model (CRMM) version 2.2, with the goal to inform cancer control policy and decision-making.

Methods: The CRMM was used to project the impacts of 8 different strategies for 2016 to 2046. Variations in the age of screening onset, screening interval and the primary screening modality were examined against a reference scenario based on recommended practice: triennial Pap screening from age 25 to 65. 72% screening and 70% vaccination coverage were assumed. Scenarios included: 2 triennial cytology scenarios from 21 or 25 years until 65; 2 HPV DNA scenarios from 30 to 65 years at intervals of 3 and 5 years; and 4 combined scenarios. Outcomes included: incidence, mortality, number of colposcopies, and cervical cancer screens

Results: Triennial HPV DNA screening from age 30, alone or following Pap that started at age 21 or 25, decreased the number of incident cases and deaths in 2046 compared to the reference scenario. Increasing the interval to 5 years in those cases did not increase incident cases and deaths. Compared to the reference scenario, HPV DNA screening alone every 5 years from age 30 resulted in 55% (82,000) fewer colposcopies and 43% (1,195,000) fewer screens. Triennial Pap starting at 21 years with 5-yearly HPV DNA testing after age 30 resulted in 30% (45,000) fewer colposcopies and 28% (771,000) fewer screens.

Conclusion: Overall, using the CRMM to model the Canadian population, HPV DNA testing alone or following initial Pap as the primary screening modality appears to be an acceptable strategy with respect to incidence and mortality outcomes, and screening resource utilization when compared to Pap-only testing.

Co-Author(s): Jason Lacombe, Canadian Partnership Against Cancer/ Cindy Gauvreau, Canadian Partnership Against Cancer / Saima Memon, Canadian Partnership Against Cancer/ Cathy Popadiuk, Canadian Partnership Against Cancer/ Andrew Coldman, Canadian Partnership Against Cancer/ Michael Wolfaon, University of Ottawa/ Anthony Miller, University of Toronto

C3	GLOBAL HEALTH	R236 REHABILITATION BUILDING

C3.1 Predicting Length of Residence in Public Housing using Linked Population-Based Administrative Data

Presented by AYNSLIE HINDS PhD Student, University of Manitoba

Background: People move in and out of public housing for many reasons, including their health and financial situations. While the average length of residence varies by jurisdiction and household type, little is known about other factors associated with length of residence and whether they vary by the reason for moving out.

Objectives: Our objective was to test the association between length of residence in public housing and demographic, geographic, economic, health status, and health service use characteristics. Additionally, we determined whether there were differences in associations for people who were and were not evicted.

Methods: This study used population-based administrative data from Manitoba. The cohort consisted of individuals moving into public housing in 2007 and 2008. A population registry provided demographic and geographic characteristics. Economic measures included area-level income and receipt of income assistance. Measures of health status and health service use were obtained from hospital, physician, emergency department, and prescription databases. Length of residency in public housing was determined from move-in and move-out dates. Censoring events were loss of health coverage, death, and study end date. Multivariable Cox Proportional Hazards regression produced adjusted hazard ratios (aHRs).

Results: The cohort consisted of 3204 public housing residents. The evicted (14.0%), not evicted (47.9%), and non-mover (38.1%) groups resided an average of 676, 721, and 1880 days, respectively, and differed on most characteristics. Younger (18-24 aHR = 1.94; 25-39 aHR = 1.45) and residentially mobile (aHR = 1.19) individuals, and those with a substance abuse disorder (aHR = 1.25) or an injury (aHR = 1.12) were significantly more likely to move. Urban residents (aHR = 0.84) and income assistance recipients (aHR = 0.77) were significantly less likely to move. When evicted individuals were excluded, health variables were no longer significant.

Conclusion: Demographic, geographic, and health variables were significantly associated with length of tenure in public housing. These factors may help distinguish between individuals likely to have short and long stays and assist housing support workers identify those who may need assistance to have a successful tenancy.

Co-Author(s): Aynslie Hinds, University of Manitoba/ Brian Bechtel, Program Policy Integration, Interagency Council on Homelessness, Family Violence Prevention and Homeless Supports/ Leslie L, Roos, University of Manitoba/ Jino Distasio, University of Winnipeg/ Lisa Lix, University of Manitoba

| C3.2 | Influence of drop-in centres on health of street children in New Delhi: a qualitative study |

Presented by RONITA NATH PhD Student, McMaster University

Background: Street children experience ill health, yet there is little research on interventions that aim to improve their health outcomes. Drop-in centres are one of the most common programs for street children globally; however, they have not been evaluated for how they influence the health of street children.

Objectives: We aimed to understand how drop-in centres influence the physical health, substance use status, and mental health of street children in New Delhi, India, using interpretive description methodology.

Methods: We conducted face-to-face interviews with 23 street children and two drop-in centre staff members in New Delhi using semi-structured interview guides. We asked participants to describe how they believed drop-in centres worked or did not work to influence street children's physical and mental health, and substance use status. We analyzed the interviews using constant comparative methods.

Results: Participants believed that because street children regularly visited drop-in centres, their health outcomes improved. Street children participated in drop-in services rather than services provided by other facilities, because the staff at the centres were nonjudgmental, they were free to be a child, their daily struggles were lessened and they received protection. Staff at drop-in centres also provided children with moral direction and an opportunity for a better life. However, children continued to live on the streets despite what centres offered because street life had become normal for them.

Conclusion: According to street children and drop-in centre staff members, drop-in centres positively influence the physical health, mental health and substance use status of street children by providing services in an environment tailored for street children.

Co-Author(s): Ronita Nath, McMaster University

| C3.3 | In-hospital antibiotic exposure and transmission of MRSA to roommate contacts, 2005-2012 |

Presented by WALLIS RUDNICK PhD Student, University of Toronto

| C3.4 | The double burden of malnutrition among adolescents in 70 low-income and middle-income countries: A meta-analysis and meta-regression |

Presented by CHRISTOPHER TAIT PhD Student, Dalla Lana School of Public Health, University of Toronto

Background: As the global burden of overweight and obesity continues to rise, several low- to middle-income countries, previously characterized by prevalent undernutrition, now face a double burden with overnutrition. The double burden of malnutrition has been well documented in adults but much less is known about this phenomenon in children.

Objectives: We sought to estimate the magnitude and co-occurrences of nutritional indicators that characterize under- and overnutrition in adolescents aged 12-15 years for 70 low-income and middle-income countries between 2003-2013. We also aimed to explore what factors may explain observed heterogeneity of estimates between countries and across regions.

Methods: We extracted Global School-Based Student Health Surveys (GSHS) datasets from the Centers for Disease Control and Prevention. Pooled prevalence estimates of stunting, thinness, overweight/obesity, and the co-occurrence of these nutritional indicators was calculated for WHO regions, stratified by sex, with random-effects meta-analysis. We computed pooled regional estimates by first stabilizing the variances of the raw proportions with a double arcsine transformation and then applying the DerSimonian-Laird random-effects model. We further explored sources of heterogeneity for each nutritional status through random-effects meta-regression analysis. We conducted univariable analyses to test the individual association of a priori country-level covariates with overall pooled estimates.

Results: From 2003-2013, of 68,859 adolescents, 13.3% (95% CI: 11.3-15.4) were stunted, 6.0% (95% CI: 4.8-7.3) were thin, 24.3% (95% CI: 21.6-27.1) were overweight/obese, 18.6% (95% CI: 16.2-21.2) suffered from undernutrition (stunting and/or thinness), and 3.6% (95% CI: 2.8-4.4) suffered from stunting and overweight/obesity simultaneously. Across all WHO regions, the prevalence of stunting and thinness was higher in boys than in girls. The co-occurrence of stunting and overnutrition was also consistently more pronounced in boys than girls across all WHO regions. Substantial heterogeneities within and across regions were in part explained by few covariates including gross national income and food inadequacy.

Conclusion: Malnutrition in every form presents significant threats to human health. In low- and middle-income countries, adolescents carry a substantial double burden of undernutrition and overnutrition. In light of these insights on nutritional challenges faced in some of the poorest countries, prevention initiatives are a major global health priority.

Co-Author(s): Christopher Tait, Dalla Lana School of Public Health, University of Toronto

C4	SURVEILLANCE & SPATIAL/CLINICAL EPIDEMIOLOGY	626 BMSB

C4.1 Association Between Food Insecurity and HIV Viral Suppression: A Systematic Review and Meta-Analysis

Presented by WUSIMAN ABIBULA PhD Student, McGill University

Background: Although increasing number of HIV infected people are accessing antiretroviral treatment, many do not achieve complete HIV viral suppression. Recently, food insecurity has been identified as a potential risk factor for poor virologic response. However, studies describing the association between food insecurity and complete HIV viral suppression have been inconsistent.

Objectives: To summarize the association between food insecurity and complete HIV viral suppression among HIV infected people.

Methods: Electronic databases (PubMed, Web of Science, ProQuest ABI/INFORM Complete, Ovid MEDLINE(R), EMBASE Classic) and bibliographies of relevant studies were systematically searched through April 2015. Studies that quantitatively assessed the association between food insecurity and HIV viral load suppression were eligible for inclusion. Study results were summarized using a DerSimonian and Laird random effects model.

Results: Eleven observational studies were included (7 cross sectional studies and 4 cohort studies) with a total of 7562 participants. Meta-analyzed results revealed that experiencing food insecurity resulted in 29% less odds of achieving complete HIV viral suppression (OR=0.71, 95% CI=0.61, 0.82). This significant inverse association was consistently found regardless of study design, exposure measurement, and confounder adjustment methods.

Conclusion: The pooled estimate indicated that food insecurity is inversely associated with complete HIV viral suppression. Therefore, addressing food insecurity may improve virologic control, treatment outcomes, and possibly curtail HIV epidemics.

Co-Author(s): Wusiman Aibibula, McGill University/ Joseph Cox, McGill University / Anne-Marie Hamelin, McGill University/ Taylor McLinden, McGill University/ Marina Klein, McGill University/ Paul Brassard, McGill University

C4.2 Investigating Ecological Determinants of Malaria Vector Distribution in Rural Tanzania: a Multi-Scalar Investigation

Presented by ESHA HOMENAUTH MSc Student, University of Ottawa

Background: Investigating the similarities and differences in the global, regional, and local factors that influence vector-borne disease transmission is a critical public health need. Yet we still lack a synthetic understanding of the spatial and multi-scalar drivers of vector-borne disease ecology despite the critical contribution spatially-explicit investigations have in intervention strategies.

Objectives: The primary objective of this study is to describe the spatial patterns of malaria vector mosquito in rural villages in Tanzania and to evaluate the relative contribution of ecological factors over multiple scales.

Methods: Trap density of Anopheles mosquitoes were collected from villages in the Hai and Machame districts in the Kilimanjaro region. Key environmental factors collected include temperature, precipitation, land-cover, elevation, vegetation and population density via satellite remote sensing from MODIS, LandScan, BIOCLIM and other sources identified in the literature. Local-scale factors were extracted from raster layers at the household level and at 2 buffer zones (1.5km and 3.0km from the household, determined by maximum mosquito dispersal range) using ArcGIS. The relationship between Anopheles abundance and these environmental factors was determined using stepwise regression and models were compared based on their adjusted-R2 values.

Results: Vegetation and water explained vector density at the household scale, whereas temperature explained vector densities at a regional scale. Predictive strength of different environmental factors on vector distributions varied over different spatial scales.

Conclusion: We identified that spatial scale is an important consideration when assessing the impact of environmental factors on vector density. This work suggests that a multi-scalar spatial approach can allow researchers to understand the scale at which environmental factors operate to influence vector density and subsequent disease transmission.

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C4.3 Efficacy of biologics in juvenile idiopathic arthritis: A network meta-analysis

Presented by CHRISTINE SMITH MSc Student, University of Ottawa

Background: A recent study found that many recommendations in clinical practice guidelines for juvenile idiopathic arthritis (JIA) relied on expert opinion or designs that are weaker than randomized controlled trials (RCTs). With challenges conducting RCTs in pediatrics, the use of other methods will help identify the most effective interventions.

Objectives: To evaluate the efficacy of biologics compared to a control or other active intervention on disease response, reduction of pain and improvement in quality for JIA.

Methods: A systematic review and network meta-analysis (NMA) were conducted. Included studies were RCTs comparing biologics to placebo or active intervention among patients with JIA aged 0-18 years. The primary outcome was the American College of Rheumatology Pediatric 30 (ACR Pedi 30). Secondary outcomes were pain, quality of life, and the six ACR Pedi 30 component outcomes. Medline, Embase and Cochrane CENTRAL databases were searched, along with a hand search. Two reviewers independently selected citations, extracted data and assessed risk of bias of included studies. The NMA used a Bayesian statistical model with random effects. Traditional meta-analyses were also performed.

Results: A total of 537 citations were found and, after duplicate removal, 361 citations continued to abstract screening. After full-text screening of 151 articles, 14 biologics studies were included. The biologic interventions were etanercept, adalimumab, infliximab, abatacept, tocilizumab, anakinra, rilonacept and canakinumab. Placebo was the central node for comparing biologics. Results for the NMA are forthcoming and will present the estimates of relative treatment effects and their 95% credible intervals.

Conclusion: Anticipated results on the comparative efficacy of RCTs in JIA will indicate the biologic interventions most suitable for disease response, reduction of pain and improvement in quality of life. This should be incorporated in future updates of clinical practice guidelines.

Co-Author(s): Christine Smith, University of Ottawa/ Karine Toupin-April, Children's Hospital of Eastern Ontario Research Institute / Lucie Brosseau, University of Ottawa/ Jennifer Stinson, The Hospital for Sick Children/ George Wells, University of Ottawa

C4.4 The role of social cohesion in the promotion of physical activity among adults in communities across Canada: a multilevel analysis

Presented by CALVIN YIP MSc Student, Western University

Background: In Canada, only 15% of adults meet physical activity guidelines for optimal health. Of the many factors that may influence physical activity, social cohesion is particularly interesting because the limited research on it suggests that at both the individual and community level, social cohesion could promote physical activity.
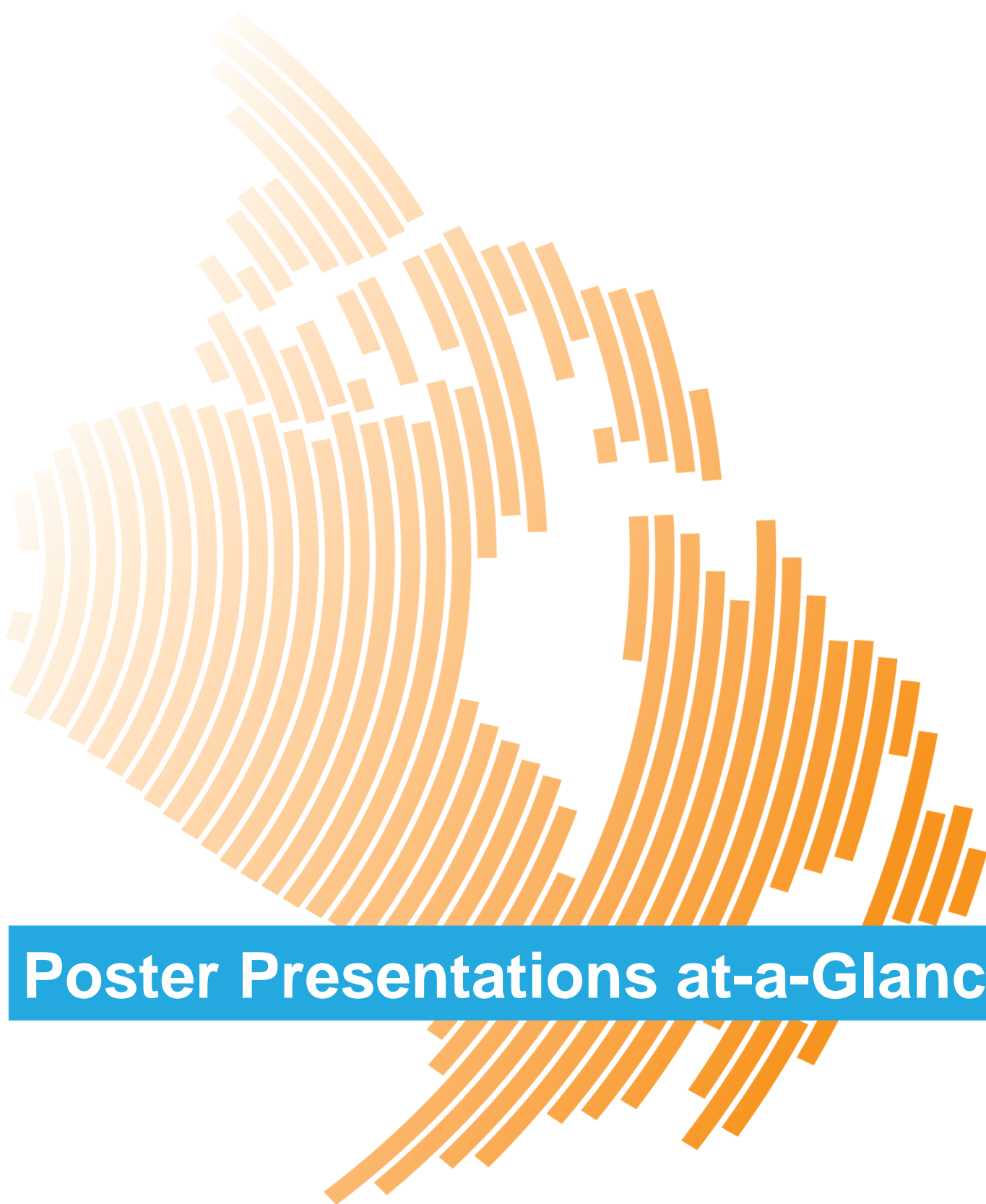
Objectives: The objectives of this study are to assess the effect of both individual- and community-level social cohesion on physical activity, and to determine if these effects are moderated by weight status.

Methods: The 2009-2010, 2011-2012, and 2013-2014 cycles of the Canadian Community Health Survey (CCHS) were combined in this cross-sectional multilevel analysis. Physical activity level was determined by average daily energy expenditure during leisure time. Social cohesion was operationalized as the self-reported score for sense of belonging to the community, and community was defined as an individual Forward Sortation Area (FSA). Social cohesion at the community level was represented by the aggregate mean score for sense of belonging in each FSA. The sample was stratified by weight status, and regression models with mixed effects were used to analyze the data.

Results: The final sample included 224,105 respondents from 1,600 communities. After controlling for the compositional effects of age, sex, household income, and education level, a significant positive association was observed between social cohesion and physical activity level, regardless of whether social cohesion was operationalized at the individual or community level. A larger effect was observed for social cohesion at the community level for both the normal weight and overweight groups. Though still statistically significant, the effect of social cohesion at each level was of a lesser magnitude in the overweight group.

Conclusion: It was promising to see that social cohesion could potentially increase physical activity in both normal weight and overweight adults. Implicitly, public health initiatives promoting social cohesion in communities may increase physical activity regardless of weight status, and ultimately improve health outcomes at the population level.

Co-Author(s): Calvin Yip, Western University

Poster Presentations at-a-Glance

Poster Presentations
Friday June 10 – 9:15am-10:45am

1	Proposing and Analysing Methods which improve the Kaplan-Meier Estimates of De-Identified Time-to-Event Data Presented by **SAMANTHA-JO CAETANO** PhD Student, McMaster University
2	Summary Metrics for Irregular Longitudinal Data Presented by **ARMEND LOKKU** PhD Student, University of Toronto
3	Modeling the covariance matrix of random effects for generalized linear mixed models with covariates measurement errors and missing responses Presented by **MD. ERFANUL HOQUE** MSc Student, University of Manitoba
4	Accurate Confidence Intervals for Small-Sample Clustering Presented by **HARRIS QUACH**
5	Quantile Regression with Rank-Based Sampling Presented by **OLAWALE AYILARA**
6	Accuracy of Health Risk Factor Diagnoses in Administrative Health Databases: A Validation Study Presented by **SAEED ALAZAZI**
7	Moderate-vigorous recreational physical activity and breast cancer risk, stratified by menopausal status: A systematic review and meta-analysis Presented by **MEGAN FARRIS** MSc Student, University of Calgary, Alberta Health Services
8	Telomere Length and Breast Cancer Prognosis: A Systematic Review Presented by **KAOUTAR ENNOUR-IDRISSI** MSc Student, Laval University
9	Association of rs2282679 A>C polymorphism in vitamin D binding protein gene with colorectal cancer risk and survival: effect modification by dietary vitamin D in Newfoundland population Presented by **YUN ZHU** PhD Student, Memorial University of Newfoundland
10	Routine follow-up care after curative treatment of head and neck cancer: A population-based longitudinal analysis Presented by **KELLY BRENNAN** MSc Epidemiology Student, Queen's University
11	The impact of imatinib generic substitution policy in the community Presented by **JULIANO AMADOR DA SILVA** MSc Student, University of Manitoba
12	Evaluating preventive health screening compliance in physicians and non-physicians in Ontario. Presented by **OWEN LITWIN**
13	Baseline Study of Health, Lifestyle and Chronic Disease Risk Factors among Alberta's Tomorrow Project Cohort: Implication for Future Study Presented by **MING YE** Postdoctoral Fellow, University of Alberta
14	Examination of the association between insomnia and the risk of obesity among North American adults Presented by **SORA ABDUL-FATTAH** Undergraduate Student, University of Ottawa
15	Multimorbidity in Canada: A Population-Based Investigation Using Administration Health Data Presented by **ALLISON FEELY** Undergraduate Student, University of Manitoba
16	The Relationship Between Social Isolation, Social Support, and Mental Health Presented by **OKSANA HARASEMIW** MSc Student, University of Manitoba
17	Influence of a Pay-for-performance Program on the Care of Diabetic Patients by Family Physicians in New Brunswick Presented by **EMILIE LEBLANC** MSc Student, Université de Sherbrooke
18	Prevalence and risk factors of tuberculosis infection among healthcare trainees in South India Presented by **MARZIEH GHIASI** MSc Student, McGill University
19	The effect of religious involvement on cognition across the aging lifespan: a systematic review Presented by **SHERA HOSSEINI** PhD Student, University of Waterloo
20	The use of segmented regression to identify if there has been a change in the proportion of adults with intellectual and developmental disabilities receiving an annual health exam from 2003 to 2015 in Ontario, Canada Presented by **GLENYS SMITH** MSc Student, Queen's University
21	Should large urban centres decide how best to use health care services Presented by **SUZANE CLARKE** Medical Student, Dalhousie University
22	Progress and challenges associated with the use of Decision Tree Analysis to Validate the Hamilton Early Warning Score Presented by **MICHAEL XU** MSc Student, McMaster University
23	Design and Analysis of Crossover Trials in Infertility Presented by **DALTON BUDHRAM** Undergraduate Student, McMaster University
24	Study of relationships between cardiovascular disease peaks and weather: application in Quebec and Montreal, Canada. Presented by **YOHANN CHIU**
25	Measuring telemedicine usage and satisfaction in urban and rural Ontario Presented by **JESSICA LOWEY** MHSc Student, Lakehead University
26	Modelling Human Risk of West Nile Virus in Ontario, 2002-2013: Incorporating Surveillance and Environmental Data Presented by **SHRUTI MALLYA** MSc Student, University of Ottawa
27	Avoiding Oxy-moronic Health Policy: Examining Individual Level Prescription Pattern Changes after the Transition to Tamper Resistant Oxycodone Presented by **KEVIN FRIESEN** MSc Student, College of Pharmacy, Faculty of Health Sciences, University of Manitoba
28	The State of Knowledge on PTSD, Depression and Anxiety among Refugee Women in Africa: A Scoping Review Presented by **AKLILE FIKRE WORKNEH** MSc Student, University of Ottawa
29	The risk of pre-eclampsia among HIV-infected mothers: A systematic review and meta-analysis Presented by **CHENOA CASSIDY-MATTHEWS** Undergraduate Student, University of Ottawa
30	Infants born large for gestational age and subsequent development in early childhood Presented by **CAIRINA FRANK** MSc Student, Western University
31	The Adolescent Irritability Scale Presented by **VALBONA SEMOVKSI** MSc Student, McMaster University
32	The effect of the Roots of Empathy program on the use of psychotropic medications among youth in Manitoba Presented by **LINDSEY DAHL** MSc Student, University of Manitoba
33	Overweight and obesity prevalence among James Bay Cree children according to three body mass index classification systems Presented by **AUDRAY ST-JEAN**

Poster Presentations Guide

1 — Proposing and Analysing Methods which improve the Kaplan-Meier Estimates of De-Identified Time-to-Event Data

Presented by SAMANTHA-JO CAETANO PhD Student, McMaster University

2 — Summary Metrics for Irregular Longitudinal Data

Presented by ARMEND LOKKU PhD Student, University of Toronto

3 — Modeling the covariance matrix of random effects for generalized linear mixed models with covariates measurement errors and missing responses

Presented by MD. ERFANUL HOQUE MSc Student, University of Manitoba

4 — Accurate Confidence Intervals for Small-Sample Clustering

Presented by HARRIS QUACH, MSc Student, University of Toronto

Background: Researchers conducting program evaluation on microeconomic data can face hurdles when confronted with clustering and small-sample sizes. In this setting, conventional statistical methods for deriving confidence intervals for the parameters of interest can perform poorly.

Objectives: The goal of my project is to derive accurate confidence intervals in the presence of small-sample clustering, where the error structure is given by a random effects model. Furthermore, I investigate the influence of cluster size and number on the performance of the derived confidence intervals.

Methods: To construct my confidence intervals, I employ higher-order likelihood methods. The approach is based on Barndorff-Nielsen's r*, which is an adjustment to the signed-likelihood ratio and provides third-order accurate inference. I compare the performance of this method against approaches suggested in the econometrics literature for building confidence intervals using robust standard errors. Ideal performance would be achieving nominal coverage rates in simulation. The cluster size and number are varied to assess the influence of these factors on coverage performance.

Results: The preliminary results suggest that higher-order theory provides generally accurate confidence intervals in the sense of achieving nominal coverage rates, whereas competitors can over or under cover by a notable amount. Furthermore, confidence intervals based on higher-order likelihood methods are not as sensitive to cluster size and number as those derived from robust standard errors.

Conclusion: Confidence intervals constructed via higher-order likelihood theory are accurate in the presence of small-sample clustering. This accuracy holds for a few to many clusters of varying sample sizes.

Co-Author(s): Harris Quach, University of Toronto

5 — Quantile Regression with Rank-Based Sampling

Presented by OLAWALE AYILARA, MSc Student, University of Manitoba

Background: Quantile Regression provides a complete picture of the relationship between the response and covariates by estimating a family of conditional quantile functions. It offers a natural solution to the problem of homoscedasticity and sometimes unrealistic normality assumption in the usual conditional mean regression. Most often quantile regression are based on SRS.

Objectives: In this paper, we study the quantile regression with rank-based sampling methods. Rank-based sampling methods have a wide range of applications in medical, ecological and environmental research, and have been shown to perform better than simple random sampling (SRS) in estimating several population parameters.

Methods: We propose a new objective function which take into account the ranking information to estimate the unknown model parameters based on maxima nomination sampling (MNS). Our method explore the distribution of the maximum order statistics and Asymmetric Laplace distribution (ALD) which serves as link between the minimization of sum of absolute deviation and the maximum likelihood method. Assuming the response variable Y follows a ALD, we substitute the density and distribution function of Y in the likelihood of the maximum order statistics to obtain a new objective function. We then maximize the proposed objective function using the M-Estimation approach.

Results: We compare the mean squared error (MSE) of the proposed quantile regression estimate using MNS design and observe that it provides higher relative efficiency when compared with their counterparts under SRS design. The performance of our proposed method outweighs the SRS design even when ranking is done with error. Also, we present in our result the graph of the relative efficiency of the mean squared error.

Conclusion: It is evident that generally the MNS sampling design is more effi
cient than SRS design in estimating the upper quantile. However, the relationship between the response variable and the concomitant (variable used for ranking) plays a key role in rank based design.

Co-Author(s): Olawale Ayilara, University of Manitoa/ Mohammed Jafari Jozani, University of Manitoba

6   Accuracy of Health Risk Factor Diagnoses in Administrative Health Databases: A Validation Study

Presented by SAEED ALAZAZI, MSc Student, University of Manitoba

Background: Administrative health data (AHD) were originally collected for healthcare management and provider remuneration, but are now widely used for population health and health services research. The validity of AHD for research depends on their quality, including the accuracy of diagnoses. AHD are frequently used to predict the risk of chronic disease onset. Two major disease risk factors are smoking status and obesity/overweight. To date, there has been only limited research about the accuracy of obesity diagnoses in AHD, and little, if any research, about the accuracy of diagnoses associated with smoking.

Objectives: The objectives of our proposed research are: (a) To evaluate the accuracy of obesity diagnoses in AHD, and (b) To assess the accuracy of chronic obstructive pulmonary disease (COPD) diagnoses as a proxy for smoking status in AHD.

Methods: This study will be conducted using AHD housed in the Population Health Research Data Repository at the Manitoba Centre for Health Policy: clinical registry data from the Manitoba Bone Mineral Density (BMD) Program (which contains body weight), electronic medical records (EMRs) from the Canadian Primary Care Sentinel Surveillance Network (CPCSSN; which contains both body weight and smoking status), hospital abstracts, physician billing claims, and the population registry. One study cohort will be created using the BMD registry from 2006 to 2015. The second cohort will be created using CPCSSN data from 1994 to 2015 and will include adults who have height and weight and/or smoking status recorded in their EMR. BMD Program and CPCSSN data for the cohorts will be linked to hospital records and physician claims to ascertain diagnosis codes for obesity and COPD. Measures of agreement, sensitivity, specificity, positive and negative predictive value will be estimated for AHD.

Co-Author(s): Saeed Alazazi, University of Manitoba

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7   Moderate-vigorous recreational physical activity and breast cancer risk, stratified by menopausal status: A systematic review and meta-analysis

Presented by MEGAN FARRIS MSc Student, University of Calgary, Alberta Health Services

Background: Living longer with prostate cancer may be associated with factors that negatively impact quality of life (QoL). To date, no research determining QoL trajectory groups in prostate cancer survivors and the impact of changes in physical activity and prognostic factors on QoL trajectory groups has been done.

Objectives: The aim of this study is to identify physical and mental QoL trajectory clusters of prostate cancer survivors based on physical activity and prognostic factors in order to target subgroups of survivors with poor QoL after their diagnosis.

Methods: 830 prostate cancer survivors were derived from a prior case-control study in Alberta, with histologically confirmed, invasive stage T2 or greater, identified through the Alberta Cancer Registry and followed up for cancer outcomes until 2014. Three repeated assessments, taken approximately every two years, collected information on physical activity and QoL, while demographic and prognostic factors were collected at baseline. Further, medical chart abstractions were completed to confirm treatments, record new progressions, reccurrences and mortality. To assess QoL trajectories of prostate cancer survivors, group-based trajectory modeling was used taking into account physical activity changes over time and prognostic factors at diagnosis.

Results: Three trajectories of physical QoL were identified including: consistently average QoL 34.1% (in comparison with the standardized normal values), decreased QoL 40.2% and consistently low QoL 25.7%. In addition, three trajectories for mental QoL were identified: average to slightly increased QoL 71.3%, average to decreasing QoL 16.0% and low to increasing QoL 12.7%. In both physical and mental QoL, dropout (due to morality) was different between trajectories, thus confirming QoL and mortality were closely related. Further, both physical activity and prognostic factors were associated with physical QoL group membership but not consistently associated with mental QoL group membership.

Conclusion: It was possible to define three sub-groups of prostate cancer survivors related to physical and mental QoL, while taking into account physical activity and prognostic factors at diagnosis. This project will provide insights regarding the identification of subgroups of prostate cancer survivors with lower QoL after diagnosis for further intervention.

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8   Telomere Length and Breast Cancer Prognosis: A Systematic Review

Presented by KAOUTAR ENNOUR-IDRISSI MSc Student, Laval University

9 Association of rs2282679 A>C polymorphism in vitamin D binding protein gene with colorectal cancer risk and survival: effect modification by dietary vitamin D in Newfoundland population

Presented by YUN ZHU PhD Student, Memorial University of Newfoundland

Background: A single nucleotide polymorphism rs2282679 A>C in vitamin D binding protein gene has been associated with lower serum levels of vitamin D. No study, especially from Canadian populations, has yet systematically investigated how GC rs2282679 is involved in both colorectal cancer (CRC) susceptibility and prognosis.

Objectives: We investigated whether this genetic polymorphism influences CRC risk or mortality and whether the effects vary by vitamin D intake and tumor molecular phenotype.

Methods: A population-based case-control study was performed in 637 CRC incident cases (including 489 follow-up cases) and 489 matched controls in Newfoundland. The cohort was previously genotyped with the Illumina Omni-Quad 1 Million chip in cases and the Affymetrix Axiom@ myDesignâ„¢ Array in controls. The genotype data on rs2282679 was retrieved from the database for the purpose of the current study. The relationship between the rs2282679 polymorphism and CRC risk was examined using logistic regressions. For those cases with follow-up data, Kaplan Meier and multivariate Cox models were applied to assess the SNP in relation to CRC overall(OS) and disease-free survival(DFS).

Results: Our data showed no significant association of rs2282679 polymorphism with overall CRC risk. However, we observed some evidence for effect modification of rs2282679 genotype and CRC incidence by total vitamin D intake (P interaction=0.019). Survival analysis showed that the polymorphic C allele was correlated with poor DFS of CRC (per-allele HR,1.36;95%CI,1.05-1.77). The effect of this SNP on DFS was limited to BRAF wild-type tumors(HR,1.58;95%CI,1.12-2.23). For OS, carriage of the minor allele conferred an enhanced significant risk for all-cause mortality among patients in higher categories of dietary vitamin D(HR,2.11;95%CI,2.29-3.74;P interaction=0.040), calcium(HR,1.93; 95%CI,1.08-3.46;P interaction=0.043), milk(HR,2.36;95%CI,1.26-4.44;P interaction=0.004), and total dairy product intakes(HR,2.03;95%CI,1.11-3.72;P interaction=0.024).

Conclusion: SNP rs2282679 was not associated with susceptibility to overall CRC, but possibly related to decreased DFS after cancer diagnosis. The effect of this SNP on survival among CRC patients varied by vitamin D, calcium, and tumor BRAF mutation status.

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10 Routine follow-up care after curative treatment of head and neck cancer: A population-based longitudinal analysis

Presented by KELLY BRENNAN MSc Epidemiology Student, Queen's University

Background: Widespread variation has been reported in routine head and neck cancer follow-up practices by Canadian head and neck surgeons including how often appointments occur, how long patients are followed for and what types of surveillance tests are performed. Patients are potentially receiving insufficient and excessive follow-up care, which places a burden on both the patients and the healthcare system.

Objectives: The study objectives are to identify follow-up care practices and factors associated with patients receiving a higher intensity of follow-up care. To gage the impact of the follow-up care practices, overall survival time will be compared among patients receiving high-intensity follow-up care to patients receiving lower intensity of follow-up care.

Methods: The study population for this retrospective cohort study will be identified in the Ontario Cancer Registry (OCR) using ICD-9 diagnosis codes. The cohort is estimated to be 5500 patients between the ages of 35 and 75, diagnosed in Ontario with primary squamous cell carcinoma of the oral cavity, oropharynx, larynx, hypopharynx, nasopharynx or unknown head and neck primary between January 1st 2007 to December 31st, 2012. Variables will be created using data linkages with Institute for Clinical and Evaluative Sciences (ICES) databases such as Ontario Health Insurance Plan (OHIP) and Canadian Institutes for Health Information (CIHI). A descriptive analysis will be used to describe the patterns of follow-up in the province. Factors associated with follow-up care intensity will be identified using logistic regression with generalized estimation equation methods. Kaplan-Meier survival curves and log rank tests will be employed to compare overall survival in high and low intensity follow-up care.

Co-Author(s): Kelly Brennan, Queen's University/ Stephen Hall, Queen's University/ Timothy Owen, Queen's University/ Yingwei Peng, Queen's University

11 The impact of imatinib generic substitution policy in the community

Presented by JULIANO AMADOR DA SILVA MSc Student, University of Manitoba

Background: Imatinib mesylate is an important oral tyrosine kinase inhibitor used in the treatment of chronic myeloid leukemia. The brand name Gleevec™ was first marketed in Canada in 2001 and the generic became available in 2013. Generic substitution has the potential to produce substantial medication savings (Brand: $4,000/month, Generic: $1,000/month).

Objectives: To determine the total yearly expenditure on imatinib. To assess the impact of a generic substitution policy on brand name imatinib prescribing. To estimate the cost savings associated with a generic substation policy.

Methods: All imatinib prescriptions from 2001-2015 in Manitoba were extracted from administrative data from the Manitoba Centre for Health Policy and analyzed with SAS. The total annual expenditure on imatinib was assessed throughout the study period. Users of name brand imatinib were followed after the introduction (April 2013) of generic imatinib and after a policy requiring substitution. The impact of generic substitution on average prescription cost and total population expenditure was assessed. The total population level savings was estimated for 2014, the first full year of generic imatinib availability.

Results: In 2012, the final year before the release of generic imatinib, 5.4 million was spent on Gleevec™. This cost dropped by 72% to $1.5 million in 2014. Only 3.5% ($51 378) of imatinib expenditure was for brand name product. There were 142 patient taking brand name imatinib when generic imatinib was released. The vast majority (98%) made the switch to the generic product. All new patients since 2014 have been started on generic imatinib. The average cost of an imatinib prescription has been reduced by $3,017 (95% CI $2929-$3105) with an estimated annual savings of over $4 million.

Conclusion: The introduction of the generic imatinib and a pharmacy mandated substitution policy has produced substantial savings in Canada. Generic imatinib was released in Canada ahead of the United States and the European Union. Similar approaches in other countries have the potential to generate substantial savings in medication cost.

Co-Author(s): Juliano Amador Da Silva, University of Manitoba/ Kevin Friesen, University of Manitoba/ Shawn Bugden, University of Manitoba

12 Evaluating preventive health screening compliance in physicians and non-physicians in Ontario.

Presented by OWEN LITWIN, MSc Student, University of Western Ontario

Background: In 2015, cancer will be the leading cause of mortality in Canada. Accordingly, 77% of Canadian family physicians routinely recommend cancer screening for eligible patients. Despite this widespread support for screening, it is well established that compliance to cancer screening guidelines is low amongst the general public. Furthermore, personal screening compliance amongst physicians has been understudied. This warrants further investigation since evidence suggests that when physicians are compliant with preventive healthcare behaviors, their patients are influenced to do the same; making physicians uniquely positioned to lead from the front for a number of important preventive health initiatives.

Objectives: The aim of this project is to evaluate cancer screening compliance amongst physicians in Ontario, and to analyze potential associations between screening compliance and various determinants of health such as age, sex, income quintile, residential status, and factors such as country of medical school graduation and physician specialty.

Methods: A cross-sectional, matched cohort study will be conducted using linked databases held at the Institute for Clinical Evaluative Sciences. Physicians will be matched to non-physicians using a 1:4 ratio on the basis of age, sex, income quintile and residential status. Individuals will be excluded if they have certain high risk features such as a history of breast, cervical, or colorectal malignancy, or if they previously underwent procedures (mastectomy, hysterectomy, or colectomy) which preclude them from screening. Compliance will be measured at the individual level as a binary outcome, and Canadian national guidelines for breast, cervical and colorectal cancer screening will be the standard against which compliance will be measured. Multivariable logistic regression will be used to calculate odds ratios when evaluating the primary outcome in the physician and control groups. Secondary analyses will involve stratifying individuals by age, sex, physician specialty and by country of medical school graduation.

Co-Authors: Owen Litwin, University of Western Ontario/ Amit Garg, University of Western Ontario & Division of Nephrology, London Health Sciences Centre/ Eric McArthur, Institute for Clinical Evaluative Sciences (ICES) Western/ Blaine Welk, Western University/ Manish Sood, University of Ottawa

13   Baseline Study of Health, Lifestyle and Chronic Disease Risk Factors among Alberta's Tomorrow Project Cohort: Implication for Future Study

Presented by MING YE Postdoctoral Fellow, University of Alberta

Background: Alberta's Tomorrow Project (ATP) is a population-based cohort study of cancer and other chronic diseases in Alberta. By February 2015, 52,810 Alberta residents aged 35-69 years were recruited, contributing data on health, lifestyle and disease risk factors for future etiological study.

Objectives: To study the baseline characteristics of ATP cohort, including health, lifestyle, social and environmental risk factors of chronic diseases, and distributions of these factors across age, sex and between two phases of recruitment.

Methods: ATP participants were recruited in two phases: Phase I (2000-2008, n=29,878) by telephone random digital dialing (RDD) method and Phase II (2008-2015, n=22,932) by volunteer sampling methods. Descriptive statistics were calculated for factors that were collected using self-administered questionnaire, including socio-demographic, anthropometric, health, nutrition and diet, physical activity and environmental factors. Bi-variate analyses (chi-square tests, student t-tests and ANOVA) were conducted to examine the distribution of these factors across different groups and between recruitment phases.

Results: Overall, at enrollment ATP participants were 51.2 (SD=9.4) years old. The majority (64%) of participants were female and half of them never smoked. The average body mass index (BMI) was 28.6 (SD=5.8) kg/m2. Hypertension was reported by 22%, diabetes by 5.5% and history of MI and stroke by 1.5% and 0.8% respectively, of total participants. Compared to Phase I, Phase II participants were 2.7 years older, had higher household incomes, greater education attainment, and more likely to be obese, but less likely to have smoked, had lower self-rated health, consumed fewer fruits and vegetables, and less physically active.

Conclusion: Phase I and Phase II participants were different in the presented socio-demographic, health and lifestyle factors. Despite better sociodemographic indicators, Phase II participants appeared to have a poorer health and lifestyle profile. This suggests that while aiming primarily at "healthy" individuals, ATP cohort represents a more diverse population in Alberta.

Co-Author(s): Ming Ye, University of Alberta/ Paula Robson, CancerControl Alberta, Alberta Health Services/ Jian-Yi Xu, CancerControl Alberta, Alberta Health Services/ Jennifer Vena, University of Alberta/ Dean Eurich, University of Alberta/ Jeffrey Johnson, University of Alberta

14   Examination of the association between insomnia and the risk of obesity among North American adults

Presented by SORA ABDUL-FATTAH Undergraduate Student, University of Ottawa

Background: Sleep is essential for human survival and a lack thereof leads to serious impairments in well-being. Insomnia is one of the most prevalent sleep disorders, with 30% of the adult population reporting at least one symptom. Given the rising epidemic of obesity, investigation of all associated risk factors is vital.

Objectives: A literature review was conducted to assess evidence regarding the association between insomnia and the risk of obesity among North American adults. If insomnia is found to increase the risk of obesity in the adult population, it could have significant impacts on an individual's quality of life.

Methods: A structured literature review was conducted through database searches in PubMed, Medline, and ScienceDirect using the keywords "insomnia", "obesity", and "risk of obesity". The adult cohort ranged from 20 to 65 years of age and more than 1 in 3 North American adults are classified as obese. The articles selected were peer-reviewed, published after 2000, based on the human North American population, available in full-text, and in the English language. Exclusion criteria included areas outside of North America, as well as child or adolescent age groups; this limits generalizability of the results to the overall population and other locations.

Results: Findings suggest that insomnia is associated with an increased risk of obesity. Shorter sleep durations (less than or equal to 5 hours) are linked to lower leptin levels and higher ghrelin levels. Chronically elevated levels of glucocorticoids associated with adults who experience insomnia may predispose them to increased fat storage and overconsumption of high fat and high sugar foods. The 14 studies examined in the literature review all demonstrated a statistically significant relationship between the two observed variables. Findings bring attention to a risk factor that may otherwise be overlooked in obesity prevention, thus emphasizing the importance of adequate sleep.

Conclusion: There is a positive association between insomnia and the risk of obesity among North American adults. Further investigation of the synergistic effect between insomnia and obesity is suggested. Additional research involving prospective longitudinal studies with larger sample sizes is required to confirm the strength and direction of the association.

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15 Multimorbidity in Canada: A Population-Based Investigation Using Administration Health Data

Presented by ALLISON FEELY Undergraduate Student, University of Manitoba

Background: The surveillance of multimorbidity, the co-occurrence of two or more chronic diseases, is important to inform health promotion and disease prevention activities. Currently, the Canadian Chronic Disease Surveillance System (CCDSS) focuses on estimating the prevalence of individual chronic diseases, but has not previously been used to estimate multimorbidity prevalence.

Objectives: The research objective was to apply the CCDSS methodology to estimate the prevalence of multimorbidity for Canada and its provinces/territories by age group, sex, fiscal year, and different definitions of multimorbidity.

Methods: Administrative health databases, including hospital records, physician billing claims, and population registration files, from 10 provinces/territories and five validated chronic diseases or disease groups (cardiovascular disease, respiratory disease, mental illness, hypertension, and diabetes) were used to estimate multimorbidity prevalence by age and sex. Different definitions of multimorbidity were applied to the data, including 2 or more conditions and 3 or more conditions. Age-standardized and age-specific estimates were produced, along with 95% confidence intervals, for fiscal years 2001/2002 to 2011/2012. The data were descriptively analyzed.

Results: The overall national prevalence of the co-occurrence of two or more chronic diseases, the most common definition of multimorbidity, for 2011/2012 was 26.4%, a 22.7% increase from 2001/2002. The national prevalence of the co-occurrence of three or more chronic diseases was 10.1% for 2011/12.There were no consistent patterns across the provinces and territories, although prevalence tended to be highest in the territories. Multimorbidity prevalence was generally higher in men than women. Prevalence also increased with age; it was 66.2% for the definition of 2+ chronic diseases in the 85+ age group, compared to 7.8% in the youngest age group (40-44).

Conclusion: CCDSS multimorbidity prevalence estimates were slightly lower than those from previous population-based studies, likely because a smaller number of diseases were included. While this study demonstrates the implementation of a standardized methodology, further research is needed to expand the number of conditions and address possible misclassification bias in case definitions.

Co-Author(s): Allison Feely, University of Manitoba/ Lisa Lix, University of Manitoba

16 The Relationship Between Social Isolation, Social Support, and Mental Health

Presented by OKSANA HARASEMIW MSc Student, University of Manitoba

Background: Research has shown that social isolation is prevalent among community-dwelling older adults and is a risk factor for poor mental health. However, there is a need to further examine both structural (type of social network) and functional aspects (social support) of social networks, and how they relate to mental health.

Objectives: The main objective of this study was to examine whether social support mediates the relationship between different social network groups that range from more socially isolated to more socially integrated individuals, and mental health.

Methods: Using data from the baseline questionnaire of the tracking cohort of participants in the Canadian Longitudinal Study on Aging (n=8782), k-means cluster analysis was first conducted to group individuals ages 65 to 85 years old into different levels of social network integration clusters, based on their structural social network characteristics (e.g., frequency of contact with family and friends). The clusters were subsequently used as predictor variables in a series of mediation analyses to test whether social support mediated the relationship between social integration level and mental health.

Results: Three levels of socially integrated individuals, ranging from most socially integrated, moderately integrated, and socially isolated, were used in the mediation analyses. Univariate analyses indicated that with decreasing social integration level, individuals fared increasingly worse in terms of their mental health outcomes (self-rated mental health, depression, diagnosed mood disorder, loneliness, and satisfaction with life), as well as in terms of social support. Furthermore, in the mediation analyses, statistically significant indirect effects, through the mediator of social support, were found between social integration level and all five mental health outcomes, an effect that was strongest for the most socially isolated individuals.

Conclusion: Results indicate that the relationship between social isolation and mental health is mediated by social support, an effect that is strongest for the most socially isolated. Findings from this study can provide a framework for identifying social network factors that place individuals at risk of becoming socially isolated.

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17 | Influence of a Pay-for-performance Program on the Care of Diabetic Patients by Family Physicians in New Brunswick

Presented by EMILIE LEBLANC MSc Student, Université de Sherbrooke

Background: With increasing costs associated to diabetes management, many jurisdictions are using pay-for-performance programs to entice family physicians to follow practice guidelines when caring for their diabetic patients. The impact of such programs on the health of patients remains elusive.

Objectives: The objective is to determine whether glycemic control (A1C) of diabetic patients was improved following the introduction of an incentive program in New Brunswick in 2010. Three outcomes were considered: frequency of A1C testing, probability of having had at least two A1C tests per year, and average A1C of patients.

Methods: Administrative data from all patients with A1C tests were acquired from the New Brunswick Department of Health. Both repeat cross-sectional and cohort-based (2001-2014) analyses were conducted. Patients were divided in two groups based on whether their family physician claimed the incentive or not. Multivariate analyses were conducted to compare pre and post-incentive period frequency of A1C (Poisson), probability of having had two tests per year (logistic) and mean A1C (linear). The same outcomes were compared between patients for whom an incentive was claimed and those for whom it was not claimed after 2010.

Results: As the analyses are still underway, we cannot confirm any final result but hypothesize that physicians who maintain good glycemic control for their patients before the implementation of the program will not have changed their practice after the availability of the incentive programs. Preliminary analyses reveal that A1C control is best before implementation (7,1% vs 7,4%) and that A1C testing increases after the implementation of the incentive program (2,0 vs 2,2).

Conclusion: This comprehensive overview of the influence of the incentive program destined for the care of diabetic patients in New Brunswick will help understand how the incentive program affects the health of these patients and to consider if investments in such programs are helpful to our communities.

Co-Author(s): Emilie Leblanc, Université de Sherbrooke

18 | Prevalence and risk factors of tuberculosis infection among healthcare trainees in South India

Presented by MARZIEH GHIASI MSc Student, McGill University

19 | The effect of religious involvement on cognition across the aging lifespan: a systematic review

Presented by SHERA HOSSEINI PhD Student, University of Waterloo

Background: Preserving cognitive health is a crucial aspect of successful aging. We propose to conduct a systematic review and explore the association between religious involvement (RI) and cognition across the aging lifespan from young adulthood to old age.

Objectives: We will conduct a systematic review of the literature in order to establish the current scope of knowledge on religious involvement (RI) and cognitive function.

Methods: We will assess the risk of bias of included articles using the Newcastle-Ottawa Scale and evaluate the strength of evidence using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach. We will qualitatively synthesize the extracted data from all included articles and for subsets of studies that are sufficiently homogeneous in terms of sample characteristics, measures of RI and cognition, and methods, we will pool results using meta-analysis. We estimate that the results of the review would be available in time for the conference.

Co-Author(s): Shera Hosseini, University of Waterloo/ Ashok Chaurasia, University of Waterloo/ Martin Cooke, University of Waterloo/ Mark Oremus, University of Waterloo

20 | The use of segmented regression to identify if there has been a change in the proportion of adults with intellectual and developmental disabilities receiving an annual health exam from 2003 to 2015 in Ontario, Canada

Presented by GLENYS SMITH MSc Student, Queen's University

Background: Over the past decade, annual heath exams have been de-emphasized for the general population but in 2006 and again in 2011 the Canadian consensus guidelines were published emphasizing the need for an annual health exam for adults with intellectual and developmental disabilities.

Objectives: Our objective was to compare the proportion of adults with and without intellectual and developmental disabilities who have received a health exam each year from 2003/04 to 2014/15 to see if there has been a change over time.

Methods: Administrative health data was used to calculate the proportion of adults (18-64 years old) with and without intellectual and developmental disabilities who received a health exam each year. The comparison group was hard matched on sex and propensity score matched on age, morbidity, neighbourhood income, and rurality. An annual health exam was defined using three different Ontario Health Insurance Plan billing code combinations (A003 only, A003 with diagnostic code 917 and K131, and A003 and K131). Poisson segmented regression controlling for age was used to compare the trend between groups for each of the annual health exam definitions.

Results: Results will be available at time of conference.

Conclusion: Conclusions will be available at time of conference.

Co-Author(s): Glenys Smith, Queen's University/ Hélène Ouellette-Kuntz, Queen's University/ Micheal Green, Queen's University

21   Should large urban centres decide how best to use health care services

Presented by SUZANE CLARKE Medical Student, Dalhousie University

Background: Needs-based approaches for assessing key healthcare policy issues must define how need should be measured and a standard level of healthcare resource use given need should be estimated. Different population choices can be used to establish this standard, though the implications of this choice on estimates historically has been ignored.

Objectives: A need-based approach is widely used to examine health equity issues. It estimates need-expected use based on a standard level of use given need. We assessed how need-expected inpatient hospital use differ depending on whether the standard was estimated for all Canadians, Canadian regions, or high income Canadians.

Methods: Data used was the 2009/2010 Canadian Community Health Survey. The measure of health care was self-reported inpatient hospital use. Using zero-inflated negative binomial regression, we modeled inpatient hospital use separately based on the choices of population, Canadians (counting each individual in the population equally), Canadian regions (counting each region in the population equally by giving equal weight), and high income Canadians (modeling among the above average income groups). We adjusted for demographic, health behaviour, health status, socioeconomic, and health care supply factors. We then estimated need-expected inpatient hospital use and compared the estimates across individuals and by income and province.

Results: Overall, parameter estimates from the three models with different choices of population were similar. Choice of population resulted in small differences in the estimates of average need-expected hospital inpatient use by province or income group. Differences were larger in the income comparison than the provincial comparison. Differences in the estimates of average need-expected use were the most pronounced among the low income group. Across the provinces, differences due to choices of population were the smallest for Alberta and largest for Quebec. While choice of population did result in some small differences, how provinces rank in need did not alter.

Conclusion: Choice of population defining standard resource use given need is an important consideration if it alters winners and losers in allocation decisions. Our results suggest this is not the case. Future research should explore generalizability of our results to other types of healthcare services including general practitioner or specialists services.

Co-Author(s): Suzanne Clarke, Dalhouise University/ Yukikio Asada, Dalhousie University/ George Kephart, Dalhousie University

22   Progress and challenges associated with the use of Decision Tree Analysis to Validate the Hamilton Early Warning Score

Presented by MICHAEL XU MSc Student, McMaster University

Background: Early warning scores track patient deterioration and condition prior to critical events such as code blue. These scores were designed through a trial and error process. Decision trees (DT) partitions data into homogenous groups, minimizing impurity within the group. DT can generate similar decision structures to early warning scores

Objectives: Our primary objective was to compare the performance of the existing electronic Hamilton Early Warning Score (HEWS) with an early warning score generated using decision tree analysis. Our secondary objective was to validate the existing HEWS.

Methods: DT analysis was used to construct a decision tree early warning score (DTHEWS) from a database of 170160 vital sign observations. DTEWS was evaluated on its ability to classify and predict patients at risk of having a code blue event, an unanticipated ICU transfer, or death within 24 hours of a given vital sign being taken. Each vital sign was classified as it's own decision tree, mimicking the structure of HEWS, a tree containing all vitals was also generated. The areas under the receiver operating curves and number needed to evaluate for HEWS and DTEWS were compared to evaluate performance.

Results: The study is ongoing and preliminary results have been collected for heart rate (HR) as beats per minute, systolic blood pressure (SBP) in mmHg, and respiratory rate (RR) as breaths per minute. Results indicate that for HR, values < 25 or > 121 are strong classifiers of critical events; classifiers for SBP were values < 82 or > 154, increased SBP had poor discriminative ability; classifiers for RR were > 20 or < 13. Weighting was applied during analysis to critical events, due to the imbalance of outcomes being predicted for. These preliminary results are similar to the criteria of the HEWS.

Conclusion: DT analysis provides a rapid and robust method for generation of patient outcome prediction models. Preliminary results indicate that DTHEWS follows similar structure to the current HEWS criteria. Additional methods other than weighting, such as bagging and majority voting, will be explored to address the imbalance

Co-Author(s): Micahel Xu, McMaster University/ Alison Fox-Robichaud, McMaster University/ Erin Kelleher, Hamilton Health Sciences/ Lehana Thabane, McMaster University

23   Design and Analysis of Crossover Trials in Infertility

Presented by DALTON BUDHRAM Undergraduate Student, McMaster University

Background: In randomised crossover (CO) trials, participants receive two or more alternative treatments in successive time periods. This yields within-person comparison of outcomes, which is typically more precise than other designs. In some situations, however, participants leave the study when a successful outcome occurs. The data analysis is then problematic, because the differential selection of subjects who continue to the second and later time periods can bias the estimated treatment effect. The extent to which proposed analytic approaches optimise unbiasedness and precision of the estimated treatment effect are largely unknown. The CO design is particularly attractive to evaluate interventions for infertility.

Objectives: To identify and compare (via simulation) available methods for the design and analysis of CO trials, where the outcome of interest may be achieved after the initial randomization. We will also examine how these approaches have been used in clinical practice in the context of infertility research.

Methods: We will build search strategies to retrieve trials on current infertility interventions employing a CO design. We will empirically survey how often the CO design is used in infertility trials relative to other study designs. The trials will be classified by their analytic methods (e.g. modified parallel group trials, re-randomization in the second period, or the Mantel-Haenszel method) and each of these methods will be evaluated. To assess the strengths and weaknesses of the alternative analytic approaches, Monte Carlo computer simulation will be used. The simulation will identify the biases in the estimated treatment effect, and the estimates with the lowest standard errors or lowest mean squared errors. These results will be used to determine the optimal analytic approach. We will additionally comment on how often these proposed analytic strategies are implemented in clinical practice.

Co-Author(s): Dalton Budhram, McMaster University/ Stephen Walter, McMaster University

24   Study of relationships between cardiovascular disease peaks and weather: application in Quebec and Montreal, Canada.

Presented by YOHANN CHIU, PhD Candidate, Institut national de la recherche scientifique

Background: Meteorological conditions affect cardiovascular diseases (CVDs). Studies traditionally focus on means for an overall point of view. However, mean events are very different from "peaks", which cause management issues in the public health network (e.g. overflow in hospital emergency rooms) and are not fully apprehended by working on the mean.

Objectives: It is necessary to understand the relationships between peaks (not all observations) and weather, in order to better forecast and reduce climate change consequences. This study aims at establishing and analyzing relationships between CVD-related hospitalisations and deaths peaks and meteorological conditions using appropriate statistical tools, for improvement of health warnings.

Methods: CVD peaks are selected in Quebec and Montreal (Canada) with tools from the extreme value theory. In order to understand relationships between CVDs peaks and meteorology, the Generalized Additive Models (GAMs) are used. GAMs are known in public health for their adaptability in presence of non-linear relationships. GAMs are compared to quantile regression, which can quantify weather effects in various extreme quantiles of the health variables. In this study, the methodology is different from the classical case because of the peaks scarcity (raw observations>10000 compared to peaks≪100). Besides, meteorological variables are lagged since their effects can extend to several days.

Results: The results show that temperature, humidity, precipitations and snow have a significant impact on hospitalisations and deaths peaks, although different from the classical case, whereas atmospheric pressure does not. Moreover, temperature has a major influence on the health variables (explained deviance over 40%). In this study, the main difference with the classical case resides in the much higher explanatory power of the meteorological variables when peaks are involved, compared to the average situations. This may be because the meteorological variables effect is diluted when considering the mean events. This indicates the need to treat peaks separately with appropriate tools.

Conclusion: The peaks and weather relationships analysis displays new insights compared to the classical case. This study brings a better understanding of peaks and will help improve sanitary alerts and health care management. Furthermore, in a climate change context, these approaches also allow for modeling the impact of future meteorological extremes.

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25   Measuring telemedicine usage and satisfaction in urban and rural Ontario

Presented by JESSICA LOWEY MHSc Student, Lakehead University

26 Modelling Human Risk of West Nile Virus in Ontario, 2002-2013: Incorporating Surveillance and Environmental Data

Presented by SHRUTI MALLYA MSc Student, University of Ottawa

Background: West Nile Virus (WNV) is an emerging mosquito-borne disease in North America. Though often asymptomatic, infection with the virus can result in febrile illness or rarely, neurologic disease. In recent years, WNV has become a disease of public health concern in North America with many agencies undertaking preventive measures.

Objectives: The current study aims to combine environmental, census and historical mosquito and human surveillance data for Ontario to create a WNV case prediction model to identify risk factors at the public health unit (PHU) level and provide insight for public health intervention.

Methods: A dataset incorporating monthly historical climate, landcover, census populations, daily historical human cases and daily mosquito WNV testing results from 2002-2013 was compiled. Mean monthly min/max temperature and mean monthly precipitation estimates were generated for each PHU centroid by NRCAN. Percent of PHU falling under each landcover class and PHU area were generated in ArcMap 10.3. Human WNV cases and percent positive mosquito pools were aggregated weekly. A Poisson regression model was developed in SAS using backwards selection to predict weekly human WNV case counts.

Results: Among the climate variables, mean minimum temperature of winter months ($p<0.001$), mean maximum temperature of spring and early summer months ($p<0.001$) and mean monthly precipitation of early spring and late summer months were significant predictors of human WNV ($p<0.05$). Among the land cover variables, settlement and developed land was most significant. Significant demographic variables included population density and percent male population ($p<0.05$). Percent mosquito WNV positive pools in the current week and 2 weeks prior were also significantly associated ($p<0.001$).

Conclusion: The use of environmental and surveillance data shows promise for predicting human WNV and informing public health decision-making. By understanding risk factors at the PHU level, we may be able to predict the spread of the virus as the climate and demographics of Ontario change over time.

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27 Avoiding Oxy-moronic Health Policy: Examining Individual Level Prescription Pattern Changes after the Transition to Tamper Resistant Oxycodone

Presented by KEVIN FRIESEN MSc Student, College of Pharmacy, Faculty of Health Sciences, University of Manitoba

Background: OxyContin™, a long acting oxycodone tablet, was introduced to Canada in 1999 and became infamous as a drug of abuse. OxyNeo™, an abuse deterrent reformulation, was released in 2011 to replace OxyContin™. Claims that this switch resulted in patients seeking alternative opioids without these properties have been made

Objectives: To determine the response among long term OxyContin™ users to the switchover to OxyNeo™.

Methods: A retrospective longitudinal analysis using administrative health care data was conducted using prescription records from the provincial prescription monitoring program. A cohort of all chronic users of OxyContin™ between September 1 and December 31 2011 was constructed. Prescription records in the 3 months following the end of their last OxyContin™ dispensation were analyzed and rates of switching to OxyNeo™, other oxycodone formulations, other opioids, or opioid discontinuation were determined. The persistence of OxyNeo use among those who switched was examined over the following year.

Results: There were 1365 regular users of OxyContin™ identified. Of these, 1244 (91%) continued on a long acting opioid, 78 (5.7%) switched to a short acting opioid, and 43 (3.2%) had no opioid prescriptions. Of those persons that continued using long-acting opioids, 1146 (92%) switched over to OxyNeo™ immediately. Of those who switched to OxyNeo™, 89% filled 5 or more OxyNeo™ prescriptions, and the median persistence of 12 prescriptions. There were 69 (6.0%) OxyNeo™ switchers who later filled prescriptions for long-acting hydromorphone, 30 (2.6%) who filled prescriptions for long-acting morphine, and 33 (2.9%) who filled prescriptions for generic versions of OxyContin™.

Conclusion: The delisting of OxyContin™ in Manitoba resulted in the majority of regular users switching to its abuse deterrent formulated replacement OxyNeo™, with a smaller numbers of patients switching to other long-action opioid products. Most persons who switched to OxyNeo™ persisted with its use.

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28 The State of Knowledge on PTSD, Depression and Anxiety among Refugee Women in Africa: A Scoping Review

Presented by AKLILE FIKRE WORKNEH MSc Student, University of Ottawa

Background: With over 15 million refugees under the care of UNHCR, the 21st century is at its apex with humanitarian crisis. The world has seen a 45% increase in the refugee population since 2011, with Africa home to close to one third of the refugee population (4,1 million). While reasons for fleeing vary, ranging from political unrest to famines, the WHO estimates that 5 to 10% of people having experienced emergency settings suffer from mental health related problems. Research further suggests that refugee women have higher mental illness prevalence such as PTSD, depression and anxiety in comparison to men.

Objectives: The purpose of this study is to identify: the prevalence of PTSD, depression and anxiety among refugee women in African camps, the services available to treat the mental health problems, the gaps in knowledge and the experiences of refugee women in regards to mental health in African camps.

Methods: This will be achieved through a scoping review. Articles will be pooled using search databases such as MEDLINE, PsycINFO, Global Health, CINHAL, PILOTS, and Sociological Abstracts. Relevant grey literature and non-peer reviewed databases will be searched. Qualitative and quantitative studies published between 2000 and 2016, pertaining to refugee women in African camps: 1.seeking help for mental health disorders (PTSD, depression and/or anxiety), and 2. experiencing the aforementioned mental health problems; published in French or English will be included. Two independent reviewers will screen the articles included and conflict will be resolved by a third reviewer. Risk of bias and the quality of each article will be assessed prior to inclusion. Depending on the homogeneity of the studies included, a meta-analysis or a narrative synthesis will be done.

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29 The risk of pre-eclampsia among HIV-infected mothers: A systematic review and meta-analysis

Presented by CHENOA CASSIDY-MATTHEWS Undergraduate Student, University of Ottawa

Background: HIV affects over 30 million people around the world. Antiretroviral therapies now make it possible for HIV-infected women to give birth with little risk of mother-to-child transmission. There are concerns about the effects of HIV on adverse pregnancy outcomes, particularly preeclampsia, a hypertensive disease characterized by gestational hypertension and proteinuria.

Objectives: Conduct a systematic review and meta-analysis to synthesize the existing evidence for the prevalence of preeclampsia among HIV-infected women.

Methods: Six major databases were searched on November 22nd, 2015 using key words like "preeclampsia" and "HIV" and variations, including MeSH terms. Studies that met specified inclusion criteria and contained sufficient data were included in a meta-analysis using Cochrane's Review Manager 5.3 software, and a summative odds ratio was calculated. All articles that met inclusion criteria, including those that were only incorporated in qualitative synthesis due to insufficient data for quantitative analysis, were critically appraised using CASP checklists.

Results: The search strategy recalled 437 articles. After filtering based on specified inclusion criteria, 13 articles were included in qualitative synthesis, 9 of which provided sufficient data to perform a meta-analysis. Most articles scored a high risk of bias and were generally of low quality. The summative odds ratio calculated in the meta-analysis was 0.96 [0.56, 1.67], showing no association between preeclampsia and HIV.

Conclusion: According to this review and meta-analysis, the prevalence of preeclampsia is not different between HIV-positive and HIV-negative women. However, the current body of literature presents a high risk of bias. Future research should focus on the effects of antiretroviral treatment on perinatal outcomes.

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30 Infants born large for gestational age and subsequent development in early childhood

Presented by CAIRINA FRANK MSc Student, Western University

Background: Sub-optimal uterine environment is thought to have short and long-term effects, however, most literature discusses those born small for gestational age. Infants born large for gestational age (LGA) have a higher risk for obstetrical complications and longer-term health effects. The association between LGA births and subsequent development is considered less.

Objectives: The objective of this study is to investigate whether being born LGA is associated with a greater risk of poor developmental attainment (PDA). Moreover, the study seeks to examine the attribution of upstream risk factors and downstream mechanisms for this risk, with a particular focus on metabolic pathways.

Methods: Data from the National Longitudinal Survey of Children and Youth were used, limiting to single births, and those where the biological mother was the respondent. LGA was defined as a birth weight >90th percentile for gestational age and sex. PDA was defined with two methods: as scoring <15th percentile on the Peabody Picture Vocabulary Test for cognitive development, or scoring in the top 10th percentile on externalizing behaviour scales for behavioural development. A directed acyclic graph guided analysis. Logistic regression, stratified by sex, was used to examine whether LGA was associated with PDA.

Results: In progress.

Conclusion: Literature is mixed in regards to associations between LGA and development, and exact mechanisms are still in need of clarity. Few studies have considered essential factors such as parenting and stimulation, or child sex, potentially discounting significant differences between boys and girls. This research hopes to address these gaps.

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31 The Adolescent Irritability Scale

Presented by VALBONA SEMOVSKI MSc Student, McMaster University

Background: Irritability, a common presenting symptom in youth is a criterion for various DSM psychiatric disorders. To date, there is one measure of irritability in adolescents. This study modified the Born-Steiner Irritability Scale (BSIS) for use in adolescents, named the Adolescent Irritability Scale (AIS), and assessed the scale's preliminary psychometric properties.

Objectives: The primary objectives of the study were to test (i) face validity of the AIS to adolescents (ii) reliability and factor structure of the AIS and (iii) examine the external validity of the scale by comparing correlations across informants, with self-report of irritability and with symptoms of depression.

Methods: Research was conducted at a tertiary pediatric hospital outpatient psychiatry clinic in Hamilton. Tools that were used in the assessments of irritability and psychopathology included: Adolescent Irritability Scale (AIS): Self-Rating (SR) and Observer-Rating (OR), Beck Depression Inventory II (BDI II), Multidimensional Anxiety Scale for Children (MASC), Behaviour Problem Checklist (DSM-IV Disruptive Behaviour Disorder Checklist). All measures administered at Time 1 whereas the AIS was also completed 2 weeks later. Descriptive statistics were done in SPSS and factor analysis in MPlus.

Results: 121 adolescents ages 12-18 years (mean age = 15.15 years, SD = 1.67) completed the study. The AIS showed acceptable reliability (Cronbach's Î± = .88). Median scale scores were significantly correlated across time (r = 0.62, p= 0.05). Factor analysis was inconclusive, with item response analysis suggesting greater evidence of a one-factor model. The AIS was significantly correlated with the observer rating (r = .74, p < .01) and with depressive symptoms as measured by the BDI (r = 0.39, p = 0.01)

Conclusion: AIS identifies a reliable construct of irritability in youth. Irritability is moderately correlated with depression which may be due to the clinical nature of the sample. It is unclear whether irritability is a unidimensional construct based on the AIS model. Further assessment of the AIS in non-clinical samples is important.

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32   The effect of the Roots of Empathy program on the use of psychotropic medications among youth in Manitoba

Presented by LINDSEY DAHL MSc Student, University of Manitoba

Background: The Roots of Empathy (ROE) program was first piloted in Manitoba schools during the 2001/02 school year and has been implemented every year since. The aim of the program is to strengthen essential social skills through empathy development in children. Research has demonstrated the programs' ability to effectively achieve these objectives; however, more distal and unintended outcomes of the program have not been studied. Given the mental health promoting potential of the program, it may have a beneficial impact on the rising use of psychotropic medications among youth that has been reported in recent decades.

Objectives: The objective of this study is to determine if the Roots of Empathy program reduced the risk of being dispensed a psychotropic medication among youth who have previously participated in the program in Manitoba.

Methods: This study will use administrative health, education, and social service records for youth in Manitoba to estimate the effect of the ROE program on future psychotropic medication use. Children who participated in the program between the 2002/03 to 2013/14 school years will be identified and compared to a control group who will be selected through hard matching and propensity score methods. Children from both groups will be followed and observed for the occurrence of being dispensed a medication from 5 subclasses of psychotropic medications, which include antidepressants, anxiolytics, psychostimulants, antipsychotics, and hypnotics and sedatives. Kaplan-Meier survivor curves and Cox proportional regression models will be used to compare and describe the survival experience between the two groups. Analyses will be conducted on a composite outcome for being dispensed any psychotropic medication, as well as separate analyses for each of the subclasses of psychotropic medications.

Co-Author(s): Lindsey Dahl, University of Manitoba

33   Overweight and obesity prevalence among James Bay Cree children according to three body mass index classification systems

Presented by AUDRAY ST-JEAN, MSc Student, Université Laval

Background: Age and sex-specific body mass index (BMI) is the most commonly used method to assess weight status in children. However, different cut-offs values generate inconsistent prevalence estimates of overweight and obesity. Little is known about the suitability of these BMI classification systems for Indigenous children.
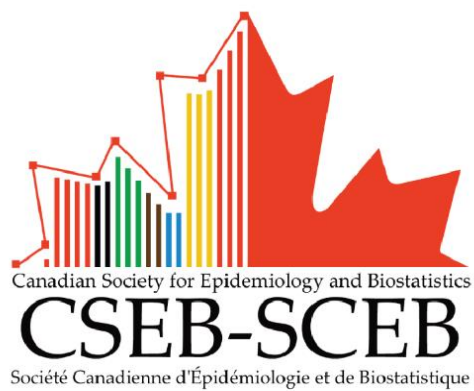
Objectives: This study aimed to estimate overweight and obesity prevalence estimates among James Bay Cree children (northern Quebec) according to three BMI classification systems, assess the agreement between these growth references, and evaluate their accuracy using body fat and cardiometabolic risk factors as surrogates of obesity-related outcomes.

Methods: Data were collected on 288 children from the cross-sectional Nituuchischaayihtitaau Aschii: A Multi-Community Environment-and-Health Study (2005-2009). Weight status was assessed according to three BMI classification systems: Centers for Disease Control and Prevention (CDC), International Obesity Task Force (IOTF), and World Health Organization (WHO). Weighted kappa (κw) statistic was used to measure the agreement between the different systems. Associations with body fat percentage and cardiometabolic risk factors were assessed using analysis of variance. Mean differences according to agreement and non-agreement between weight status based on IOTF and CDC, and IOTF and WHO growth references were also calculated.

Results: Obesity prevalence was 42.7% for IOTF, 47.2% for CDC, and 49.3% for WHO criteria. Agreement was almost perfect between IOTF and CDC (κw = 0.93), IOTF and WHO (κw = 0.91), and WHO and CDC (κw = 0.94). Means of body fat and cardiometabolic risk factors were significantly higher (Ptrend < 0.001) from normal to obese children, regardless of the BMI classification. Participants who were considered overweight by IOTF classification but obese by CDC or WHO classifications, exhibited lower means (P < 0.05) of body fat, fasting plasma insulin and HOMA2-IR.

Conclusion: We observed high prevalence estimates of overweight/obesity among our sample. Despite an overall good level of agreement between the three systems, we noted significant differences for discordant obese. Our results suggest that IOTF seems to be more suitable to identify severe clinical obesity in children in our context.

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