WEDNESDAY, MAY 31
POSTER VIEWING: 3:15PM – 4:30PM

Impact of vitamin D intake on serum vitamin D status in Canadian Breast Cancer Patients

Presented by: **Amit Manocha**, Student Researcher, University of Calgary

The objective of this research was to determine the relationship between vitamin D intake and the serum vitamin D concentration in a cohort of patients diagnosed with breast cancer. The Breast Cancer to Bone (B2B) Metastases Research Program recruited 449, incident breast cancer patients, stage I-IIIc, between February 2010 and July 2015. All participants provided a pre-surgical blood sample. Additional data collection included the completion of a baseline Canadian Diet History Questionnaire version I or II (C-DHQI or C-DHQII) providing measures of dietary and supplemental vitamin D intake. The serum concentration of 25-hydroxyvitamin D (25(OH)D) was measured by the chemiluminescent LIAISON® XL (DiaSorin) assay. We calculated Pearson Correlation Coefficients to determine relationships between serum 25(OH)D concentration, supplement intake, dietary intake, combined total intake, as well as age. Total vitamin D intake, combining both diet and supplement intake, was weakly correlated with the serum 25(OH)D concentration (Pearson correlation coefficient, r=0.19184, p=0.0011). Supplemental intake, alone, was more strongly correlated with vitamin D serum concentration than total intake; however, the correlation was still weak (r = 0.20396, p=0.0005). Dietary intake was not significantly correlated with serum vitamin D concentration. (r = 0.01517, p=0.7988). There was an unexpected weak but statistically significant positive correlation between age and serum vitamin D concentration (r = 0.14222, p=0.0072). Total intake and intake from supplement use were also positively correlated with age (r = 0.17451, p=0.0009 and r=0.19480, p=0.0002, respectively). Supplemental vitamin D intake showed a weak but statistically significant positive correlation with serum 25(OH)D. Dietary vitamin D intake was not correlated with serum 25(OH)D. Our results suggest that other factors, including sun exposure, likely determine serum vitamin D status in Canadian breast cancer patients.

Co-Author(s): Amit Manocha, Heather Merry, Rachel O'Reilly, Margo Hopkins, Linda S. Cook, Alexander Paterson, Hans J. Vogel, Carrie S. Shemanko, Anthony Magliocco, David A. Hanley, Christine Friedenreich, Nigel Brockton

Methods filters and 'and not' limits filters for systematic reviews have high sensitivity and markedly reduce the number of articles need to read: an analytic survey

Presented by: **Dalton Budhram**, Undergraduate Student, McMaster University

To compare the Clinical Queries (CQs) 'methods' and 'and not' limits search filters with the Cochrane 'methods' filters (CSs), including their limits terms, if any. We conducted an analytic survey with Cochrane reviews (CRs) as the 'gold standard' for 'included studies'. CRs were identified by searching the term 'intervention' in the titles, abstracts, or keywords in the Cochrane Database of Systematic Reviews. The sensitivity and precision of Cochrane content terms + Cochrane methods and limits filter terms were compared in MEDLINE and EMBASE with Cochrane content terms + Clinical Queries maximally sensitive filter with and without additional limits (CQ-S; CQ-S + limits) and a balanced filter with and without additional limits (CQ-B; CQ-B + limits). Included studies were extracted from 15 Cochrane reviews that met the inclusion criteria for our current study with 402 included studies available to test the performance of the search filters. The use of Cochrane or CQ methods terms reduced, by 64% to 96%, the overall retrieval of articles with minimal loss of included studies. Sensitivity was almost identical for the 4 filters. However, CQ-B + limits had the highest precision (2.68%, 95% CI 2.38-3.01%, number needed to read to find one eligible study (NNR) 37), followed by the CQ-B (1.06%, 95% CI 0.94-1.19%, NNR 94), CS (0.51%, 95% CI 0.46-0.58%, NNR 196), CQ-S + limits (0.35%, 95% CI 0.30-0.38%, NNR 286), and CQ-S filters (0.31%, 95% CI 0.28-0.35%, NNR 322). Methods filters and limits greatly reduce the number of articles from bibliographic databases that reviewers need to read to find eligible studies. For systematic reviews of interventions, searches in MEDLINE and EMBASE were better served by including the Clinical Queries balanced methods filter with limits.

Co-Author(s): Dalton Budhram, Tamara Navarro-Ruan, Brian Haynes

Associations between spouses' health behaviours before and after one partner is diagnosed with diabetes: Results from the Lifelines Cohort Study

Presented by: **Rachel Burns**, Postdoctoral Fellow, McGill University

Examine associations between the health behaviours of spouses before and after one spouse is diagnosed with diabetes. Spouses' health behaviours were expected to be concordant and to increase after diagnosis. Data came from the first three waves of Lifelines, a cohort study in the Netherlands. Data were collected at three time points approximately 1.5 years apart (i.e., baseline, follow-up 1, follow-up 2). These analyses include 155 couples in which one partner first reported a diagnosis of diabetes at follow-up 1 and the other partner did not report a diagnosis of diabetes at any time. The health behaviours examined were self-reported frequency of eating breakfast and engaging in physical activity. Couples were distinguishable because one member developed diabetes, therefore, Pearson correlations examined associations between partners' health behaviours at each time point. On average, individuals with diabetes were 55.4 years old (SD = 10.5) at baseline. Preliminary findings indicated that before the diabetes diagnosis (i.e., baseline), spouses' frequency of eating breakfast ($r = .30$, $p < .001$) and engaging in physical activity ($r = .22$, $p = .008$) were correlated. Spouses' behaviours remained correlated at follow-up 1, which was soon after diagnosis (breakfast: $r = .14$, $p = .01$; physical activity: $r = .23$, $p = .005$), and at follow-up 2, which was 1.5 years later (breakfast: $r = .23$, $p = 004$; physical activity: $r = .21$, $p = .009$). In general, health behaviour was concordant within couples before and after one partner was diagnosed with diabetes. To determine the extent to which health behaviours change over time within couples. Additionally, the extent to which spousal health behaviour, including change in spousal health behaviour, predicts the wellbeing of people with diabetes will be examined.

Co-Author(s): Rachel Burns, Jennifer Fillo, Sonya Deschênes, Norbert Schmitz

Transdermal nitroglycerin therapy in lower limb peripheral arterial disease: A systematic review

Presented by: **Michael Caputo**, Medical Student, Northern Ontario School of Medicine

In adults with peripheral arterial disease, does adjuvant therapy with transdermal nitroglycerine decrease PAD-associated morbidity and improve peripheral arterial integrity, perceived symptom-severity and quality of life. We performed a systematic review of the electronic databases Medline, Embase and Web of Science. The medical subject headings (MeSH) used were peripheral arterial disease, arterial occlusive diseases, peripheral vascular disease, nitroglycerin and administration, cutaneous. The Emtree terms used were peripheral occlusive artery disease, peripheral vascular disease, glyceryl trinitrate and transdermal drug administration. Keywords were also applied to capture non-indexed material. After all duplicates were removed, abstracts of remaining records were screened according to the eligibility criteria. Titles, abstracts and papers were independently assessed by two reviewers. Difference of opinions were resolved by consensus. Individual studies and systematic reviews were included in this analysis. Overall, the evidence suggests that transdermal nitroglyercin therapy may have both anti-inflammatory and analgesic effects. Specifically, nitroglycerin was shown to reduce plasma levels of C-reactive protein and sE-selectin and increase the levels of intraplatelet cGMP. These results highlight the potential efficacy of this treatment approach for atheroschlerotic syndromes. Studies included a diverse PAD population and varied in methodology. Data on benefits, harms, and cost-effectiveness of transdermal nitroglycerin therapy were limited. Most studies only included patients with intermittent claudication. The overall quality of the articles was heterogeneous, with low quality articles included. There remains a lack of large scale prospective studies with long-term follow-up. Evidence supporting the therapeutic role of transdermal nitroglycerin therapy in patients with lower limb peripheral arterial disease is insufficient. Despite the current paucity of data, it would appear that patients with intermittent claudication may benefit this treatment approach.

Co-Author(s): Michael Caputo, Grace Scott, Alanna Campbell, Sante Fratesi

Supervisor and Organizational Factors Associated with Job Modifications

Presented by: **Catherine Chambers-Bedard**, MPH Candidate, Lakehead University

The Job Accommodation Scale (JAS) is a valid measure of employer support for job accommodations. This study explores associations between workplace factors and JAS sub- scores (reflecting specific accommodation types). Supervisors from 19 employers completed an online survey concerning job accommodations. The survey included demographic information, type of job supervised, supervisor and organizational factors, and a hypothetical situation of a worker with low back pain for whom supervisors rated their likelihood of implementing the 21 JAS accommodations. The 21 items were factor analyzed, revealing five job accommodation types: physical workload, work environment, work schedule, alternate duties, and assistance. We used five separate multiple linear regression models to explore which supervisor and organizational factors are associated with each accommodation construct. Data were available for 556 supervisors who had supervised at least one worker. Significant factors associated with accommodation included organizational policies and practices, which were positively associated with all accommodation types (? range = 0.117 - 0.221); increased supervisor autonomy, which was positively associated with two of five factors (? = 0.081 and 0.092); and increased employee social capital, which was negatively associated with two of the five factors (? = -0.078 and -0.258). We explored the associations JAS sub-scores and a number of supervisor and organizational factors. As many of these factors are potentially modifiable, this may allow for the development of interventions to improve the availability of particular workplace accommodations for low back injured workers.

Co-Author(s): Catherine Chambers-Bedard, Vicki Kristman, Joshua Armstrong, William Shaw

The combined effect of socioeconomic status and compensation policy on return to work.

Presented by: **Catherine Chambers-Bedard**, MPH Candidate, Lakehead University

This study will examine the impact of socioeconomic status on return to work within two different workplace compensation systems: the system in Victoria, Australia, and the system in Ontario, Canada. I will use a retrospective cohort design based on existing data from WorkSafe, a workplace compensation provider in the Australian state of Victoria and the WSIB database for the province of Ontario. This approach will allow me to assess time to return to work, rather than simply a dichotomous return to work outcome. Baseline data collected at the time of the claim includes injury-related symptoms and type of injury, as well as sociodemographic information such as income and occupational status. Information on return to work is available based on the termination of income compensation payments. Survival analysis will be used to assess the relationship between return to work and socioeconomic status.

Co-Author(s): Catherine Chambers-Bedard, Vicki Kristman

Falls and Fear of Falling in Older Adults After Total Joint Arthroplasty

Presented by: **Serena Chen**, Graduate Student, University of Alberta School of Public Health

To examine the prevalence of falls and fear of falling in patients with total joint replacements and compare the rate to seniors residing in the community. This study is a cross-sectional survey of a consecutive sample recruited at the Edmonton Hip and Knee Clinic examining falls and fear of falling in patients who were waiting (n=114) or received (n=84) hip or knee replacements (TJA). Controls (n=100) were matched for age and gender at two Edmonton Flu Clinics. The survey included socio-demographics, history of falls, and intrinsic and extrinsic falls risk factors. Fear of falling was measured (Activities-Specific Balance Confidence Scale). Preliminary analysis showed of the 100 adults from the flu clinic (mean age = 71.4±5.7; 59 (59%) female) and 198 TJA patients (mean age = 70.9±6.6; 117 (59%) female), the 1-year prevalence of falls in seniors from the flu clinic was 24%. In the TJA group, 34% of pre-op patients fell, and 27% of post-op patients fell. Fear of falling was significantly different between pre-op patients, post-op patients, and flu clinic controls ($F(2, 308)=34.68$, $p < 0.001$), with significantly higher fear in pre-op (66.1 ± 23.8, $p < 0.001$) and post-op (68.4 ± 23.3, $p < 0.001$) patients as compared to controls (88.1 ± 14.9). Findings from this cross-sectional survey suggest that TJA patients have a greater prevalence of reported falls and a higher fear of falling than controls. Falls risk factors identified in patients undergoing TJA will have direct clinical implications for development of falls prevention programs.

Co-Author(s): Serena Chen, Allyson Jones, Don Voaklander

Diabetes significantly increases the risk of depression in longitudinal studies:systematic review,meta-analysis and population attributable fractions.

Presented by: **Batholomew Chireh**, Student, University of Saskatchewan

(1) Systematically examine the relationship between diabetes and depression. (2) Provide estimates of by how much of depression incidence in a population would be reduced if diabetes was reduced. Literature supports a strong relationship between diabetes and depression but most studies reviewed are cross-sectional. Research on the potential prospective impact of diabetes reduction on the incidence of depression is scarce. Electronic databases and grey literature from January1990 to June 2016 were searched for English-language longitudinal studies (prospective and retrospective cohort) with criteria for depression and non-recall measurement of diabetes. Systematic review with meta-analysis synthesized the results. Study quality, heterogeneity, and publication bias were examined. Initial screening of titles and abstracts resulted in 245 papers being reviewed. Twenty high-quality articles met eligibility criteria. Population attributable fractions (PAFs) estimated potential preventive. The pooled odds ratio (OR) between diabetes and depression was 1.33 [95% confidence interval (CI) 1.18–1.51]. For type of study design and method of diabetes diagnosis and their relationship with depression, the ORs were: prospective studies (OR 1.34, 95% CI 1.14–1.57), retrospective studies (OR 1.30, 95% CI 1.05–1.62), self-reported diagnosis (OR 1.37, 95% CI 1.17–1.60), and blood test diagnosis (OR 1.25, 95% CI 1.04–1.52). Population attributable fractions (PAFs) suggest that over 9.5 million of global depression cases are potentially attributable to diabetes. A 10–25% reduction in diabetes could potentially prevent 930,000–2.34 million depression cases worldwide. Our systematic review provides robust evidence to support the hypothesis that diabetes predicts the onset of subsequent development of depression in later life and reinforces the need for effective programs and policies to reduce or weaken the association between the two-fellow travelers.

Co-Author(s): Batholomew Chireh, Kenneth Carl D'Arcy, Muzi Li

Evaluating TNM stage prognostic ability in a population-based cohort of gastric cancer patients in a low incidence country

Presented by: **Alyson Mahar**, Postdoctoral Research Associate, Sunnybrook Research Institute

TNM stage is a preeminent prognostic factor in cancer. Our goal was to evaluate the predictive power of TNM stage in gastric cancer, in a low incidence country. A province-wide chart review of gastric cancer patients was conducted at over 100 institutions in Ontario, and linked to population-based death clearance data. Patients diagnosed between 01/04/2005 and 31/03/2008 were included; follow-up extended until March 31, 2012. Staging data were collected from radiology, endoscopy, pathology, and operative reports in the three months preceding and the three months following the diagnosis. Staging was classified according to the 6th and 7th UICC/AJCC edition, and will be updated with the 8th edition. Discrimination was evaluated using Harrell's C statistic. Kaplan-Meier methods were used to create survival curves; log-rank tests compared stage-stratified survival estimates. The cohort included 2,366 gastric cancer patients. The median amount of follow-up in survivors was 60 months. One year and five-year survival was 43%, and 17% respectively. According to the 6th edition, 9% of patients had stage I disease, 5.4% stage II, 7.3% stage III, and 64% stage IV; 15% were unstaged. Using the 7th Edition, 9% were stage I, 7.7% stage II, 16% stage III, and 54% stage IV; 14% were unstaged. Observed stage-stratified five-year survival ranged from 68% to 7% with the 6th edition and from 70% to 4% with the 7th Edition. Predictive performance was poor for both iterations of AJCC stage. Harrell's C statistic was 0.42 (0.38-0.47) for the 6th and 0.51 (0.47-0.5). Discriminative power remained poor across multiple sensitivity analyses. Existing staging systems for gastric cancer used in North America perform poorly. Refinement of stage or the creation of a more complex prediction tool is necessary to provide accurate and precise prognostication information to oncologists, patients, and their families.

Co-Author(s): Alyson Mahar, Matthew Dixon, Brandon Zagorski, Natalie Coburn

Mental health status and service utilization among ethnic groups in Ontario, Canada

Presented by: **Evgenia (Jenny) Gatov,** Epidemiologist, Institute for Clinical Evaluative Sciences (ICES)

The objective of this study was to compare mental health status and health service utilization across the four largest ethnic groups in Ontario: white, South Asian, Chinese, and black groups. The study population was derived from the Canadian Community Health Survey, using a pooled sample of over 250,000 white, South Asian, Chinese, and black residents living in Ontario between 2001 and 2014. Age- and sex-standardized prevalence estimates for mental health service use and other related factors were calculated for each of the four ethnic groups overall and stratified by age, sex and immigrant groups. The prevalence of physician-diagnosed mood and anxiety disorders and past-year mental health service utilization was lower among South Asian, Chinese, and black respondents compared to white respondents. Chinese individuals reported the weakest sense of belonging and the poorest self-rated mental health. Family doctors were the main point of contact for mental health issues for most ethnic groups, with the exception of Chinese individuals who were just as likely to see a family doctor, psychiatrist, or allied health professional. Among those reporting past-year suicidal ideation, less than half sought help from a mental health professional, and this was particularly low among ethnic minorities ranging from only 13.9% in the Chinese group to 25.6% in the black group. Lower rates of mental health service use among ethnic minorities suggest that cultural factors influence whether individuals seek help for mental health care. Efforts are needed to understand why mental health service use is low among ethnic minority groups, even among those reporting severe distress.

Co-Author(s): Maria Chiu, Abigail Amartey, Xuesong Wang, Paul Kurdyak, Evgenia (Jenny) Gatov

Factors Associated with Shorter Night-Time Sleep in Toddlers: The Survey of Young Canadians (SYC)

Presented by: **Christy Costanian**, PhD Student, York University

To determine the prevalence of and identify the factors associated with sleeping less than 11 consecutive hours per night among toddlers aged 1 to 2 years old in Canada. Data from the cross sectional, Survey of Young Canadians (SYC) 2010, that aimed to provide indicators of early childhood development for younger children in the ten Canadian provinces,was used. The Person Most Knowledgeable reported on toddlers' sleep duration at night; determined in response to the following: "how many hours in a row does the child usually sleep at night?", and other sleep parameters that included naptime during the day, and sleep onset delay. Based on age-specific reference values, shorter night-time sleep was defined as sleeping < 1 1 hours per night. Multivariable logistic regression was conducted to identify the association between socio-demographic, maternal, sleep and child-related variables with shorter sleep at night. Analysis of 3675 toddlers revealed that 57% slept < 1 1 hours per night. Results of the regression analysis showed that being from an immigrant family was significantly associated with shorter night-time sleep. Being from a household with a higher income, having a mother aged between 25- 34 years at the time of the survey, and napping ? 2 hours during the day were significantly related to sleeping ? 11 hours per night. Other socio-demographic, maternal, and child-related variables were not associated with night-time sleep. This was the first population based, nationally representative, study to examine factors of shorter night-time sleep in Canadian toddlers. Socio-demographic factors and nap duration were associated with night-time sleep duration. More adequate early childhood sleep hygiene awareness efforts are recommended especially in vulnerable populations.

Co-Author(s): Christy Costanian

Writing Skills Enhancement for Public Health Professionals in Rwanda

Presented by: **Raywat Deonandan**, Assistant Professor, University of Ottawa

We sought to improve the Rwandans public health professionals' skills and confidence with respect to writing scientific papers for submission to international peer-reviewed global health journals. We delivered a one-week workshop to 30 public health professionals in Rwanda. At the beginning of the workshop, all participants filled out a pre-session assessment questionnaire which sought to measure their expectations for the workshop and their perceived baseline skills, with respect to their ability to statistically analyze data and present that analysis as a paper. A similar assessment questionnaire was given to the same participants at the end of the week. Descriptive statistics were employed to determine whether self-perceived student skills had changed. Theme analysis was applied to written comments to qualitatively assess students' perceptions of the workshop's value. At the end, 38% of respondents felt confident in submitting a paper to a refereed journal. There was improved confidence ($p < 0 .05$) in: phrasing research questions, selecting journals, understanding how journals evaluate papers, writing an introduction to a paper, writing the methods section of a paper, writing the results section of a paper, writing the discussion section of a paper, understanding how to cite references in a paper, understanding the different types of academic papers, understanding how to write a paper in a compelling style, and understanding what an "impact factor" means and how it is calculated. No improvement ($p>0.05$) was seen in analyzing and interpreting data. The most common recommendations were to increase the workshop's length and to enhance statistics content. Remarkably, as a group, participants were able to write an article for a leading international journal, which was subsequently published. Results indicate that similar interventions would be both successful and well received, especially if targeted to individuals at a similar stage of career progress.

Co-Author(s): Raywat Deonandan

Advanced Maternal Age: Ethical and Medical Considerations for Assisted Reproductive Technology

Presented by: **Raywat Deonandan**, Assistant Professor, University of Ottawa

Assisted reproductive technologies (ARTs) allow post-menopausal pregnancy physiologically plausible, however, one must consider the associated physical, psychological and sociological factors involved. A quasi-systematic review was conducted in PubMed and Ovid using the key terms post-menopause, pregnancy + MeSH Terms [donations, hormone replacement therapy, assisted reproductive technologies, embryo donation, donor artificial insemination, cryopreservation]. Overall, 28 papers encompassing two major themes (ethical and medical) were included in the review. There are significant ethical considerations and medical (maternal and fetal) complications related to pregnancy in peri- and post-menopausal women. The literature portrays an overall positive attitude towards pregnancy in advanced maternal age. With respect to the medical complications, the general consensus in the evaluated studies suggests that there is greater risk of complication for spontaneous pregnancy when the mother is older (e.g., > 35 years old). This risk can be mitigated by careful medical screening of the mother and the use of ARTs in healthy women. A women of advanced maternal age that is otherwise healthy can carry a pregnancy with a similar risk profile to that of her younger counterparts when using donated oocytes.

Co-Author(s): Raywat Deonandan

Post-Colonoscopy Colorectal Cancers. A Step Towards Identification of Root Causes and Potential Points of Interventions

Presented by: **Saiganesh Dhannewar**, Research Assistant, University of Alberta

To determine root causes of Post Colonoscopy Colorectal Cancer (PCCRC) and use this knowledge to control colorectal cancer incidence in Alberta. This study focused on Alberta residents aged 40 years and older with a first-time diagnosis of Colorectal Cancer (CRC) in 2013. PCCRC was defined as patients who were diagnosed with CRC between 6 to 60 months after colonoscopy was performed. First-time cases of CRC diagnosed in 2013 were identified through the Alberta Cancer Registry. These cases were linked to the National Ambulatory Care Reporting System, Discharge Abstract Database, and Alberta Ambulatory Care Reporting System databases to determine the dates of previous colonoscopies. A new Algorithm was created based on Robertson's algorithm to more accurately determine the likely causes for PCCRC. Total 1278 patients were diagnosed with CRC in 2013. As per the Canadian Cancer Society, this number is expected to reach 2200 by end of 2016. Through an iterative process of chart reviews, a decision analysis framework was developed, that provided a rational basis for systematic categorization of PCCRC root causes. Several causes of PCCRCs were identified including missed cancer diagnosis, patient-related factors, high-risk (genetic syndrome) patients, path to care issues, and inadequate follow-up. This study also identified areas for future quality improvement initiatives such as failure to arrange a follow up after poor bowel preparation and identifying what are the current barriers to report the adequacy or inadequacy of the bowel preparation. Analysis of PCCRC cases identified causes of cancer that are helpful in creating health intervention to control CRC. Improvements in colonoscopy quality, as well as clinical care pathways, are required. For patients, knowledge translation tools explaining the importance of bowel preparation should be created.

Co-Author(s): Saiganesh Dhannewar, Dianne Johnson, Nermeen Youssef, Daniel Sadowski, Clarence Wong

Handling uncertainty in trial-based economic evaluations: a review of the use of statistical methods

Presented by: **Juan Pablo Diaz-Martinez**, Student, McMaster University

We conducted a systematic review to explore the advancements in statistical methods for handling uncertainty caused by sampling variation in trial-based economic evaluations. MEDLINE, EMBASE, Web of Science and JSTOR databases were searched to identify studies, published up to February 2017, meeting two inclusion criteria: (i) the study analyzes the different methods of handling sampling uncertainty in healthcare economic evaluations when patient level data was available; and (ii) only complete analyses were included. We excluded empirical studies, letters to the editor, and conference abstracts. The following data were captured for each study: (i) statistical method for sampling uncertainty; (ii) statistical branch (parametric or nonparametric); (iii) assumptions of the statistical method; and (iv) strengths and limitations of the statistical method. The search identified 237 potentially relevant studies, from which 80 studies underwent full-text review. 60 studies met the inclusion criteria. 25 studies explored the nonparametric bootstrapping approach. 30 studies incorporated the potential dependence between costs and effects assuming a bivariate normal distribution, from which three evaluated a regression-based approach to account for covariates. Finally, the remaining five studies examined other methods to handle uncertainty. Copulas (a multivariate probability distribution for which the marginal probability distribution of each variable is uniform) were analyzed in two of these 5 studies. Some limitations were found; i) cost data, which is often skewed, is assumed to be normal; and ii) when sample is relatively small. We found that bootstrapping and assuming a bivariate normal distribution are the methods most widely used. Although copulas are rarely used, one of the useful features of this method lies in the flexibility of the assumptions that one can make on the cost and effectiveness.

Co-Author(s): Juan Pablo Diaz-Martinez, Rana Qadeer, Lehana Thabane

Reach and pattern of use of assisted methods of smokers quitting in Ontario

Presented by: Sarah Edwards, Director, Surveillance & Reporting, Alberta Health Services

The objective of this research was to estimate the prevalence of unassisted quitting and the reach and pattern of use of assisted methods for quitting in Ontario, Canada. Data were taken from 3578 smokers with at least one follow-up interview participating in the Ontario Tobacco Survey (OTS). Population-weighted prevalence was estimated for unassisted and assisted quitting. Multinomial regression models were run for demographics and smoking history to assess the association with quitting behaviour and use of assistance. A majority of smokers reported quitting unassisted (58.8%, 95% CI: 56.0-61.6). Nearly all smokers who reported using assistance to quit used pharmaceutical supports (92.9%, 95% CI: 91.1-94.6). Adjusted analyses found that quitting using assistance was less common among male smokers (RR=0.82; 95% CI: 0.63-0.97) but more common among smokers who were married (RR=1.52; 95% CI: 1.18-1.97), reported smoking every day (RR=1.60; 95% CI: 1.01-2.60), self-reported being somewhat (RR=3.74; 95% CI: 1.30-10.75) or very addicted (RR=8.76; 95% CI: 3.02-25.43) and rated high on the heaviness of smoking index (RR=1.42; 95% CI: 1.01-2.13). A majority of quit attempts in Ontario are unassisted and those using assistance are mainly relying on pharmaceutical supports. Level of addiction had the largest magnitude of association with using assistance, indicating those most likely to benefit are seeking assistance during quit attempts.

Co-Author(s): Sarah Edwards, Susan Bondy, Robert Mann, Russell Callaghan

Breast cancer survival by molecular subtype in Ontario, Canada: A population-based analysis of cancer registry data

Presented by: Saber Fallahpour, senior research associate, cancer care ontario

The goal of this study is to determine how breast cancer molecular subtype impacts survival among Ontario women and how this relationship may be modified by tumor based characteristics. All malignant female breast cancers diagnosed between January 1, 2010 and December 31, 2012 were extracted from the population-based Ontario Cancer Registry. Associations between molecular subtype and predictor variables were estimated using a Cox proportional hazards model. A separate model was fitted for each of the four molecular subtypes and likelihood ratio testing was used to evaluate the significance of differences in mortality risk. Luminal A was the most commonly diagnosed subtype and in a univariate model it had the highest survival while Triple Negative had the poorest. In the multivariate model, age, stage, co-morbidities and histology were found to significantly affect the risk of mortality. A dose-response effect was observed with age for all subtypes, with the greatest effect of increasing age found for Luminal B. For all subtypes increased stage increased the risk of mortality, however the greatest effect was seen for Luminal B (HR=11.5). Moderate co-morbidities were only associated with an increased mortality risk for those with Triple Negative cancers while severe co-morbidities were associated with an increased risk for all subtypes. Residence had no effect on survival for any of the subtypes. The results indicate the possible need for better co-morbidity management in breast cancer patients, particularly those with triple negative cancers. Finally, the results reinforced the equity of Ontario's cancer services, showing no difference in survival between patients in rural or urban areas.

Co-Author(s): Saber Fallahpour, Tanya Navaneelan, prithwish de

The association between social participation and depression symptoms among middle-aged and elderly Chinese adults

Presented by: **Mingying Fang**, Ph.D candidate, University of Waterloo

To examine the association between social participation and depression symptoms among middle-aged and elderly Chinese, and to investigate the impact of rural and urban residency in the relationship. We analyzed baseline data (2011-2012) from the China Health and Retirement Longitudinal Study (CHARLS), a national survey of persons aged 45 and older who were recruited from 10,257 households in 450 rural village/urban communities. Depression symptoms were assessed using the 10-item Center for Epidemiologic Studies Depression Scale (CES-D). Social participation was measured by attending at least one of a list of twelve social activities during last month, e.g., interaction with friends, going to clubs, performing voluntary or charity work. We investigated the association of interest using multivariable logistic regression models, controlling for age, gender, marital status, education, and function disability. Complete data were available for 15,131 participants (mean age 58.5 years): 5624 (37.2%) exhibited depressive symptoms, 7979 (52.7%) were female, and 6131(40.5%) lived in rural areas. CES-D mean score of all participants was 8.4. Individuals who performed at least one social activity were less likely to show depression symptoms (OR [95% CI] = 0.73 [0.68, 0.78]) compared to those who did not preform any social activities during the past month. Urban residents were less likely to exhibit depression symptoms than rural residents (OR [95% CI] = 0.67 [0.62, 0.72]). Function disabilities defined by exhibiting activities of daily living (ADLs) difficulties were insignificant in all the models. The results suggest that active social participation is positively associated with depression symptoms; this is inconsistent with previous Western studies. Comparing with urban areas, there are fewer types of social actives in rural regions, and rural residents have fewer opportunities to perform social activities.

Co-Author(s): Mingying Fang, Mark Oremus

HIV and syphilis prevalence and risk factors among drug users: results of respondent-driven sampling in Guangzhou

Presented by: **Mingying Fang**, Ph.D candidate, University of Waterloo

This study aimed to explore the application and strategy of respondent-driven sampling among drug users, and to accurately grasp the hidden population of AIDS and syphilis prevalence in Guangzhou. Four focus groups and a pilot study was conducted before the survey. Respondent-driven sampling (RDS) approach is implemented in this study. In the community of the seven seeds among drug users were selected, who were also eligible to accept questionnaire interview and clinical testing for HIV and syphilis. The seeds recommend their companions to join the investigation. Blood samples were collected for the lab testing. RDSAT 5.6 and NetDraw were used for the network analysis. Univariate and multivariate logistic regression were employed to identify unhealthy behaviors and related risk factors. 361 respondents were recruited from local communities, the majority of them were unemployed and low educated. The average social network size was 23 ± 46 people among the respondents. The infection rate of HIV was high, sample infectious rate and the overall estimated rate were 11.70%. Sample infectious rate of syphilis was 9.7%, and overall estimated rate was 6.1%. The actual process of recruitment fitted theoretical simulation and recruitment process were efficient and reliable. The rate of awareness of HIV / STD was high but limited accesses to knowledge about the diseases. Insecurity drug behaviors such that share syringes and injected drug inhalation were identified. HIV and syphilis risk factors included low education, promiscuity, low condom usage, and rehabilitation. RDS sampling plays a positive role in the study of drug users in Guangzhou. Drug users with the same social attributes have the same unsafe using drugs behavior. This situation impelled the HIV/STD to spread from high-risk groups to the general population.

Co-Author(s): Mingying Fang, Aihua Lin

An Assessment of the Effectiveness of Epidemiology Online Distance Learning

Presented by: **Mateo Farfan**, Student, University of Ottawa

Epidemiology is underexplored as an appropriate content area for online education. We sought to determine whether online epidemiology videos were an effective teaching tool for measurable improvements in student In partnership with the Lecturio Corporation in Germany, an online Epidemiology class was created, featuring 11 recorded lectures tailored to the USMLE medical licensing requirements. Free access to the lectures was offered to the students of a 4th year undergraduate Epidemiology course at the University of Ottawa. Improvements in this group from the midterm examination baseline to the final examination performance were assessed relative to improvements experienced by students who did not watch the videos. There were 90 students enrolled in the class overall. While 40 students expressed an interest in viewing the Lecturio videos, only 26 actually did so. Of those 26, 18 provided feedback on the qualities of the videos, but performance data was available for all 26. Students who watched the videos saw their average mark increased by 1.2%, while the mark in the control group decreased by 2.6%, though this change was not statistically significant. Most participants failed to watch all the videos to completion. Qualitative comments were universally positive with respect to the instructional usefulness of the videos. Augmenting epidemiology courses with an online component (blended course) is an effective strategy for improving student learning outcomes. Until standardized examinations are applied, it is unclear whether the online course can independently offer competitive learning outcomes comparable to those of the in-person and blended courses.

Co-Author(s): Raywat Deonandan, Mateo Farfan

Psychosocial outcomes twelve months following a dose-response aerobic exercise intervention in postmenopausal women

Presented by: **Megan Farris**, Epidemiology Research Associate/ Project Coordinator, Alberta Health Services

We previously reported no dose-response effects of a 12-month exercise intervention on quality of life (QoL) and psychosocial functioning in postmenopausal women. Here, we report the 24-month follow-up abovementioned outcomes. Twelve months post-intervention (24 month follow-up), 333/400 postmenopausal women randomized to a year-long intervention of either 150 (MODERATE) or 300 (HIGH) minutes/week of aerobic exercise returned a battery of self-reported measures assessing QoL, sleep quality and psychosocial outcomes (stress, anxiety, depression, self-esteem and happiness) which were also assessed at baseline and post-intervention. Intention-to-treat analyses using linear models were conducted to determine the changes between baseline and the 24-month follow-up. No significant changes between baseline and 24-month follow-up were observed amongst any QoL, sleep quality or psychosocial outcome in either intervention arm. There was some evidence of statistical modification by baseline body mass index (BMI) in relation to QoL, sleep quality and psychosocial outcomes; however the direction and strength of the associations did not indicate meaningful differences. Further, when examining differences between participants who completed the 24-month follow-up questionnaires versus those who did not complete, those who completed the follow-up had higher perceived happiness, lower depression scores, were older, more likely to have one or more comorbidities, higher rates of adherence and a higher average exercise time during the intervention than non-completers. We observed no benefits in postmenopausal women prescribed a HIGH versus MODERATE volume of aerobic exercise at 24-month follow-up regarding their QoL, sleep quality or psychosocial health suggesting that physical activity volume may not be relevant in regards to overall well-being in this population.

Co-Author(s): Megan Farris, Kerry Courneya, Rachel O'Reilly, Christine Friedenreich

The Alberta Moving Beyond Breast Cancer (AMBER) Cohort Study: Recruitment, Assessment, and Description of the First 1023 Participants

Presented by: **Megan Farris**, Epidemiology Research Associate/ Project Coordinator, Alberta Health Services

The purpose was to report on the feasibility of recruitment, baseline measurement completion, and the representativeness of the first 1023 participants in the Alberta Moving Beyond Breast Cancer (AMBER) Study. AMBER is enrolling newly diagnosed stage I (?T1c) to IIIc breast cancer survivors in Alberta, Canada. Baseline assessments are completed soon after diagnosis and collect a wide array of health-related fitness (HRF) measurements including: cardiorespiratory fitness, musculoskeletal fitness, body composition, objective and self-reported physical activity (PA) and sedentary behavior, lymphedema, and blood collection. In addition, 1 and 3 year follow-ups post-diagnosis are completed on the participants and updates to 2017 are reported here. Between July 2012 and February 28th, 2017, AMBER recruited its first 1,023 participants from a pool of 1,662 (62%) eligible breast cancer survivors. Baseline HRF assessments were completed on ?85% of participants with the exception of upper body strength. Collection of ?4 days/week of monitoring for the Actigraph GT3X® and ActivPAL® were obtained from 93% of participants. Completion rates were also high for blood (99%), lymphedema (98%), and questionnaires (95%) including patient-reported outcomes and correlates of exercise. In addition, 646 and 202 participants have completed or partially completed 1 and 3 year assessments. Approximately 80% and 77% of those who came back for 1 and 3 year assessments completed HRF assessments and ?90% completed questionnaires, activity monitors, blood samples and lymphedema measurements. AMBER has demonstrated that newly diagnosed breast cancer survivors are willing and able to complete sophisticated and physically demanding HRF and PA assessments. AMBER is a unique breast cancer survivor cohort that may inform future randomized controlled trials on lifestyle and breast cancer outcomes.

Co-Author(s): Christine Friedenreich, Margaret McNeely, Nicole Culos-Reed, Jeff Vallance, Gordon Bell, John MacKey, Charles Matthews, Megan Farris, Diane Cook, Stephanie Voaklander, Andria Morielli, Kerry Courneya

Interventions for reducing the duration of the Acute Diarrhea and Gastroenteritis in Children: A network meta-analysis

Presented by: **Ivan D. Florez**, PhD Student, McMaster University

to determine the comparative effectiveness and safety of all the available pharmacological and nutritional interventions for reducing the duration of the acute diarrhea and gastroenteritis (ADG) in children
Systematic review and network meta-analysis(NMA) of trials comparing zinc, vitamin A, probiotics(Lactobacillus-GG, S.boulardii and others), prebiotics, symbiotics, racecadotril, smectite, loperamide, diluted milk, lactose-free formula(LFF), their combinations, placebo(PLC) or no treatment(NT) for reducing ADG duration in children. Protocol was registered with PROSPERO(#CRD42015023778). We searched Medline, Embase, CINAHL, CENTRAL, Global-Health, LILACS, and grey literature. Review was in duplicate. We performed a Bayesian random-effects NMA to calculate effect estimates and their credible intervals. The surface under the cumulative ranking curve was performed to determine the hierarchy of interventions according to their safety and effectiveness. Quality of evidence was assessed using the GRADE approach. Were included 133 studies(18,190 children). Studies were mostly(72%) from low-and-middle income countries(LMIC). The most common comparison were probiotics, zinc, and lactose-free formula-LFF(70.2%) vs.PLC/NT. All the interventions were better than PLC/NT, except for vitamin-A, micronutrients, diluted milk and prebiotics,. Evidence came mostly from comparisons of intervention vs. PLC/NT, and from LMIC with few direct comparison among the interventions. Differences in reduction among the effective interventions ranged from 11.9 to 53.4 hours less than PLC/NT. LGG+Smectite, S.boulardii+Zinc and symbiotics+LFF ranked as the best combinations. Symbiotics was the most effective single intervention. Probiotics, zinc, smectite, and racecadotril were similarly effective(reduction from -23.9 to -16 hours). Loperamide was the least safe. The quality of Evidence was Low and Very-Low in most comparisons. Evidence from symbiotics proved the highest quality Indirect comparisons drove most of the effects of active treatments against one another. Almost all the interventions were better than PLC/NT. However, differences among the interventions proved small. More trials directly comparing interventions among them, instead of comparisons against placebo, are needed.

Co-Author(s): Ivan D. Florez, Areti-Angeliki Veroniki, Gordon Guyatt, Lehana Thabane

Weight trajectories, adiposity measurements of obesity and survival after prostate cancer diagnosis

Presented by: **Christine Friedenreich**, Scientific Leader, Alberta Health Services

We examined the associations of self-reported weight and objective anthropometric measures of obesity after a prostate cancer diagnosis with all-cause and prostate cancer-specific mortality in a prospective cohort of prostate Men diagnosed with prostate cancer (n=987) were recruited into a population-based case control study, then re-consented into a prospective cohort study and followed for up to 19 years for cancer and survival outcomes. Anthropometric measurements were taken shortly after prostate cancer diagnosis, 2-3 years post-diagnosis and weight was recalled pre-diagnosis and up to seven years post-diagnosis. Group-based trajectory modelling was used to determine clusters of weight trajectories within the sample and Cox proportional hazards modeling in addition to competing risk analyses were used to examine the associations between different anthropometric measurements and survival outcomes including, all-cause and prostate cancer-specific mortality. Three trajectories of pre-diagnosis and post-diagnosis weight were observed, each group was separated by at least 10 kg. Pre-diagnosis groups had nonlinear increases in weight over time, while two of three post-diagnosis trajectories had initial increases followed by decreases. Survival analyses suggested anthropometric measurements of obesity measured post-diagnosis were not consistently related to all-cause and prostate-specific mortality. Interestingly, a waist-hip ratio 2-3 years post-diagnosis of 0.90- < 0 .95 and 0.95+ relative to < 0 .90, was inversely associated with prostate cancer-specific mortality (0.90- < 0 .95, Hazard Ratio (HR): 0.48, 95% confidence interval (CI): 0.27-0.86; 0.95+, HR: 0.61, 95% CI: 0.39-0.96), respectively. Nonetheless, weight gain between baseline and third follow-up measures appeared to be associated with an increased risk in all-cause mortality (HR: 1.35, 95% CI: 1.01-1.83), relative to a stable weight. We found our study population clustered into three weight trajectories however, anthropometric measures of obesity were not related to survival outcomes. Further research using objective measurements of body composition is warranted to determine the true associations between obesity and survival after prostate cancer diagnosis.

Co-Author(s): Christine Friedenreich, Megan Farris, Karen Kopciuk, S. Elizabeth McGregor, Kerry Courneya

Improving legionellosis spatial cluster detection using multiple exposure addresses per case

Presented by: **Lennon Li**, Biostatistical Specialist, Public Health Ontario

To develop a spatial surveillance tool that can objectively detect potential legionellosis case clusters using multiple exposure addresses from each case. Our tool uses the Ontario Hybrid Information Map (OHIM), a hybrid geospatial boundary composed of regular grids (4 km2), census subdivisions (CSDs) and PHU polygons (geographic areas). OHIM allows for finer resolution analysis for cluster detection in dense urban areas and better visualization of results across the province. Each postal code is assigned to a single OHIM polygon which is used as the unit of the spatial cluster analysis. Data preparation and tool implementation were done using ArcGIS software and statistical software R, respectively. The tool takes a detection radius specified by the user's input and calculates the maximum number of cases within the radius, considering all possible combinations of case locations with the constraint that each case can only be counted once. The tool flags the OHIM polygon if the number of cases exceeds a threshold specified by the user. To aid visualization and interpretation, an interactive map shows the maximum number of cases possible at each OHIM polygon, while highlighting polygons that exceed the threshold. A prototype has been developed and was applied to Ontario's Golden Horseshoe area using Ontario's legionellosis case data from 2013. The tool has identified clusters in a region where a known outbreak had occurred, and in dense population areas where further The tool will be used prospectively to monitor Ontario's legionellosis data in the upcoming season in June 2017. Public health units involved in a potential cluster will be notified when a flag occurs, and public health action can occur if deemed necessary.

Co-Author(s): Cecilia Fung, Lennon Li, Steven Johnson, Michael Whelan

Cancer Screening and Perceived Susceptibility of Developing Cancer: A Cross-sectional Analysis of the Alberta Tomorrow Project

Presented by: **Meghan Gilfoyle**, Student, University of Waterloo

Is utilization of cancer screening tests (prostate specific antigen [PSA], Pap, mammography, and sigmoidoscopy/colonoscopy) in the Alberta Tomorrow Project (ATP) associated with one's perceived susceptibility (PS) of developing cancer? Between 2001-2008, ATP employed random digit dialing to recruit Albertans aged 35-69 years. Persons without diagnosed cancer (non-melanoma skin cancer excepted) were eligible to participate. Participants provided self-reported PS scores on a 0 (no risk of diagnosis) to 100 (definite diagnosis) scale. They also reported ever receiving (yes/no) PSA, Pap, mammography, or sigmoidoscopy/colonoscopy (combined). We used the Mann-Whitney U test to examine whether PS differed according to participants' utilization of screening tests at baseline. We included 3,628 participants in our analysis (mean age: 48 ± 8 years; 49% female). The medians for PS were higher in people who reported receiving Pap tests and sigmoidoscopy/colonoscopy tests compared to individuals who reported not receiving these tests. Pap median was 30 in the screened group versus 20 in the not screened group ($p=0.0219$) and sigmoidoscopy/colonoscopy median was 33 in the screened group versus 30 in the not screened group ($p < 0 .0001$). For PSA and mammography, the medians were equal across groups (PSA=30 [$p=0.9577$]; mammography=30 [$p=0.3257$]). Utilization of some screening tests was associated with higher PS. To further examine this association, we will expand our analysis of the ATP data and investigate whether baseline PS is associated with test utilization longitudinally, adjusting for age, income, family history, and marital status.

Co-Author(s): Meghan Gilfoyle, Ashok Chaurasia, John Garcia, Mark Oremus

Quality of Web-based Information for the 10 Most Common Fractures

Presented by: **Lydia Ginsberg**, Research Assistant/Student , McMaster University

In this study, we assessed the quality and readability of Web-based health information related to the 10 most common fractures. Using the Google search engine, we assessed websites from the first results page for the 10 most common fractures using lay search terms. Website quality was measured using the DISCERN instrument, which scores websites as very poor, poor, fair, good, or excellent. The presence of Health on the Net code (HONcode) certification was assessed for all websites. Website readability was measured using the Flesch Reading Ease Score (0-100), where 60-69 is ideal for the general public, and the Flesch-Kincaid Grade Level, where the mean FKGL of the US adult population is 8. Overall, website quality was "fair" for all fractures, with a mean (standard deviation) DISCERN score of 50.3 (5.8). The DISCERN score correlated positively with a higher website position on the search results page (r2=0.1, P=.002) and with HONcode certification (P=.007). The mean (standard deviation) Flesch Reading Ease Score and FKGL for all fractures were 62.2 (9.1) and 6.7 (1.6), respectively. The quality of Web-based health information on fracture care is fair, and its readability is appropriate for the general public. Patients should select HONcode-certified websites and websites that are positioned higher on the results page to obtain higher quality information.

Co-Author(s): Lydia Ginsberg

Is quality of diabetes care associated with depressive symptoms in adults with diabetes? A study of 19 European countries

Presented by: **Eva Graham**, PhD Candidate, Epidemiology, McGill University

To determine whether the association between diabetes and depressive symptoms differs in European countries with higher quality of diabetes care compared to countries with lower quality of care. This study included 34 420 adults from 19 European countries who participated in the European Social Survey – Round 7 (2014-2015). Quality of diabetes care was measured using the Euro Diabetes Index score for each country and analysed in quartiles. Negative binomial regression was used to calculate rate ratios comparing the number of depressive symptoms between adults with and without diabetes in each quartile of diabetes care. Analysis were adjusted for demographic, clinical, and lifestyle covariates of participants. Country-specific survey weights were used to generalize to the European adult population. In countries with the highest quality of diabetes care (first quartile), having diabetes was associated with a 2% increase in the number of depressive symptoms compared to adults without diabetes (95% CI 1.00-1.05). In countries in the second, third, and fourth quartiles of quality of care, having diabetes was associated with a 12% (95% CI 1.08-1.17), 14% (1.08-1.20), and 24% (1.12-1.38) relative increase in number of depressive symptoms, respectively. Diabetes is associated with increased depressive symptoms across Europe. This association may be stronger in countries with lower quality of diabetes care.

Co-Author(s): Eva Graham, Joanne-Marie Cairns, Katie Thomson, Clare Bambra

Identifying relevant population-based intervention programs to impact the prevalence of cancer-related lifestyle risk factors in Canada

Presented by: **Xin Grevers**, Research study coordinator, Alberta Health Services

As part of a cancer burden estimation project, we conducted a series of literature reviews to identify effective interventions for modifying the prevalence of lifestyle factors associated with cancer. We conducted a series of structured PubMed searches to identify randomized controlled trials, systematic reviews and meta-analyses examining the effectiveness of interventions to reduce the prevalence of tobacco consumption, alcohol consumption, excess body weight, inadequate physical activity and inadequate fruit and vegetable intake. The outcomes of the interventions were evaluated based on applicability and suitability to a Canadian population and consistency of results observed across studies and relevant age groups. We are currently modeling the impact of interventions on future exposure prevalence using data from the Canadian Community Health Survey data. Preliminary results will be presented at the meeting. For tobacco and alcohol, taxation was identified as the most effective intervention for reducing consumption. It was estimated that every 10% price increase in tobacco and alcohol led to a 3.7% reduction in the prevalence of active smoking (Hoffman, 2015) and a 4.4% reduction in alcohol consumption (Wagenaar, 2009). For fruits and vegetables, a 10% price decrease could increase consumption by approximately 5% (Powell, 2013). Behavioural interventions combining diet, exercise and lifestyle changes such as the Diabetes Prevention Program (DPP) were effective in reducing excess body weight. Compared to controls, intervention participants showed a greater reduction in BMI of -1.11 kg/m2 (Peirson, 2014). Higher physical activity levels could be achieved by implementing dynamic intervention programs including public campaigns, social support and health behaviour change programs. Our systematic literature reviews identified several interventions that can modify the prevalence of cancer-associated lifestyle factors in Canada. The outcomes of these interventions will be used to estimate the potential impact of exposure prevalence change at the population level on future cancer incidence in Canada.

Co-Author(s): Xin Grevers, Farah Khandwala, Yibing Ruan, Abbey Poirier, Christine Friedenreich, Darren Brenner

A multi-centre retrospective study of evaluation times in prior living kidney donors

Presented by: **Steven Habbous**, PhD student, Western University

To measure the time to complete the evaluation process in prior living kidney donors. We also consider centre-to-centre variability and whether individual donor-level factors were associated with longer evaluation times. At 16 Canadian and Australian transplant centres, we retrospectively assessed the evaluation time of 894 donors who underwent nephrectomy (September 2009 – January 2015). We used Cox proportional hazards regression to identify factors associated with longer evaluation times. The median (25th-75th percentile) total evaluation time (time from when the candidate first contacted the transplant centre to donation) was 11.0 (7.2-18.0) months. The time from first contact to approval to donate, and the time from approval to donation was 8.6 (5.2 15.0) months and 0.8 (0.2-0.5) months, respectively. The median time between the first and last nephrologist, surgeon, or psychosocial assessment was 3.0 (1.0-6.3) months. All of these times varied across transplant centres. After adjustment, kidney paired donation increased all evaluation times [hazard ratio (HR) ranged from 1.39-2.09)]. Very obese donors compared non-obese donors had longer times until approval [HR 2.15 (1.09-4.24)]. For some, the evaluation period to become a living kidney donor is lengthy. A better understanding of the reasons for a prolonged evaluation may inform quality improvement initiatives to reduce unnecessary delays in the evaluation.

Co-Author(s): Steven Habbous, Garg Amit

Meat-derived carcinogens and the risk of colorectal cancer; a meta-analysis.

Presented by: **Vikki Ho**, Assistant Professor/Researcher, University of Montreal/University of Montreal Hospital Research Center (CRCHUM)

To conduct a meta-analysis and summarize the evidence on the relationships between dietary PhIP, the most abundant HAAs found in cooked meats, and overall meat mutagenicity, and colorectal cancer risk. Admissible studies were identified by searching through PubMed, Google Scholar, Web of Science and other sources. Studies that investigated associations between exposure to HAAs, or meat cooking with colorectal cancer were evaluated. We retained studies that estimated PhIP and overall meat mutagenicity using the CHARRED mutagen database, and which employed either a cohort or case-control design. Of the 68 studies identified, 11 studies were included in the final meta-analysis. Reasons for exclusion included study type (cross-sectional), duplicate study population, and irrelevant exposure or outcome measurementAdmissible studies were identified by searching through PubMed, Google Scholar, Web of Science and other sources. Pooled analyses were conducted separately for cohort and case-control studies, using a random-effects model. For PhIP, the pooled estimates from 6 cohort (relative risk (RR) [95% confidence interval] = 1.04 [0.96, 1.12] p=0.353) and 5 case-control studies (odds ratio (OR) [95%CI] = 1.15 [0.99, 1.33], p=0.072) revealed no association when comparing the highest versus lowest category of dietary exposure. For meat mutagenicity, an exposure metric which incorporates the mutagenic potential of all classes of carcinogens found in cooked meats including HAAs, the pooled RR was 1.12 ([1.02 , 1.23], p= 0.023) for 4 cohort studies; only one case-control study investigated the meat-mutagenicity-colorectal cancer association. Future analysis will consider subgroup analysis (sex; anatomic location of cancer). Findings from this meta-analysis suggest that PhIP, one of the most commonly assessed HAA in epidemiologic research, is not associated with colorectal cancer risk. In contrast, meat mutagenicity, representative of the mutagenic potential of cooked meats, appears to increase the risk of colorectal cancers.

Co-Author(s): Vanessa Brunetti, Leila Farkhondeh-Kish, Vikki Ho

The Association between Frequency of Religious Participation and Cognitive Function: Preliminary Analysis of the Canadian Longitudinal Study on Aging

Presented by: **Shera Hosseini**, Graduate Student, University of Waterloo

To assess whether greater frequency of religious participation is associated with better cognitive function in a group of 21,243 adults aged 45 to 85 years recruited from across Canada. We used baseline telephone interview data from the Canadian Longitudinal Study on Aging (CLSA) and the Kruskal-Wallis test to examine the relationship between the frequency of religious participation and cognitive function. Religious participation was measured categorically: at least once a day, at least once a week, at least once a month, at least once a year, never. Three tests measured cognitive function: the Rey Auditory Verbal Learning Test, Mental Alternation Test, and Animal Fluency Test. A p-value < 0.005 was considered statistically significant after applying the Bonferroni correction for multiple comparisons. The mean age of the CLSA participants was 63 years. The majority of participants reported never participating in religious activity (47.5%). Forty-nine percent of the participants were male. We detected several statistically significant pair-wise comparisons ($p < 0.005$) for each of the cognitive tests (e.g., at least once a week vs. at least once a year); however, the data did not show any particular trends or patterns. We will conduct regression analyses examining cognitive outcomes singularly and combined to assess the association between religious participation and cognitive function, controlling for age, sex, education, place of residence, and social engagement. We will repeat the analyses longitudinally when the CLSA releases three-year follow-up data.

Co-Author(s): Shera Hosseini, Ashok Chaurasia, Mark Oremus

Studying Cycle Tracks and Cyclist Safety in Toronto through Online Data Mining

Presented by: **Martha Hunter**, Master's Student, Lakehead University

To assess the relationship between protected cycle tracks and cyclist-involved collisions and to explore the utility of using open, online data sources for this analysis. Toronto Police Services uses a Twitter account (TPSOperations) as their police scanner. This Twitter account was searched for tweets containing "collision", "cyclist, "cycle", or "bike". Once a relevant tweet was identified, the intersection, time, and injury information were recorded. These collisions were compared to the City of Toronto's cycling route map and collisions along seven cycle tracks were identified. Reference routes (of similar length and with similar cross streets) were selected from the map, and collisions on these streets were identified. Cycling usage for all routes were calculated using city bicycle counts and one conducted by a cycling advocacy organization. 348 tweets about cyclist-involved collisions were initially recorded. Tweets that were sent out prior to April 2015 were excluded, as the Toronto Police were not consistently tweeting collision information before this point, as were those involving off-road collisions. 330 tweets were included in the analysis. 23 of these collisions occurred on the seven protected cycle tracks and 45 of these collisions occurred on the 12 streets selected to be reference routes. Both a crude risk ratio for collisions and a risk ratio adjusted for high- and low-use were calculated in R Studio. The crude risk ratio was 0.70 (95% CI of 0.43 to 1.16) and the adjusted risk ratio was 0.64 (95% CI 0.38 to 1.08). Although this data analysis did not show a statistically significant relationship between the presence of protected cycle tracks at an intersection and cyclist-involved collisions, further analysis will look at a longer period of tweets in case a larger sample size affects the findings.

Co-Author(s): Martha Hunter

Long-Term Risk of Recurrence After Discontinuing Anticoagulants for a First Unprovoked Venous Thromboembolism: Systematic Review and Meta-Analysis

Presented by: **Faizan Khan**, Master of Science Student, University of Ottawa

Establish the absolute, long-term risk of recurrent venous thromboembolism (VTE) at 1, 2, 5, 10 and 20 years after stopping anticoagulant therapy (AT) in patients with a first unprovoked VTE. A systematic review and meta-analysis of randomized controlled trials and prospective cohort studies involving unprovoked VTE patients who had completed at least 3 months of initial AT; and who were followed-up for the standardized time intervals of 1, 2, 5, 10, and 20 years (± 3 months) after stopping anticoagulation. The primary outcome of the rate of recurrent VTE was calculated for each study from the total number of recurrent events and the corresponding number of patient-years of follow-up. We used a random-effects model to pool study results and reported a weighted estimate of the absolute risk per 100 patient-years. We included 18 eligible studies (14 randomized controlled trials; 4 prospective cohort studies) in our analysis, and contacted the primary investigators of each study for additional data. Based on currently available data obtained from 10 studies (6 randomized controlled trials; 4 prospective cohort studies) involving 4,187 patients, the pooled absolute rate of recurrent VTE was 10.27 events per 100 patient-years (95% CI, 8.50 to 12.19) within the first year, 9.37 events per 100 patient-years (95% CI, 7.56 to 11.35) within the first 2 years, 6.50 events per 100 patient-years (95% CI, 5.26 to 7.86) in the first 5 years, and 5.74 events per 100 patient-year (95% CI, 4.64 to 6.96) within the first 10 years after discontinuing anticoagulants. Final numbers/conclusions are pending. The absolute rate of recurrent VTE appears to peak in the first year after stopping anticoagulation, and then continuously decrease over time. A clear-cut estimate of the long-term recurrence risk will help in the clinical decision-making for optimal treatment duration.

Co-Author(s): Faizan Khan, Alvi Rahman, Marc Carrier, Clive Kearon, Jeffrey Weitz, Sam Schulman, Francis Couturaud, Paolo Prandoni, Sabine Eichinger, Cecilia Becattini, Giancarlo Agnelli, Harry Buller, Timothy Brighton, Gualtiero Palareti, Mary Cushman, Laurent Pinede, Elham Sabri, Brian Hutton, George Wells, Marc Rodger

Statistical Methods for Projecting Lifestyle Exposure Prevalence Trends in Canada

Presented by: **Farah Khandwala**, Statistical Associate, Alberta Health Services

We explored statistical methods for projecting exposure prevalence trends of lifestyle risk factors based on past population-level data to inform a larger project for estimating future cancer burden in Canada. Potential impact fractions are used to estimate the avoidable burden of disease after a change in the exposure of a related risk factor. To quantify this effect, the projected prevalence trends if the risk factor continues unchanged (baseline prevalence) must first be established. Historical prevalence estimates for lifestyle exposures including smoking status, alcohol intake, body mass index, and physical activity were obtained from the Canadian Community Health Survey and the National Population Health Survey spanning 1994-2011. Linear and multinomial regression and logistic growth curves were considered for modeling past data and projecting prevalence trends for each level of the exposure. Linear regression models provide a straightforward approach to modeling prevalence trends, however, should be interpreted with caution since prevalence rates are not bounded at zero. Multinomial regression models provide an intuitive way to model prevalence data with multiple exposure states and captured log-linear trends in exposure levels of alcohol intake, BMI, and physical activity. While current smoking status followed a linear decline, a logistic growth curve provided the best model to characterize the initial increase and eventual leveling of former smoker status. At the national level, the prevalence of never smokers is estimated to increase from 37% in 2011 to 45% in 2030. In contrast, current smoker rates are predicted to decrease from 21% to 12%, while former smoker rates remained at 43%. Prevalence projections are an integral piece to estimating the effect of risk factor change on disease burden. When historical data are limited and more sophisticated forecasting methods are not available, multinomial regression and logistic growth curves provide reasonable approaches to model lifestyle exposure trends.

Co-Author(s): Farah Khandwala, Abbey Poirier, Darren Brenner, Xin Grevers, Yibing Ruan, Christine Friedenreich, on behalf of the ComPARe Team

Factors influencing employer participation in research

Presented by: **Vicki Kristman**, Associate Professor, Lakehead University

The objective of this research was to identify factors associated with employer participation and interest in research. Employers in Thunder Bay, Ontario with at least one employee were eligible. We used a fee-for-service online business tool to identify companies. We approached and invited employers to participate by telephone. If employers expressed interest, they were emailed a detailed description of the study and followed-up to complete the consent process. Consenting employers provided contact information of two employees who were invited to participate in a 10-15 minute web-based survey. We emailed these employee(s) a study invitation and link to the web-based survey. We created two multivariable logistic regression models to determine factors associated with participation and interest in research. We approached 597 eligible employers; 107 (17.9%) consented to participate, 274 (45.9%) declined participation, and 216 (36.2%) were unable to be contacted. A company-level analysis suggested three factors were associated with employer participation: high payroll and benefits, local authority to provide consent, and non-profit ownership. The 107 consenting employers provided contact information for 132 employees, 92 of which responded to the web survey (69.7% participation rate), representing 82 unique employers. The only significant variable in the model was: “wanting to know more about injury prevention”. Those who responded positively to this question were 3.6 (95% confidence interval: 1.16, 11.00) times more likely to be interested in work and health research than those who responded negatively. Local, non-profit companies with high payrolls were most likely to participate. These factors may vary depending on the nature of the research. Further research is needed to corroborate these findings. The identified factors can help target future recruitment strategies to ensure representative employer samples.

Co-Author(s): Vicki Kristman, Paula Reguly, Joshua Armstrong

Susceptibility of Depression among Canadian University Students

Presented by: **Philip Lam**, Health Science Student, University of Ottawa

Discover what factors contribute to the higher susceptibility of depression among Canadian university students. In order to research this specific topic, we initially began by consulting grey literature pertaining to both depression and Canadian students from reputable organizations such as ACHA, CANMAT, Canadian Psychiatric Association, and Public Health Agency Canada. Next, using PubMed we searched for the terms “depression”, “university students”, “causes”, “Canada” and more. We narrowed the parameters of our search to only include publications that were in English, had the full-text available and were conducted within the past 10 years. We excluded low quality, duplicate and non-relevant studies. Through our systematic literature search, we ended up with a final count of 12 studies. Of these studies, the recurring topics included Academics (n= 3), Finances (n= 2), Social Support (n = 3), Lack of Treatment (n= 4) and other (n= 3). It must be noted that many of the studies covered more than one of the main ideas. Key findings from these studies were first and foremost that stress and depression are strongly related. Secondly, Academics, Finance and Social Support are key factors contributing to stress and depression. Next, depression has a negative effect on academic performance, which inevitably creates a vicious cycle. Lastly, stress management and early intervention seem to be the best areas to address in order to reduce prevalence. Academics, finance and social support were found to be the greatest contributors to the high prevalence of depression among Canadian university students. While university services (medical clinics, cognitive therapy, gyms, etc.) exist, only a fraction of students with depression actively make use of them.

Co-Author(s): Philip Lam, Theodore Boufaical

Health In the Rural Towns of Lima, Peru

Presented by: **Theodore Boufaical**, Health Science Student, University of Ottawa

Examine the Medical, Educational and Developmental needs of rural Lima, Peru. Initially, we traveled to rural Lima and worked with a team of physicians, nurses and volunteer students in multiple Mobile Clinics. We established an overview of the issues that the rural towns were facing and learned about their culture. We interviewed various community professionals (village leaders, physicians, teachers, etc.) to develop an understanding of the current situation and collect qualitative data. Through MEDLIFE’s mobile clinic program, which proved to be a reliable medium, we further collected quantitative data while still providing health services to various communities. Through the data collected, we observed a number of common illnesses. Namely, dental caries, parasites, back pain, arthritis, diabetes and illnesses related to pregnancy. In fact, it was also observed that this population had a high fertility rate, high infant mortality rate and mother mortality rate. We were able to draw conclusions based on the qualitative and quantitative data. Specifically, the two greatest determinants of health that influenced their outcomes were education and infrastructure. Within education, knowledge of oral hygiene and safe sex practices were scarce. Within infrastructure, clean water and useable roads were often absent. A source of bias exists due to the limit of patients that our mobile clinics could see per day. Although we established common illnesses and their relationships with specific determinants of health, our work is still in progress and may be subject to change. Nevertheless, increased focus on education systems and infrastructures may produce the largest positive impact on the rural Lima, Peru population.

Co-Author(s): Theodore Boufaical, Philip Lam

Beall's List: A Viable Tool for Identifying Predatory Science Journals?

Presented by: **Meghan Laverty**, Student, University of Ottawa

Librarian Jeffery Beall's list of "predatory" journals is used for critiquing studies and making decisions about promotion and tenure. We sought to assess its perceived validity. An online survey of Canadian university librarians was conducted to determine their attitudes about whether Beall's List is valid, the role it should play in critiquing studies and informing professors' promotion, and how one should define a predatory journal. Thematic content analysis was used to identify prevailing themes in responses. Beall's List was well-known among the 253 respondents and 66.2% said they name it as a resource. However, only 35.4% said they are very likely to agree that a journal on the list is predatory. In the text responses, librarians were split evenly between those supportive and those opposed to Beall's activities. The former expressed simple sentiments, such as that the list is easy to use; while the latter offered more detailed criticisms, describing biases and subjectivity present in its management. The majority said that it should only be used as a starting point and with caution. Predatory journals were defined as including elements of profit motivation, misrepresentation, no actual peer review, and exploitative behaviour: a higher practical threshold than that used in Beall's List. While having served the vital function of alerting the world to the existence of predatory journals, Beall's List is not a validated, transparent, or peer-reviewed arbiter of the quality of journals. An unbiased third party is needed to replace its function.

Co-Author(s): Raywat Deonandan, Meghan Laverty

The Relationship Between Age and Serum Vitamin D Status in a Population-based Cohort of Canadian Breast Cancer Patients

Presented by: **Nicholas Massaro**, Student, University of Calgary

The objective of this research was to examine the relationship between age and vitamin D serum concentration in a population-based cohort of breast cancer patients. All participants were recruited by the Alberta Cancer Research Biobank, according to the Comprehensive Biospecimen Rapid Ascertainment (CoBRA) procedures, between February 2010 and February 2015. All participants provided informed consent and a blood sample at or near the time of diagnosis. Serum vitamin D (25-hydroxyvitamin D; 25(OH)D) was measured by the chemiluminescent LIAISON® XL (DiaSorin) assay. We calculated Pearson Correlation Coefficients to determine relationships between Serum 25(OH)D concentration and age. Differences in serum 25(OH)D between age groups were assessed using the Wilcoxon Two-Sample Test. Serum 25(OH)D values were available for 1266 participants. The mean serum vitamin D status in the CoBRA cohort was 81.9 nmol/L. 2.1% of patients were considered vitamin D deficient (serum vitamin D < 3 0nmol/L) and a further 10.6% were considered vitamin D insufficient (serum vitamin D < 5 0nmol/L). 39.1% of patients were vitamin D sufficient (>50-80nmol/L) and 48.3% were in the optimal range (80-250 nmol/L). Serum vitamin D status was positively correlated with age and the serum 25(OH)D concentration (Pearson correlation coefficient, r=0.13995, p < 0 .0001). Mean serum vitamin D status differed significantly by menopausal status (< 5 0 years: 76.3 nmol/L; ?50 years 83.9 nmol/L, p<.0001). When patients were stratified by 10 year age groups, serum vitamin D increased in each age group except in those >80 years of age. Some previous research has suggested that serum 25(OH)D declines with age. We observed a significant positive correlation between age and serum 25(OH)D in our cohort. Interestingly, participants < 4 0 years of age had the lowest serum 25(OH)D; we also observed a slight decline in participants >80 years.

Co-Author(s): Nicholas Massaro, Heather Merry, Rachel O'Reilly, Margo Hopkins, Linda S. Cook, Alexander Paterson, Hans J. Vogel, Carrie S. Shemanko, Anthony Magliocco, David A. Hanley, Christine Friedenreich, Nigel Brockton

Trends in Serum Vitamin D in a Population-based Cohort of Albertan Breast Cancer Patients

Presented by: **Heather Merry**, Statistical Research Associate, Alberta Health Services

To investigate changes in serum vitamin D (25(OH)D) over the study period and according to season of blood draw in a population-based cohort of Canadian breast cancer patients. Between 2010 and 2015, 1431 breast cancer patients were recruited by the Alberta Cancer Research Biobank (ACRB). All participants provided informed consent and a blood sample at or soon after their time of diagnosis. Serum 25(OH) D was measured by the chemiluminescent LIAISON® XL (DiaSorin) assay. We assessed Vitamin D serum concentrations over time by looking at the date the participants' blood was drawn, and used linear regression to determine if there was a trend in serum 25(OH)D concentrations. We assessed the impact of seasonality on serum 25(OH)D concentration using ANOVA. The mean 25(OH)D concentration in the our cohort was 82.3 nmol/L (SD=31.1). The mean serum 25(OH)D did not change significantly over the time period of our study, 2010 - 2015 (p=0.2343). The highest mean values for serum 25(OH)D were observed in summer and fall but the seasonal variation did not reach statistical significance in our cohort. The average monthly Vitamin D serum concentrations ranged from 74.5 nmol/L to 85.4 nmol/L, but no significant difference was found between the months (p=0.3573). Vitamin D serum concentrations did not differ between those who had their blood drawn pre-surgery (82.4 nmol/L) and those post-surgery (81.4 nmol/L). Serum 25(OH)D levels were in the sufficient to optimal range for most breast cancer patients. Season of blood draw did not significantly impact 25(OH)D levels. No significant increase in serum 25(OH)D was observed over the 5 years despite concomitant increases in vitamin D intake recommendations.

Co-Author(s): Heather Merry, Rachel O'Reilly, Margo Hopkins, Linda S. Cook, Alexander Paterson, Hans J. Vogel, Carrie S. Shemanko, Anthony M. Magliocco, David A. Hanley, Christine Friedenreich, Nigel Brockton

Selective Outcome Reporting in Randomized Controlled Trials of Lung Cancer Immunotherapy

Presented by: **Reenika Aggarwal**, Student, University of Waterloo

This study examines whether publication bias is present in the form of selective outcome reporting (SOR), prospective registration, and favouring of significant results in clinical trials of lung cancer immunotherapy. All trials of lung cancer immunotherapies published since 2005 were identified through Cochrane and PubMed databases. Search terms: controlled trial*[all fields] OR randomised controlled trial*[all fields] OR rct[tiab] OR rcts[tiab]). After articles were selected, the corresponding trial registration number was identified through the publication or through manual searching of trial registries through the International Clinical Trials Registry Platform. Primary outcomes, secondary outcomes, outcome definitions, sample size, source of funding, study characteristics and significant findings were compared between the trial registration and the publication for any changes. Out of 477 records identified in the literature search, 28 were eligible for the study. 32.1% of studies contained trial registration information in the article (n=9) and 67.9% did not (n=19). Four additional trial registries were identified through manual searching of trial registries and trial registration information was collected for 13 studies. 53.8% of studies had prospective registration (n=7) and 46.2% did not (n=6). 92.3% of studies contained SOR (n=12). The most prevalent types of SOR were adding a new secondary outcome (66.7%, n=8), omitting a registered secondary outcome (41.7%, n=5), and omitting a primary outcome (25%, n=3). However, SOR was not associated with funding type or region of publication (all p-values < .05), nor did it apparently contribute to over-reporting of statistically significant results. SOR was present in many of the studies contained in trial registries yet the small sample size prevented us from assessing SOR's impact on reported results. We could draw no inferences about the 15 studies that were not contained in trial registries.

Co-Author(s): Reenika Aggarwal, Mark Oremus

Clinical utility of serum 25-Hydroxyvitamin D in the diagnosis of insulin resistance: A cross-sectional analysis of NHANES, 2001-2010

Presented by: **Banaz Al-khalidi**, PhD Candidate, York University

Early detection of insulin resistance (IR) in routine practice is challenging. We evaluated the clinical utility of serum 25-Hyroxyvitamin-D [25(OH)D, biomarker of vitamin-D status] in diagnosing IR in asymptomatic individuals. This study included 6,868 participants aged >20 years without diagnosed diabetes in NHANES 2001-2010. IR was defined by the homeostatic model assessment (HOMA-IR >75th sex-specific percentile). We randomly split the dataset into training and testing samples (ratio of 3:2, respectively). Using logistic regression, we developed 2 risk models to estimate IR in the training sample: model 1 included established risk factors for IR, and model 2 included risk factors in model 1 plus serum 25(OH)D. Weighted predictiveness curves and decision curve analysis were used for the assessment of the improvements in diagnosing IR. Results were validated in the testing sample. The prevalence of IR in the overall sample was 22.3% (95% CI: 20.9, 23.6). Model 1 included age, sex, ethnicity, waist circumference, plasma glucose, triglyceride, HDL-cholesterol, family history of diabetes, physical activity, and medications. Model 2 additionally included serum 25(OH)D. Both models estimated IR similarly; where 60% of the population had risks < 0 .20 and 40% had risks >0.20 (predicted risks ranged from 0.0001 to 1.0). A risk threshold of 0.20 in both models corresponded to 85% sensitivity (true-positive fraction) and 75% specificity (true-negative fraction). Comparing model 2 to model 1 at a risk threshold of 0.2, the difference of net benefit equaled 0.17 to 0.42 per 100 people, indicating 2 to 4 extra cases of IR would be diagnosed per 1,000 people using model 2. Addition of serum 25(OH)D to established risk factors may provide improvements in diagnosis of IR. Early diagnosis may prevent long-term consequences of IR, in particular, type-2 diabetes and diabetes-induced bone fragility. Further research is needed to validate the prognostic value of 25(OH)D in other populations.

Co-Author(s): Banaz Al-khalidi, Michael Rotondi, Samantha Kimball, Chris Ardern

Precision Remodelling and Determining Cut-off Scores of the Iowa Infant Feeding Attitude Scale to Improve Clinical Use and Efficacy among Prenatal Women in Canada

Presented by: Nouf AlKusayer, MSc. Clinical Epidemiology candidate , Memorial University of Newfoundland and Labrador

To reduce the 17-item Iowa Infant Feeding Attitude Scale (IIFAS) to a more clinically manageable scale and determine cut-off scores for both the original and reduced version of IIFAS. The original IIFAS was validated in expectant women (n= 793) in Newfoundland and Labrador (NL) and later explored in a large population (n=1283). An exploratory factor analysis (EFA) using principle component analysis with varimax rotation was performed to explore the underlying factor structure of the IIFAS tool. The internal consistency of both the 17-item and reduced 13-item version was assessed using Cronbach's alpha and item total correlation. The Area Under Receiver Curve (AUC) and linear regression model were then used to assess predictive validity. A receiver operating characteristic and Youden index analysis was performed to identify the optimal cut-off scores. Our findings revealed that a 13-item IIFAS had high internal consistency (Cronbach's alpha = 0.870). Three themes or factors were extracted from the EFA, resulting in the removal of four items. The reduced 13-item scale demonstrated an excellent ability to predict intent to breastfeed (AUC = 0.914). A score < 60 (sensitivity = 0.81, specificity = 0.87) and a score < 45 (sensitivity = 0.84, specificity = 0.83) were found to be optimal cut-off scores for the 17-item and 13-item IIFAS, respectively. The proposed cut-off score for the reduced version demonstrated higher ability to predict women formula-feeding at one month (Adjusted OR = 6.32; 95% CI: 1.84, 11.61) than that of the original IIFAS (Adjusted OR = 4.62; 95% CI: 2.42, 16.52). The adoption of the 13-item IIFAS would facilitate the administration and efficacy of the tool in clinical settings for prenatal women, compared to the 17-item IIFAS. The study will guide the design of provincial prenatal breastfeeding interventions to improve the low breastfeeding rates in NL.

Co-Author(s): Nouf AlKusayer, William Midodzi, Julie Temple Newhook, Leigh Anne Newhook, Nicole Gill, Lorraine Burrage, Laurie Twells

Effectiveness of oral bisphosphonates in reducing fracture risk among chronic oral glucocorticoid users: a population-based study

Presented by: **Mohamed Amine Amiche**, PhD candidate, Leslie Dan Faculty of Pharmacy, University of Toronto

Oral bisphosphonates' ability to reduce fracture among oral glucocorticoid (GC) users remains controversial. We assessed the effectiveness of oral bisphosphonates in reducing fracture among oral glucocorticoid (GC) initiators. We conducted a cohort study of patients aged > = 66 years who initiated an oral GC (1998-2014). Within a 6-month ascertainment period following the first oral GC claim, patients were followed to include patients who received > = 450 mg prednisone equivalent and > = 2 GC prescriptions and who were osteoporosis drug-naïve prior the first GC claim. Exposed patients were those who received an oral bisphosphonate (alendronate, etidronate, or risedronate) during the ascertainment period. Exposed patients were matched 1:1 to unexposed on fracture risk factors and propensity score. We examined hip (primary outcome), vertebral, humerus, and forearm fractures using Cox proportional hazards We identified 3,945 alendronate, 8,464 etidronate, and 5,825 risedronate eligible new users. Matching yielded balanced exposed and unexposed cohorts. Alendronate was associated with reduced hip fracture (Hazard ratio (HR) 0.46, 95% confidence interval [0.25?0.80]) and vertebral fracture risk (HR: 0.49 [0.34?0.69]). Etidronate was associated with reduced hip (HR: 0.87 [0.65?1.17]) and vertebral fracture risk (HR: 0.58 [0.45-0.73]), yet HRs for hip fracture was not statistically. Risedronate was associated with reduced hip (0.58 [0.36-0.90]). and vertebral fracture risk (HR: 0.43 [0.32-0.59]). No risk reduction for forearm and humerus fractures was apparent for any bisphosphonate. Oral bisphosphonates are associated with a decreased risk of hip and vertebral fracture. Further research is needed to assess the comparative effectiveness of oral bisphosphonates among oral GC users

Co-Author(s): Mohamed Amine Amiche, Linda Lévesque, Tara Gomes, Jonathan Adachi, Suzanne Cadarette

The Effects of Phacoemulsification on Intra-Ocular Pressure and Topical Medication Use in Patients with Glaucoma: A Systematic Review and Meta-Analysis Three-Year Data

Presented by: James Armstrong, MD/PhD Candidate, Schulich School of Medicine

Systematic review and meta-analysis was undertaken to synthesize evidence quantifying the effect of phacoemulsification on intra-ocular pressure and the required number of topical glaucoma medications in patients with cataract. Search strategy was last run on August 15, 2016 in MEDLINE, EMBASE, CINAHL, the Cochrane Library, Web of Science and BIOSIS to identify potentially relevant studies. Identified articles were screened for relevance and meta-analysis was used to compute post-operative mean and percentage reduction in intra-ocular pressure (IOPR%) as well as mean difference in topical glaucoma medications. The search strategy identified 1613 records. Thirty-two studies (1826 subjects) were included in quantitative synthesis. A 12%, 14%, 15% and 9% reduction in intra-ocular pressure from baseline occurred six, 12, 24 and 36 months after phacoemulsification. A mean reduction of 0.57, 0.47, 0.38 and 0.16 medications per patient of glaucoma medication occurred 6, 12, 24 and 36 months after phacoemulsification. Phacoemulsification as a solo procedure does lower intra-ocular pressure and reduce medication requirements in patients with POAG. These effects appear to last at least 36 months with certain populations experiencing a much greater effect than others. Future work to identify these populations is necessary.

Co-Author(s): James Armstrong, Tomas Wasiuta, Efstathia Kiatos, Monali Malvankar, Cindy Hutnik

Depressive symptomatology and lifelong music experience: a cross-sectional study

Presented by: Jennifer Asselstine, M.HSc. Candidate/Graduate Assistant, Lakehead University

This project aims to determine the association between exposure to music and depressive symptomology in university students. We will also explore associations between musical improvisatory capabilities and depressive symptomatology. This project employed the use of a web-based, anonymous survey that was distributed to a large number of students at various academic departments. The survey was designed to assess each participant's subclinical depressive symptomatology through use of the Centre for Epidemiologic Studies Depression Scale (CES-D). To assess the exposure, each student was asked several questions related to his/her musical background, including improvisatory capabilities. The survey also contains questions related to potential confounding factors, including anxiety, presence of other mental health and chronic conditions, perfectionism, and burden of schoolwork. Data will be analyzed using multivariable linear regression, adjusting for appropriate confounders. At its completion, this project will contain responses from more than 500 students. At this stage, we have collected data from 59 respondents, and have reported initial descriptive findings. Of the 59 respondents, approximately 35% were identified with "potential subclinical depression". 46% of students identified as musicians. Subclinical depression was present in approximately 30% of student musicians, whereas it was closer to 52% in student non-musicians. The preliminary odds ratio indicates that those with subclinical depression are 50% less likely to be musicians than those without subclinical depression, although the association was not statistically significant (0.5 (95% CI [0.16 to 1.57])). Full analysis with all 500 respondents (including control for confounders) is estimated to be completed no later than April 2017. This study is the first of its kind to employ a cross-sectional survey to ascertain the association between different types of musical exposure, as well as a musician's improvisatory capabilities and depression symptoms. The next step will be to complete the full analysis.

Co-Author(s): Jennifer Asselstine, Vicki Kristman, Michel Bédard, Rebecca Schiff

The Rivermead Post-Concussion Questionnaire Predicts Social, Mental, and Overall Self-Reported Recovery Six Months After Mild Traumatic Brain Injury In Older Adults

Presented by: **Jennifer Asselstine**, M.HSc. Candidate/Graduate Assistant, Lakehead University

The goal of this study was to determine the association between various analytic definitions of the Rivermead Post-concussion syndrome Questionnaire (RPQ) and future disability in older adults with mTBI. This study used a prospective cohort design, assessing post-concussion syndrome symptomatology at baseline and recovery outcomes six months later. All individuals aged 65 or older who had visited a participating emergency department (ED) between November 5th, 2012 and November 13th, 2013 for mTBI were potentially eligible for inclusion in the study. The sixteen symptom RPQ was used to measure baseline post-concussion syndrome symptomatology. Disability at six months was measured using the Glasgow Outcome Scale-Extended (GOSE) (social functioning), SF-12 physical (PCS) and mental health components (MCS), and self-reported recovery. Five analytic definitions of the RPQ were assessed. Using linear regression, we found strong negative relationships between baseline RPQ and the GOSE (?=-0.610, 95% CI [-0.851 to -0.370]), SF-12 mental component (?=-0.314, 95% CI [-0.602 to -0.025]), and self-reported recovery [OR= 6.878, 95% CI [2.106 to 22.461]). These results indicate that a higher RPQ score at baseline was associated with poorer recovery outcomes six months later. No association was found between the RPQ and the SF-12 physical component at follow-up with any of the RPQ analytic definitions. Differences between the RPQ analytic definitions did not vary considerably from one another for any of the outcome measures. RPQ Definition #5 (consisting of three symptoms) predicted similar results with a conservative confidence interval as did the original, sixteen-symptom RPQ definition. A poor RPQ score may be associated with worse prognosis six months later, when referring to psychosocial, emotional and mental well-being. A shorter, three-symptom definition of the RPQ does not differ from longer RPQ definitions, and could be used as an easily administrable prognostic factor.

Co-Author(s): Jennifer Asselstine, Vicki Kristman

Transgender-inclusive measures of sex/gender for population health surveys: Evaluation and recommendations

Presented by: **Greta Bauer**, Associate Professor and Graduate Chair, Epidemiology & Biostatistics, Western University

Government and research organizations are increasingly seeking to expand survey demographic measures of sex/gender to be transgender-inclusive, given documented inequalities. We conduct an evaluation of such measures. Using an internet survey and follow-up of 311 participants, and cognitive interviews from a maximum-diversity sub-sample (n=79), we conducted an iterative parallel mixed-methods evaluation of two existing measures: a version of a two-step question developed in the United States and a multidimensional measure developed in Canada. We found very low levels of item missingness (< 1 %), and no indicators of confusion on the part of cisgender (non-trans) participants for both measures. However, a majority of interview participants indicated problems with each question item set. Agreement between the two measures in assessment of gender identity was very high (K=0.9081), but gender identity was a poor proxy for other dimensions of sex or gender among trans participants. Issues to inform measure development or adaptation that emerged from either analysis included dimensions of sex/gender measured, whether those with a gender identity outside the male-female binary were trans, Indigenous traditional identities, proxy reporting, temporality concerns, and the inability of a single item to provide a valid measure of sex/gender. Based on this evaluation, we recommend that multi-use population surveys consider a new Multidimensional Sex/Gender Measure for testing that includes three simple items to assess gender identity and lived gender, with optional additions. We provide considerations for adaptation of this measure to different contexts.

Co-Author(s): Greta Bauer, Jessica Braimoh, Ayden Scheim, Christoffer Dharma

Data Privacy and Research: New Challenges from the Courts

Presented by: **Greta Bauer**, Associate Professor and Graduate Chair, Epidemiology & Biostatistics, Western University

There have now been at least three Canadian court cases in which a motion has been filed to require a researcher to produce raw confidential research data for the opposing side. This presentation will discuss issues of relevance in protecting personal health information of participants in epidemiologic studies. A case study will be presented, wherein in 2016 an application was made to the Quebec Superior Court to order me (an expert witness) to produce raw data on research participants, despite my statement that this was not something I could ethically do. Ethical concerns included the protection of participants' identities and privacy, maintenance of community trust, preserving the ability of researchers to engage in future research with groups that experience marginalization, and preventing researchers working with populations requiring privacy protections from being forced off court cases that may impact those populations. While the court decision was ultimately favourable, this likely depended on: 1) clear wording in the letter of consent; 2) clear wording in the REB-approved protocol; 3) clear research team policies; 4) consistent non-sharing of data; 5) strong arguments presented by the researcher; 6) strong legal arguments by counsel; 7) support of university legal counsel; 8) support of the university research office. While such court challenges are exceedingly uncommon, there was an unfavourable result in another case wherein the court ordered the researcher to produce raw data identifying participants. Thus, it is imperative that researchers become aware of the criteria that affect decisions on whether research communications (data) are "privileged communication", and thus not subject to disclosure in legal situations. Lessons learned in planning for and conducting research will be discussed.

Co-Author(s): Greta Bauer

Annual versus Biennial Screening: Performance Measures in Concurrent Cohorts within the Ontario Breast Screening Program

Presented by: **Kristina Blackmore**, Research Associate, Cancer Care Ontario

This study examines the benefits and harms of annual screening among women aged 50-74 years at increased risk due to family history of breast and/or ovarian cancer or mammographic density. Concurrent cohorts of women aged 50-74 years screened in the Ontario Breast Screening Program (OBSP) between 2011 and 2014 were identified and followed for 12 months. Screening, diagnostic, and risk factor information was obtained from data collected within the OBSP. Recall rates, cancer detection rates (CDR), positive predictive value (PPV) were compared by screening recommendation with biennial screening as the referent cohort. The association between recommendation and risk of screening outcome was assessed using logistic regression adjusted for age, year of screening and time between screens with screening examination as the unit of analysis. Further analyses will examine false-positive rates. Among 647,032 biennial screens using digital mammography (DM), 45,666 were abnormal (Recall rate: 7.1%, 95% confidence interval (CI): 7.0-7.1%) and 3,351 cancers were detected (CDR: 5.2/1000, 95%CI: 5.0-5.4; PPV: 7.3%, 95%CI: 7.1-7.6%). Among 269,693 annual screens using DM, 17,569 were abnormal (Recall rate: 6.5%, 95%CI: 6.4-6.6%) and 1,103 cancers were detected (CDR: 4.1/1000, 95%CI: 3.9-4.3; PPV: 6.3%, 95%CI: 5.9-6.7%). After adjustment, the recall rate was significantly higher among women screened annually compared to those screened biennially (Odds ratio (OR): 1.17, 95%CI: 1.09-1.25); however, CDR (OR: 0.94, 95%CI: 0.73-1.22) and PPV (OR: 0.82, 95%CI: 0.63-1.06) were similar between screening cohorts. Preliminary results showed that annual screening reduced the risk of stage II+ cancers compared to biennial screening (OR: 0.76, 95%CI: 0.40-1.46). Few studies have examined screening recommendation outcomes based on risk factors and most were prior to DM implementation. In this study, annual versus biennial screening resulted in higher recall rates but may detect earlier stage disease, supporting more frequent screening among women at increased risk.

Co-Author(s): Kristina Blackmore, Anna M Chiarelli, Derek Muradali, Vicky Majpruz, Lucia Mirea, Courtney R. Smith, Susan J Done, Linda Rabeneck

Predictors of adherence to positive airway pressure therapy in children: A systematic review

Presented by: **Henrietta Blinder**, Epidemiology Graduate Student, University of Ottawa

While positive airway pressure (PAP) therapy has shown great success in the treatment of sleep-disordered breathing in children, adherence poses a major challenge. Enabling clinicians to identify and target children at risk of poor adherence prior to starting treatment is a necessary step to improve adherence rates. However, no systematic reviews have been done to date. The objective of this review is to identify predictors of PAP therapy adherence in children with sleep-disordered breathing. We will search MEDLINE, Embase, CENTRAL, and CINAHL for all longitudinal studies examining predictors of adherence to non-invasive PAP therapy in children ?19 years of age. Relevant conference abstracts from the last three years will additionally be searched. There will be no restrictions on language or publication date. All baseline clinical and non-clinical predictors of adherence evaluated by study authors will be considered. Screening and data extraction will occur independently and in duplicate. Risk of bias will be assessed using the JBI Critical Appraisal Checklist for Descriptive/Case Series studies. Pre-defined heterogeneity criteria will be used to assess for pooling. Where pooling is appropriate, results will be meta-analyzed into point estimates with associated 95% confidence intervals using a random effects model. In the presence of heterogeneity, a narrative synthesis will be conducted. The overall quality of the evidence will be assessed using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach. Predictors identified through the systematic review will be used to help clinicians target patients likely to adhere poorly to therapy prior to starting treatment, so that additional supports and interventions can be provided to those most in need. Identified gaps in the evidence will guide the direction of future research.

Co-Author(s): Henrietta Blinder, Franco Momoli, Dhenuka Radhakrishnan, Sherri Katz

Occupational exposure to silica and the risk of kidney cancer

Presented by: Laura Bogaert, Student, University of Toronto

The objective of this study was to investigate whether occupational exposure to crystalline silica, a recognized human carcinogen and highly prevalent workplace exposure, increases kidney cancer risk in Canadian men. The National Enhanced Cancer Surveillance System (NECSS) is a population-based case-control study conducted from 1994-1997 in eight Canadian provinces. Incident cancer cases were identified from provincial cancer registries. Self-reported questionnaires obtained information on cancer risk factors and lifetime occupational histories. For all participants, occupational hygienists coded occupational histories for silica exposure using variables of concentration, frequency, and reliability, enabling the development of several exposure metrics. Logistic regression was used to estimate odds ratios (OR) and their 95% confidence intervals. Models were adjusted for age, province of residence, body-mass index (BMI), a known risk factor for kidney cancer, and cigarette smoking. Complete occupational data were available for 710 kidney cancer cases and 2,450 controls. Overall, 46% of workers had ever been exposed to silica on the job, but just 25 workers (all controls) were ever exposed to high concentrations of silica. As expected, obesity/overweight and older age were positively associated with kidney cancer, however smoking was not. Those workers ever exposed to silica did not have a significantly elevated risk of kidney cancer (OR 1.1, 95%CI 0.9 – 1.4). When examining duration of exposure as well as tertiles of cumulative silica exposure (a multiplicative index based on relative frequency, concentration and duration of exposure), no significant relationships were observed when comparing exposed to unexposed workers. In this first population-based Canadian study of kidney cancer among crystalline silica-exposed male workers, we did not find evidence that silica exposure is positively associated with kidney cancer risk. However, this work augments the contemporary literature and provides new insight into occupational determinants of cancer.

Co-Author(s): Laura Bogaert, Cheryl Peters, Marie-Elise Parent, Shelley A Harris, Lidija Latifovic, Linda Kachuri, Paul Villeneuve

Are physical activity and consumption of fruits and vegetables associated with glaucoma?

Presented by: Ramanpreet Brar, Master's Student, Western University

The purpose of this study was to examine whether physical activity and consumption of fruits and vegetables were associated with the risk of developing glaucoma. The Household, Longitudinal component of the National Population Health Survey, cycles 5 (2002-2003) through 9 (2011-2012), were used for this study. Physical activity was measured via reported duration, frequency and type of leisure activities, to derive metabolic equivalents as a measure of energy expenditure for each cycle. Respondents were asked to report frequency of fruit/vegetable consumption in each survey as well as glaucoma diagnosis. Weighted crude and adjusted Cox proportional hazards models were fitted with time-dependent covariates. The adjusted models were controlled for age, sex, BMI, smoking, alcohol use, diabetes, hypertension, heart disease, education, and income. A total of 9322 respondents were included, of which 2.06% (n=196) developed glaucoma within the 10-year follow-up period. The crude hazards ratios for physical activity and consumption of fruits and vegetables were 0.95 [95% CI: 0.87, 1.03] and 1.04 [95% CI: 0.98, 1.11] respectively. The adjusted hazards ratio for physical activity was 1.00 [95% CI: 0.91, 1.10]; this ratio corresponds to one-unit increase in metabolic equivalents. The adjusted Cox proportional hazard model for consumption of fruits and vegetables revealed a hazard ratio of 0.98 [95% CI: 0.91, 1.06]; this ratio corresponds to one-unit increase in frequency of fruits/vegetables consumed daily. The results suggest that physical activity and consumption of fruit and vegetable are not associated with the risk of developing glaucoma. Future studies should consider including other aspects of diet and physical fitness.

Co-Author(s): Ramanpreet Brar, William Hodge, Igor Karp

Projecting Cancer Incidence in Canada: Looking back to the future

Presented by: **Abbey Poirier**, Research Associate, Alberta Health Services

As part of a larger national cancer burden estimation project (ComPARe), we aimed to produce valid estimates of future cancer incidence to 2042 using the 'CanProj' package. Cancer incidence data from 1983-2012 were obtained to extrapolate past trends using various statistical models in order to project cancer incidence from 2013-2042. Trends over age and year of diagnosis (period) and/or year of birth (cohort) and hybrids of these models including the age-period-cohort and the age-drift-period-cohort (Nordpred) models are widely used. The R package, 'Canproj,' uses a decision tree to select the best fitted model for the data. However, the projected cancer incidence estimates are often inaccurate. Therefore, we adjusted these models to account for historical changes in policy, screening and lifestyle behaviours that could alter future cancer incidence. Cancer incidence projections to 2042 were estimated for lung, colorectal, breast and prostate cancer. The main correction factors for these cancer sites were: uptake in screening (colorectal, breast), change in screening guidelines (prostate), smoking legislation (lung) and prevalence of obesity/physical inactivity (colorectal). Lung cancer incidence is estimated to rise to 17,000 in men and 21,000 in women with respective age-standardized rates (ASR) of 41/100,000 and 42/100,000. Colorectal cancer incidence is predicted to rise to 26,000 and 18,000, with ASRs decreasing and then stabilizing at 59/100,000 and 36/100,000 in men and women, respectively. The incidence of prostate cancer is predicted to rise to 36,000, with an ASR stabilizing at 102/100,000 and breast cancer incidence is predicted to rise to 38,000 with a stable ASR of 98/100,000. We used expert opinion and correction factors based on historical changes in policy, screening and lifestyle behaviours to produce estimates of future cancer incidence to 2042. Although these estimates should be interpreted with caution, we present a comprehensive method for projecting cancer incidence in Canada.

Co-Author(s): Abbey Poirier, Farah Khandwala, Yibing Ruan, Christine Friedenreich, Darren Brenner, on behalf of the ComPARe team

Tailoring the World Health Organization Surgical Safety Checklist to Pediatrics: An Implementation and Evaluation Study Proposal

Presented by: **Mary Brindle**, Surgeon, Associate Professor , Alberta Health Services

Children undergoing surgery are at risk of experiencing adverse events. The World Health Organization Surgical Safety Checklist (SSC) is a point-of-care intervention that has been shown to reduce complications and mortality. Although these evaluations have mainly occurred in adult populations, the SSC has been widely implemented in pediatrics, often without modification to suit pediatric populations or local context. We aim to develop, implement, and evaluate a SSC tailored to pediatrics at Alberta Children's Hospital. This study uses mixed-methods, where Phase 1 involves data collection to inform tool development, and Phase 2 consists of implementation and evaluation. We will draw on our systematic review of checklist effectiveness studies in pediatrics; a catalogue of currently implemented checklists in Canadian pediatric centers; and surveys and interviews with clinical, administrative, and patient stakeholders regarding checklist content, implementation, and barriers and facilitators to meaningful use. We will facilitate a consensus process among knowledge users drawing on these data. Intervention implementation will consist of in-person education for clinicians; dissemination and display of print educational materials and posters; and the delivery of audit-and-feedback reports to leadership and surgical teams. Tool evaluation will study outcomes using time-series analyses, employing an initial 3 month before and after study and then an iterative approach to SSC revision using a Plan-Do-Study-Act approach. We will study process measures such as checklist compliance and appropriately-timed antibiotic administration, assessed via blinded audit and retrospective chart review; clinician impact outcomes including improvements to the safety culture, assessed through the validated Safety Attitudes Questionnaire; and patient impact outcomes such as positive patient experience, via questionnaire, and clinical outcomes including length of stay and complication rates, obtained via electronic medical records. We foresee that this work is relevant to surgical centers seeking to optimize patient safety and for those involved in optimizing knowledge translation interventions.

Co-Author(s): Mary Brindle, Laura Rivera, Denisa Urban, Ali MacRobie, Ashleigh Gibb, Hasan Abdullah

An Audit of Implanted Device-Associated Infections at the Alberta Children's Hospital: A Mixed Chart Review/Electronic Administrative Data Study

Presented by: **Hasan Abdullah**, Research Assistant, University of Calgary

An audit of implanted-device associated infections in paediatric surgery patients between 08/2010 – 08/2015 at the Alberta Children's Hospital (ACH), using retrospective chart reviews and electronic health information. An expert panel was consulted to generate a list of data elements related to: assessing Surgical Site Infections (SSIs); compliance with SSI prevention guidelines; potential predictors and preventable contributors (eg antibiotics, nutritional status) to SSIs. A list of paediatric spine surgery procedures at ACH between 08/2010 – 08/2015 was obtained. Demographic and procedural data were extracted from the DAD, NACRS, PIN, SCM, Lab and Practitioner Claims data repositories. Patient charts were reviewed in order to flag SSIs. Preliminary analysis was performed using Chi-squared test. Univariate and multivariate analysis will be used, in future, to assess the relationship between predictors and SSIs. 320 spine implant procedures have been assessed. Males accounted for 35.9% (mean age 12.6 years) of the population and females 64.1% (mean age 14.4 years). Prophylactic antibiotics were administered as per SSI prevention guidelines in 48.7% of procedures that did not result in SSI and 30.8% of procedures that resulted in SSI (p=0.206). 13 SSIs (< 1 year after surgery), representing 4.06% of procedures were noted (9 males, 4 female; p = 0.015). The following comorbidities were positively correlated with SSIs [comorbidity (% of SSI population)(% of non-SSI population)(p-value)]: Neuromuscular Scoliosis (53.8%)(14.4%)(p=0.0002); Neuromuscular deficits (eg due to Cerebral Palsy) and behavioural disorders (eg Autism) (76.9%)(32.3%)(p=0.0007). SSIs distribution is as follows: Hardware (38.5%), Deep Incisional Primary (46.1%), Bone & Joint (23%), CNS (15.4%). Predominant pathogens were: S.aureus(53.9%) and E.faecalis(23%). All 412 patients in the spine surgery cohort will be reviewed and the study expanded to include orthopaedic, neurosurgery and plastic surgery implant procedures. The increased number of patients will yield preventable factors associated with SSIs and suggest evidence-based process improvements.

Co-Author(s): Hasan Abdullah, Denisa Urban, Ashleigh Gibb, Ali MacRobie, Laura Rivera, Mary Brindle

Area-level Deprivation and Dental Health Related Emergency Department Visits in Alberta, 2011 to 2015

Presented by: **Mei Zhang**, Senior Analyst, Alberta Health Services

This study aimed to explore the relationship between area-level deprivation and rates of dental health-related emergency department and urgent care centre (ED/UCC) visits in Alberta between 2011 and 2015. The National Ambulatory Care Reporting System (NACRS) database was used to obtain all dental health related ED/UCC visits in Alberta between 2011 and 2015. The visit data were linked with the 2011 Pampalon Deprivation Index at the Dissemination Area (DA) level using postal codes and aggregated to the Zone level. Both the material and social deprivation dimensions and the combination of the two were examined. Age standardized rates of dental health ED/UCC visits were calculated by year, deprivation quintile and geographic zone in Alberta. Relative risks were calculated to compare ED/UCC visits in patients from the most and least deprived Consistent trends were identified that the rate of dental health related ED/UCC visits were highest in the most deprived category (Q5) compared to the least deprived category (Q1), with relative risk of 1.92 (95% CI 1.76-2.10) after adjusting sex and age in Alberta for all the years. Deprivation measured by the relative risk between Q5 and Q1, were evident but declining in all Zones with Calgary and Edmonton Zones being the lowest for all the years. After 2013, the age standardized visits rates for most deprived males were slightly higher than that of most deprived females in Alberta. Gradients in area-level deprivation were found in dental health related ED/UCC visits in Alberta with distinct patterns for each Zone; however, it appears the gradient is declining over time in all Zones.

Co-Author(s): Mei Zhang, Kerri Fournier, Li Huang, Roland Ngom, Sarah Edwards

Suicide and suicide-related health care utilization in Alberta: An analysis of rates and trends from 2011 to 2015

Presented by: **Julie Zhang**, Senior Analyst, Alberta Health Services

An interactive suicide-related injury dashboard is developed, following WHO's recommendation, to provide evidence to inform suicide prevention in Alberta. This study highlighted findings on suicide-related health care utilization and mortality. The National Ambulatory Care Reporting System (NACRS) and the Inpatient Discharge Abstract Database (DAD)were used to obtain the number of suicide-related visits to emergency department/urgent care center (ED/UCC) and hospital admissions. Vital Statistics mortality data was used to obtain the number of suicides. The 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD10) codes were used to identify suicide-related injuries. Differences in suicide-related ED/UCC rates by age, gender and geographic areas were examined as well as trends over time. Poisson regression model was employed to test whether there is a significant trend over years. There was an increasing trend in suicide-related ED/UCC visits and hospital admissions between 2011 and 2015. However, suicide mortality rates remained stable between 2011 and 2014. Albertans between 40 and 64 years had the highest suicide mortality rates. Men had higher suicide mortality rates than women (M/F ratio: 3.06 in 2011 to 2.80 in 2014) while women had higher rates of suicide-related ED/UCC visits (M/F ratio: 0.67 in 2011 to 0.57 in 2015). Hanging/strangulation/suffocation, drug poisoning and firearms were the top three suicide methods used by males and hanging/strangulation/suffocation, drug poisoning and alcohol or chemicals poisoning were the top three suicide methods used by females. Among Albertans who had suicide-related ED/UCC visits, 2% died. Suicide-related healthcare utilization increased in Alberta in the past 5 years but suicide mortality rates were stable. Males and middle-aged Albertans are at the highest risk. Routine monitoring of suicide and suicide-related injuries can inform public health injury prevention and mental health programming

Co-Author(s): Julie Zhang

THURSDAY, JUNE 1
POSTER VIEWING: 2:45PM – 4:00PM

Developing integrated spatiotemporal surveillance systems: a prototype using influenza data
Presented by: **Lennon Li**, Biostatistical Specialist, Public Health Ontario
Develop a surveillance tool integrating statistical modeling and spatiotemporal visualization with application to Ontario influenza data to address challenges in timely detection of unusual geographic patterns. In order to overcome the bias from differently sized and shaped geographic polygons, we used the Ontario Hybrid Information Map (OHIM) consisting of square lattices for urban areas and Census Sub-Divisions for rural areas as the spatial unit of analysis. Based on these boundaries, CUSUM methods were applied simultaneously on all polygons to detect spatiotemporal aberration using R. Results were automatically pushed into a centralized SQL database and could be visualized via a web browser through ESRI ArcGIS online service. Users are able to freely pan and zoom on OHIM boundaries and examine temporal CUSUM results of groups of geographies. The developed system flags a polygon once the number of Influenza A cases exceeds the threshold of the CUSUM algorithm. The system allows users to tune the sensitivity and specificity parameters of each polygon or groups of polygons, which are determined and optimized by surveillance experts using historical data from 2012 to 2016. The development of this current spatial temporal surveillance system provided unique insights and new abilities to detect aberrant health events that are not constrained by health units or administrative boundaries The developed system and optimized parameters will be used prospectively in routine surveillance in the upcoming influenza season and will be further developed for additional diseases. The parameters will be updated when future surveillance data suggests that modifications are necessary for improving the estimates.
Co-Author(s): Lennon Li, Steven Johnson, Michael Whelan, Cecilia Fung, Ian Johnson

Measurement Invariance of the Medical Outcomes Study Social Support Survey in Coronary Artery Disease

Presented by: **Zhiying Liang**, Department of Community Health Institute for Public Health, University of Calgary

This study investigates the measurement invariance (MI) of the Medical Outcomes Study Social Support (MOS-SS) scale with respect to treatment, sex and age in coronary artery disease (CAD) patients. Data were obtained from the Alberta Provincial Project for Outcome Assessment in Coronary Heart Disease (APPROCH) registry of CAD patients. Multi-group confirmatory factor analysis was used to test four forms of MI in MOS-SS scale including equality of factor loadings (configural invariance), magnitude of domain intercepts (weak invariance), magnitude of factor loadings (strong invariance), and equality of intercepts, factor loadings, and error variances (strict invariance) across sex, age, and treatment groups. Model fit and MI hypotheses were assessed using likelihood ratio test (LRT), comparative fit index (CFI), and root mean square error of approximate (RMSEA). Of the 7499 patients included in this analysis, 6068 (80.9%) were male, 1467 (19.6%) were at least 75 years old, while 2054 (27.4%) received percutaneous coronary intervention (PCI) treatment. The four forms of MI were satisfied with respect to treatment (PCI versus coronary artery bypass graft) (Chi2(12) = 50.13; CFI = 0.998; RMSEA = 0.029), age (Chi2(13) = 39.80; CFI = 0.998; RMSEA = 0.023), and sex (Chi2(10) = 93.98; CFI = 0.995; RMSEA = 0.047) group comparisons. We are also able to establish the complete invariance models with equal factor means and variances for all the group comparisons. This study establishes MI of MOS-SS scale with respect to treatment, age, and sex comparisons. Researchers using MOS-SS survey can be confident that age, sex, or treatment group comparisons based on MOS-SSS are valid and any observed differences in perceived social support are meaningful.

Co-Author(s): Zhiying Liang, Maria Santana, Oluwagbohunmi Awosoga, Danielle Southern, Hude Quan, Matthew James, Lisa Lix, Colleen Norris, Tolulope Sajobi

Adult Primary Care Users with and without Body Mass Index in Electronic Medical Records from the Manitoba Primary Care Research Network

Presented by: **Lisa Lix**, Professor, University of Manitoba

We investigated the feasibility of using population-based electronic medical records (EMRs) from Manitoba for obesity surveillance by comparing primary care users with and without recorded body mass index (BMI) information. EMRs for adults (18+ years) from the Manitoba Primary Care Research Network (MaPCReN) were linked to administrative health data (population registry, hospital records, physician billing claims) from the Manitoba Centre for Health Policy for 2000 – 2015. Individuals with and without recorded BMI were compared on demographic (age, sex, income quintile, urban/rural residence), healthcare use (hospitalization, physician visits), and health status (Charlson comorbidity index, diagnoses of hypertension, diabetes, heart disease, mental disorders). Individuals with BMI were classified as underweight, normal weight, over weight, and obese. The data were described with frequencies/percentages and odds ratios (ORs) with 95% confidence intervals (95% The study cohort included 92,658 individuals; 46.5% had BMI information in MaPCReN EMRs. The BMI cohort had a higher percentage of females than the cohort without BMI (OR 1.10; 95% CI 1.07, 1.13). A higher percentage of the BMI cohort was 18 to 39 years (36.7% vs 32.4%). The two cohorts differed in healthcare use; hospitalization rates were lower in the BMI cohort (OR 0.82; 95% CI 0.78, 0.85), as were physician visits (10+ visits: OR 0.95; 95% CI 0.92 0.97). The odds of having a Charlson comorbid conditions and diagnoses of diabetes, hypertension, heart disease, and mental disorders were significantly lower in the BMI cohort. The obesity prevalence of 30.7% in the BMI cohort was higher than in the Canadian Health Measures Survey. EMRs are a potentially valuable resource for obesity surveillance. However, BMI is not captured for all primary care users; differences may exist in demographic, healthcare use, and health status, which may bias estimates. The provincial prevalence of obesity was higher than in comparative national data.

Co-Author(s): Lisa Lix, Alexander Singer, Lin Yan, Saeed Al-Azazi

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

Presented by: **Jessica Lowey**, Student, Lakehead University

The Ontario Telemedicine Network (OTN) provides virtual health care services to the Ontario population, specifically to those patients in underserviced regions. The primary objective of this research proposal is to determine the association between age and sex and utilization of health care services facilitated by the OTN. The secondary research objective is to determine if geographical location modifies the association between age and sex and health care utilization rates. A historical, population-based, retrospective cohort study, using Ontario Health Insurance (OHIP) administrative billing data, and census data will be employed. The exposures, age and sex, will be determined by the patient's age at the time of service, and female/male status, as indicated on the patient's health card. Age will be analyzed as both a continuous and categorical variable. Annual crude utilization of therapeutic services and stratified utilization of specialty services over OTN will be assessed as outcomes. Type of care received will be determined by diagnostic codes and physician specialty. The potential effect modifier, geographical location, will be determined using residence codes and assigning patients rural south/north or urban south/north classifications. Demographic data from the 2011 Census will provide a denominator when calculating utilization rates. To analyze the data and satisfy the research objectives, data linking and manipulation must occur. Administrative data from 2008-2014 will be analyzed. Univariate descriptive analyses will identify total unique OTN visits by age, sex, therapeutic area of care and patient location. To satisfy the primary objective, bivariate analyses will be conducted calculating risk ratios and rate ratios (RR) between the exposures and outcome of interest, unadjusted for location and rurality. To satisfy the secondary objective, multivariate Poisson regression will be used to calculate adjusted RR measuring the association between the exposures and outcome, stratified by geographical location.

Co-Author(s): Jessica Lowey, Vicki Kristman, John Hogenbirk, Wayne Warry, Helle Moeller

Do Health Link Calls Predict Emergency Department Visits for Influenza-like Illness

Presented by: **Andrew Macmillan**, Surveillance Analyst, Alberta Health Services

The purpose of this project is to investigate the association between Health Link call volume and emergency department (ED) visit volume . The goal is to provide a model that can be used in real-time public health surveillance to alert stakeholders to changing illness indicators that may signal an increase in ED visits. Of particular interest is the interaction between calls and visits and if Health Link calls reliably predict an increase in ED visits. Alberta Real Time Syndromic Surveillance Net (ARTSSN) data will be used to analyze the 2015-2016 and 2016-2017 influenza seasons. ED visits triaged as influenza-like illness and Health Link calls triaged as either influenza-like illness or cough will comprise the analysis dataset. SAS version 9.4 and R for Statistical Computing version 3.3.2 will be used for data extraction and analysis. A linear regression analysis will be done to quantify the association between Health Link calls and ED visits. Each time series will be differenced to remove any trend and seasonality that may result in a spurious statistical relationship. A differenced series is simply the change between each point in the original series. Ordinary least squares regression will then determine if variations in one time series are associated with variations in the other. Assuming that a relationship exists between calls and visits, Changepoint analysis will be used to compare if statistically significant changes in each series are similar or not. Changepoint analysis detects distribution changes in time ordered data. Comparing the number and location of change points between Health Link and ED time series will provide insight into the time dependant relationship between calls and visits i.e. movement in one series generally follows that of the other. Finally, an exponential smoothing model will be determined and used to make forecasts for each time series and the results and implications discussed.

Co-Author(s): Andrew Macmillan

Improving Access for Urgent and Emergent Surgical Cases at the Alberta Children's Hospital: a Realist Review

Presented by: **Ali MacRobie**, Research Coordinator, University of Calgary

Operating rooms (OR) experience conflict between scheduled surgical procedures and unscheduled (urgent and emergent) procedures. This can result in schedule disruptions, delays, cancelations, and overruns which in turn reduces OR efficiency and effectiveness. One solution to this problem is dedicated urgent OR time reserved for emergent and urgent procedures. We aim to use realist methodology to develop an optimal strategy for pediatric surgical access balancing urgent and elective surgical priorities at Alberta Children's Hospital (ACH). This study follows realist review research methodology. Realist reviews aim to answer "how?", "why?", "for whom?", and "under what circumstances?" an intervention will function. Realist reviews work by identifying, testing and refining program theory, understanding how and why interventions produce the outcomes that they do, in which contexts, and why. A search strategy was developed with a research librarian targeting databases including MEDLINE, Embase, PubMed, web of science, and Google Scholar. Identified articles have been screened independently and in duplicate. Evidence from selected articles will be used to 'support, refute, or refine' elements of the program theory. The final stage of theory refinement will take the form of refining context/mechanism/outcome (CMO) configurations. Data analysis will follow a realist approach identifying the context, causal mechanisms, and outcomes of the primary studies. We will evaluate how and under what circumstances implementation of dedicated urgent OR time at ACH would be impactful. This study represents the first step in a complex quality improvement initiative dedicated to establishing best practice surgical care of pediatric patients in Alberta. Our review is directed at developing the most efficient manner for implementing dedicated urgent OR time at ACH. The data obtained will guide ACH in developing a policy change within the OR facility. Although the project is designed for ACH, we anticipate our results could inform policy in other pediatric surgical facilities.

Co-Author(s): Ali MacRobie, A.R Harrop, David Lardner, Carmen Brauer, Mary Brindle, Heather Sartison

The Association Between Behaviours in Alzheimer's Disease and Caregiver Health-related Quality-of-life: A Cross-sectional Study

Presented by: **Melissa Majoni**, Student, University of Waterloo

This study examined whether one aspect of caregiver burden, i.e., the behaviours of persons with Alzheimer's disease (AD), can affect the health-related quality-of-life (HRQoL) of informal caregivers. Data came from a Canadian study of 216 persons with mild or moderate AD and their primary informal caregivers. Caregivers completed the EQ-5D-3L to rate their HROoL and the Dementia Behavior Disturbance Scale (DBDS) to assess the degree to which persons with AD (PwAD) presented each of 28 different behaviours. Caregivers' health utility scores were regressed on overall DBDS scores (range: 0 - 112) using ordinary least squares regression and bootstrapping. We controlled for caregiver age, sex, income, education, employment, relationship to the PwAD, and disease severity of the PwAD. The dataset included 216 primary caregivers of persons with mild (81%) or moderate AD (19%) with a median DBDS total score of 16 (IQR = 10–24). Most of the caregivers were spousal caregivers (68%) and 32% were either adult children, friends, or other relatives (median age: 69, IQR = 59-77 years). The optimal model based on the Akaike's Information Criterion (AIC) included DBDS (B = -0.002, 95% CI -0.004, -3.743E-5, p = 0.087) and age. Adding other combinations of variables did not change the association between DBDS score and health utility score. The DBDS score along with caregiver age accounted for 11% of the explained variability in health utility values in the optimal model. DBDS scores were inversely associated with health utility scores, although the mean change in score was not found to be statistically significant. Further research is needed to investigate specific behaviors longitudinally in a larger sample.

Co-Author(s): Melissa Majoni, Mark Oremus

Quantitative Risk-Based Sampling Approach for Listeria monocytogenes in Ready-to-Eat Meat and Poultry Products

Presented by: **Elmabrok Masaoud**, Senior Statistician/ Adjunct Professor, Candaian Food Inspection Agency / University of ottawa

In this study, we explore a new quantitative risk-based sampling approach (RBSA) for allocating a predetermined frequency of samples for testing for Listeria monocytogenes (Lm) in ready-to-eat products in processing establishments. The purpose of this RBSA is to make Canadian Food Inspection Agency's Lm sampling plans more efficient by tailoring the sampling frequencies to each establishment based on risk factors including compliance history, product risks and target market. The RBSA's algorithm is based on developing relative ratings for establishment's components including: RTE product categories, process control interventions (PCI), non-compliance history (NCR) and production volume (VR) per product category/process control intervention combination. The VR rating is calculated based on the principle of the ISO 2859-1 sampling standard. The NCR rating is calculated as a proportion of the total number of non-compliant tasks found to the total number of selected tasks conducted. A matrix is created, where the entries in the cells are the product of PCI and product category ratings. Each cell in this matrix is then multiplied by its corresponding VR rating. The establishment risk index (ERI) is calculated by adding the matrix entries to the estimated NCR rating for the establishment. The individual establishment's risk index as a proportion to the sum of all ERI's is then used as a multiplicative ratio to appropriately assign the total predetermined frequency of samples to each establishment on a relative risk basis (with a minimum of one sample per establishment). The RBSA is tested on data collected from 26 establishments and compared to an existing qualitative risk-based sample program. Results indicated that the RBSA's algorithm is more effective in assigning the frequency of samples according to each establishment risk factors and the products that they produce.

Co-Author(s): Elmabrok Masaoud

Who Cares: The Impact of Suspected Mining-related Lung Cancer on Caregivers?

Presented by: **Nancy Lightfoot**, Associate Professor, Laurentian University

This study investigated the emotional, physical, financial, occupational, practical, and quality of life impact on those who cared for patients with mining-related lung cancer and how to better assist them. This concurrent embedded mixed methods study utilized in-depth individual in-person qualitative interviews, as well as the RAND Medical Outcomes 36-Item Short Form Health Survey Version 2 (SF-36 v2) quality of life (QOL) measure, with eight caregivers of those with suspected mining-related lung cancer who had worked in Sudbury, Elliot Lake, and elsewhere in northeastern Ontario. Additionally, those who assisted workers in filing compensation claims, two of whom were union-based and the other government-based, were also interviewed in Sudbury and Elliot Lake. Interviews (n=11) were transcribed and analyzed thematically by two members of the research team. Caregiver themes focused on: 1) emotional impact of diagnosis (e.g., "just devastating") and lung cancer experience challenges (e.g., "had to do everything," "never left him"), 2) suspected cancer causes (e.g., dust, asbestos, radon, lack of protective equipment), 3) financial impact and compensation successes and challenges, and 4) suggestions for others ("keep fighting"). Those who assist workers in preparing claims were passionate about the: 1) lack of knowledge about how to claim and claim time limits, 2) frustration with compensation timelines, processes, and common denial of claims, 3) need for better exposure monitoring, controls, and funded studies, 4) requirement for supportive healthcare services whether claims are allowed or not, and 5) need for compensation versus cost control. QOL scores were below the norm for most measures. Caregivers expressed the need for more education about the compensation process and support. Worker representatives required: patience, more time for claim preparation and familial education about the compensation process, more workplace monitoring and controls, additional health studies, and a focus on compensation versus cost control.

Co-Author(s): Nancy Lightfoot, Leigh MacEwan, Linn Holness, Carole Mayer, Lea Tufford, Cindy Scott, Desre Kramer

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

Presented by: **Charlotte McEwen**, Student, Lakehead University

In 2012, an international team of researchers conducted a systematic review of Mild Traumatic Brain Injury (MTBI) prognosis. This paper extends that review, assessing depression as an outcome of MTBI. MEDLINE, PsychINFO, Embase, CINAHL and SPORTDiscus were searched from 2001 to 2016 using International Collaboration on Mild Traumatic Brain Injury Prognosis (ICoMP) search protocols with an additional screen for depression. Inclusion criteria focused the results to controlled trials, case-controls or cohort studies with a minimum of 30 MTBI cases. Studies also had to assess depression as an outcome of MTBI using a valid measure. Each eligible study was then assessed by two independent reviewers for scientific admissibility using Scottish Intercollegiate Guidelines Network criteria. A third reviewer resolved disputes. Evidence from relevant, methodologically sound studies was collectively analyzed. In total, 10,155 records were detected, and after screening, 96 were full text reviewed. Twelve of these studies met inclusion criteria and of those relevant studies, reviewers concluded that three were scientifically admissible. Three additional studies were identified in the original ICoMP search results and were included in the final analysis. Five studies assessed depression after MTBI in adults, and the sixth in a pediatric population. Each accepted study compared the outcomes of people who had experienced MTBI with control group outcomes, with follow-up from three months to five years. No study detected a statistically significant association between MTBI and depression, although one study did detect a significant association between MTBI and the development of affective disorders including depression. The limited literature available on this topic suggests there may be no association between MTBI and the development of depression. However, more methodologically sound research on this topic is necessary. Researchers call for studies with larger sample sizes, stronger depression assessment and consistent MTBI definition.

Co-Author(s): Charlotte McEwen, Vicki Kristman, Jessica Lowey, Jennifer Asselstine, Jennifer Plata, Catherine Chambers-Bedard, Joshua Armstrong

Gestational diabetes and risk of cardiovascular disease later in life: a retrospective cohort study

Presented by: **Safyer McKenzie-Sampson**, Master's student, McGill University

The objective of this study was to determine how gestational diabetes increases lifetime risk of cardiovascular disease. We carried out a retrospective cohort study of 1,108,541 women who delivered an infant in hospitals within Quebec, Canada between 1989 and 2013. Women with (n=73,712) and without (n=1,034,829) gestational diabetes were followed from the index delivery until March 31, 2014, for a median follow-up time of 15.5 years. The main outcome measure was subsequent hospitalization for cardiovascular disease. We used Cox regression to estimate hazard ratios (HR) with 95% confidence intervals (CI) comparing women with gestational diabetes to no gestational diabetes, adjusted for age, parity, time period, socioeconomic deprivation, and type 2 diabetes mellitus. Women with gestational diabetes had a higher cumulative incidence of heart disease 25 years post-delivery (522.7 per 10,000 women) compared with no gestational diabetes (351.2 per 10,000 women). Gestational diabetes was associated with development of ischemic heart disease (HR 1.23, 95% CI 1.12-1.36), myocardial infarction (HR 1.34, 95% CI 1.18-1.53), coronary angioplasty (HR 1.33, 95% CI 1.23-1.56), and coronary artery bypass graft (HR 1.58, 95% CI 1.23-2.21). In this large population of pregnant women, gestational diabetes was associated with an increased risk of heart disease 25 years after delivery. Women with gestational diabetes may merit closer monitoring for cardiovascular disease prevention.

Co-Author(s): Safyer McKenzie-Sampson

Determinants of maternal mortality: A comparison of geographic differences in northern and southern regions of Cameroon.

Presented by: Catherine Meh, student, Western University

This study examines the determinants of maternal mortality between the broader northern and southern regions of Cameroon where maternal deaths remain critically high in women of childbearing age (15-49). This study pooled and analyzed repeated cross-sectional data from the 2004 and 2011 Cameroon Demographic and Health Surveys (CDHS) which provide nationally representative household health indicators and a total sample of 26,082 women, aged 15-49 years. An eligible sample of 18,665 women, including survey respondents (alive), and female siblings (dead) identified through the DHS Direct Sisterhood Method for maternal mortality, was used for analysis. Nulliparous women were excluded from this study. The outcome was maternal mortality. Pearson chi-square tests, T-tests and multivariable logistic regressions were used to investigate differences in maternal mortality determinants at individual and community levels in Cameroon. Some factors were associated with maternal mortality: age, in the north (OR = 0.92 [95% CI: 0.89 – 0.94]), (adjusted odds ratio, aOR = 0.98 [95% CI: 0.95 – 1.00]) and south (OR = 0.94 [95% CI: 0.92 – 0.95]), (aOR = 0.98 [95% CI: 0.96 – 1.00]); parity, in the north (aOR = 0.71 [95% CI: 0.64 – 0.79]), and south (aOR = 0.75 [95% CI: 0.65 – 0.86]). Domestic violence (aOR = 1.14 [95% CI: 1.03 – 1.25]), a rural residence (aOR = 1.30 [95% CI: 1.01 – 1.67]) were associated with maternal death in the south. No difference was found between the north and south on maternal death (aOR = 1.07 [95% CI: 0.71 – 1.28]). This study is the first to assess maternal mortality between the northern and southern halves of Cameroon using nationally representative data. Regional differences in determinants of maternal mortality exist in Cameroon. Strategies for maternal death reduction should be specific to these regions.

Co-Author(s): Catherine Meh, Amardeep Thind, Amanda Terry, Piotr Wilk

Examining the Concurrent Impact of Multiple Healthy Weight Behaviours on Overweight and Obesity among Ontario's Adolescents

Presented by: Sandya Menon, Research Assistant, Public Health Ontario

This study aimed to examine the concurrent impact of not meeting daily recommendations for physical activity, screen time, fruit and vegetable consumption and sleep on overweight and obesity among adolescents. A cross-sectional study was conducted using data from the 2015 Ontario Student Drug Use and Health Survey of students aged 11-17 years in Ontario (n=9866). Overweight and obesity were classified using WHO BMI cut-points. Healthy weight behaviours were moderate-to-vigorous physical activity (MVPA) (>=60 vs. <60 min/day), screen time (£2 vs. >2 hours/day), fruit and vegetable consumption (>=5 vs. <5 times/day), and sleep (adequate vs. inadequate, using guidelines). Covariates included gender, age, Subjective Social Status, parental education and ethnicity. Logistic regression models were fitted to determine the association between not meeting healthy weight behaviour recommendations and overweight or obesity status. Only 2% of students met the recommendations for all four healthy weight behaviours, and 33% of students did not meet any of the four recommendations. In both the binomial and multinomial models, not meeting the recommendations for MVPA was the only significant healthy weight behaviour associated with both overweight and obesity (Adjusted Odds Ratio (AOR) = 1.29, 95% CI: 1.03-1.62), and obesity alone (AOR= 1.45, 95% CI: 1.05-1.99). Male students (AOR=2.08, 95% CI: 1.58-2.74), and students with parents with an education of High School or less (AOR=1.93; 95% CI: 1.38-2.71) were at significantly greater odds of being obese compared to their peers. For every one-unit increase in student's Subjective Social Status (scale 1-10), the odds of being obese decreased by 10% (AOR=0.90, 95% CI: 0.83-0.97). Not meeting daily MVPA recommendations was shown to be a critical behavioural predictor of obesity status in adolescents, following adjustment for differences in remaining behaviours and demographics. These findings could have significant implications on policies and programs targeting adolescent obesity reduction and physical activity rates.

Evolution, from childhood to young adulthood, of asthma phenotypes defined by utilization of health services in a province-wide birth cohort in Quebec

Presented by: **Miceline Mesidor**, PhD student, Montreal University

We aimed to describe the evolution, from childhood to young adulthood, of asthma phenotypes based on utilization of health services for asthma and other allergic diseases. The Quebec Birth Cohort on Immunity and Health includes 81,496 individuals born in 1974. Health services for asthma and allergic diseases were documented from 1983 to 1994. Individuals who had at least one health service for asthma were included (n=9,989). Over three life periods (childhood, adolescence, young adulthood), subjects were classified into phenotypes based on Ward's method for hierarchical clustering: 1) no asthma, no allergic disease; 2) mild asthma, no allergic disease; 3) mild asthma, allergic diseases; 4) moderate/severe asthma. We used latent transition analysis to determine the probability of remaining within the same and of transitioning to another phenotype. Overall, only 22% (n=2,238) of the included subjects remained in the same phenotype from childhood to adolescence. More specifically, 20% (n=2,048) remained in the "no asthma, no allergic disease" and 2% (n=190) remained in the "mild asthma, allergic diseases". Nine percent (n=895) of the sample remained in the same phenotype from adolescence to young adulthood: 0.2% (n=21) in "no asthma, no allergic disease", 1% (n=100) in "mild asthma, allergic diseases", and 7.7% (n=774) in "moderate/severe asthma". The "moderate/severe asthma" phenotype included 36%, 31%, and 41% of the sample in childhood, adolescence, and young adulthood respectively. Eight percent of the sample (n=774) was classified in this phenotype over two periods, and no one remained in it over all periods. Our study is among the few ones which described the evolution of asthma phenotypes, at the population level. Based on administrative health data, our results are generalizable to the population and can therefore contribute to a better understanding of the evolution of asthma over time.

Co-Author(s): Miceline Mesidor, Andrea Benedetti, Mariam El-Zein, Dick Menzies, Marie-Elise Parent, Marie-Claude Rousseau

Influence of Dietary Antioxidant and Oxidant Intake on Leukocyte Telomere Length

Presented by: **Alexis Mickle**, Graduate Student, Alberta Health Services

To estimate the association between the inflammatory potential of diet and leukocyte telomere length (LTL), and the intake of macronutrients associated chronic disease risk with LTL, in post-menopausal women. We conducted a cross-sectional analysis of the baseline data from 301 women within the Alberta Physical Activity and Breast Cancer Prevention (ALPHA) Trial. Participants were healthy, inactive and post-menopausal. Dietary intake data were collected using the Canadian 124-item Diet History Questionnaire. Dietary inflammatory potential was estimated using the Dietary Inflammatory Index (DII), while dietary intake of foods associated with decreased chronic disease risk was estimated using the Alternative Healthy Eating Index 2010 (AHEI). LTL was measured using quantitative polymerase chain reaction. Associations were examined using multivariable linear regression and adjusted for relevant demographic and lifestyle risk factors. Participants had a mean age of 61.5, mean BMI of 29.4, and were predominantly Caucasian (91.7%). No significant association was detected between LTL and AHEI or any of the 11 individual AHEI parameters in fully adjusted models, with an estimated one unit increase in AHEI score (range 0 - 110) corresponding to a decrease in -0.004 standard deviations of LTL (p=0.49). While vitamin C intake (p = 0.02) and anthocyanidin (p = 0.03) intake were significantly associated with LTL, overall DII score was not significantly associated. One unit increase in DII score (range -10 to +10) corresponded to a decrease in 0.010 standard deviations of LTL (p=0.58). No significant effect modification by age, smoking history, or recreational physical activity was detected for either relationship. Dietary inflammatory potential (DII) or the disease-risk potential (AHEI) were not related to LTL in post-menopausal, inactive but otherwise healthy women. Future research is nonetheless warranted to further understanding regarding the molecular processes involved in the relations between diet and chronic disease risk.

Co-Author(s): Alexis Mickle

Religion/Spirituality and Cancer Screening in Alberta's Tomorrow Project: An Exploratory Analysis of Baseline Data

Presented by: Susan Mirabi, Student , University of Waterloo

To examine the association between self-perceived level of religiousity/spirituality (R/S) and self-reported breast, prostate, colon, and cervical cancer screening using baseline data from Alberta's Tomorrow Project (ATP). From 2001-2008, ATP used random-digit dialling to recruit participants aged between 35-69 years from across Alberta. R/S was measured at baseline on a four-point scale: 'not at all', 'not very', 'moderate' and 'very'. For screening, participants responded 'yes' or 'no' to whether they had ever been screened for breast, prostate, colon, or cervical cancer. We used binary logistic regression to explore the association between R/S and each type of screening, controlling for participant age at time of survey completion, sex, and education. 11,978 participants (mean age = 49 [± 9] years; 56% female) responded to the R/S question. The majority of respondents (i.e., 68%) reported being moderately or very religious or spiritual. For sigmoidoscopy and colonoscopy, persons with 'moderate' or 'very' R/S had greater odds of reporting screening compared to persons with no R/S ('moderate' R/S: odds ratio [OR] = 1.34, 95% confidence interval [CI] = 1.10-1.62; 'very' R/S: OR = 1.32, 95% CI = 1.07-1.64). For the prostate-specific antigen (PSA) test, males with 'moderate' R/S had greater odds of reporting screening compared to males who were 'not at all' religious or spiritual (OR=1.27, 95% CI = 1.01-1.59). For PAP smear and mammography, we found no statistically significant associations between R/S and reported screening. Preliminary exploratory results show positive associations between R/S and reported screening for sigmoidoscopy, colonoscopy, and PSA tests. Future work will explore these relationships longitudinally to assess if R/S is associated with screening behaviour independently of other forms of social engagement (e.g., support, networks).

Co-Author(s): Susan Mirabi, Ashok Chaurasia, Mark Oremus

Linking Genome wide association studies and RNA via Expression Quantitative Trait Loci, with an application to a study of inflamatory bowel disease

Presented by: fahimeh moradi, Msc student, university of Alberta

The objective of this study is to identify an efficient, statistically sound and user friendly method for analysis of Expression quantitative trait loci (eQTL) studies. In this study, we performed expression quantitative trait loci (eQTL) analysis using the Matrix eQTL R package. This technique implements matrix covariance calculation and efficiently runs linear regression analysis. The statistical test determines the association between SNP and gene expression, where the null hypothesis is no association between genotype and phenotypes. In eQTL mapping, the regulative variants are classified as cis and trans, the definition depending on the physical distance between a gene and transcript. A certain genomic distance (e.g. 1 Mb) is defined as the maximum distance at which cis or trans regulatory elements can be located from the We applied matrix eQTL to a real data set consisting of 730,256 SNP and 33,298 RNA for 173 samples. SNPs with minor allele frequency (MAF) less than 0.05 and those violating the Hardy_Weinberg equilibrium (HWE) , were excluded from the study. After processing data, gene SNPs associations can be identified using the ANOVA model. In this study, 15,408 cis eQTL and 27,562 trans eQTL are identified, at a FDR less than 0.05, corresponding to p- value thresholds of 8e-5 and 1e-8, respectively. We found out that matrix eQTL is a computationally efficient and user friendly method for analysis of eQTL studies. The results provide insight into the genomic architecture of gene regulation in inflammatory bowel disease (IBD).

Co-Author(s): fahimeh moradi, Elham Khodayari Moez, Irina Dinu

Preventing residual confounding in studies of composite exposures: an example from Quebec's childcare program

Presented by: **Tanya Murphy**, PhD student, McGill University

To study the effects of the Quebec childcare program on child health, we must create a composite variable for childcare type. We aim to create a variable that reflects important variability in childcare use across suspected confounders, but one that will have a concise number of effect parameters to facilitate communication of the study results. The Quebec Longitudinal Study of Child Development (ELDEQ) is a birth cohort of 2,120 children born in 1997-8. They became eligible for Quebec's low-cost, universal childcare program at 2 years. A priori, our childcare exposure variable is multinomial and uses a definition of full-time attendance of > = 24 hrs/week. Planned childcare categories are a) centre-based Centre de la Petite Enfance (CPE), b) family-based CPE, c) a single non-CPE, d) mixed non-parental care totaling > = 24 hrs/week, and e) parental care (the reference group). Suspected confounders include 1-year lagged socioeconomic position and maternal health variables. In the proposed exploratory analyses, childcare becomes the dependent variable regressed on suspected confounders. Hierarchical multivariate models will be used to check two assumptions about the childcare variables: 1) Within childcare categories, are residual variance in hrs/week and suspected confounders associated? 2) Is that pattern similar at each annual study visit in the preschool years? If suspected confounders are not associated with the residual variance, a multinomial logit model could be used to estimate propensity scores for use in our primary research question about the effect of childcare on child health. If not, a more complex parameterization of childcare will be needed. We will explore discrete-continuous choice models that are common in econometrics, but, to our knowledge, rarely used in epidemiology.

Co-Author(s): Tanya Murphy, Seungmi Yang, Nandini Dendukuri, Jay Kaufman

Assessing a ban on the use of UV tanning equipment among adolescents in Ontario, Canada: First year results

Presented by: **Victoria Nadalin**, Senior Research Associate, Cancer Care Ontario

To describe the effect of the first year of a ban on the use of UV tanning equipment among adolescents in Ontario, Canada. Ontario adolescents under age 18 and in grades 7-12 completed two on-line questionnaires, one immediately prior to the ban (spring 2014), and another one year later (spring 2015). Both questionnaires asked about grade, age, sex, tanning beliefs/knowledge, and about tanning methods ever used. Questionnaires also asked those reporting UV tanning equipment use in the past 12 months about the length, frequency and location of UV tanning equipment use, if use was refused and why, about awareness and content of signs/warning labels, and about the use of eye protection. Data were weighted and estimates and confidence intervals generated. Over 1,500 adolescents participated in 2014, and over 2,305 in 2015. No significant reduction was observed between years regarding UV tanning equipment use (from 6.9% to 7.9%). Most adolescents using UV tanning equipment following the ban did so in commercial facilities. A significant increase between years was found in the proportion of adolescents noticing warning signs and labels (from 57% to 71%) and were required to wear eye protection (from 92% to 99%). Most adolescents who were refused the use of UV tanning equipment in the previous 12 months (72%) did not use the equipment that year. The majority of those who used UV tanning equipment were aware of the health risks, but continued to tan. One year after the enactment of a ban on UV tanning equipment among youth In Ontario, UV tanning equipment use did not decrease, however, other aspects of the ban led to improvements. Future research should examine aspects of enforcement of the ban.

Co-Author(s): Victoria Nadalin, Loraine Marrett, Caroline Cawley, John Atkinson, Thomas Tenkate, Cheryl F Rosen

Exercise dose effects on adiposity persist 12 months after an exercise intervention in postmenopausal women

Presented by: **Heather Neilson**, Research Associate, Alberta Health Services

To understand how the amount of exercise prescribed during an exercise intervention influences adiposity levels over the long-term, to inform exercise recommendations for postmenopausal breast cancer prevention. This study was a 12-month follow-up to the Breast Cancer and Exercise Trial in Alberta (BETA), a year-long randomized exercise dose-comparison trial (June, 2010-June, 2013) in Calgary and Edmonton. Participants were 400 healthy inactive postmenopausal women, mean age=61 years, mean BMI=29 kg/m2. Between 0-12 months women were prescribed five days/week aerobic exercise (three days/week supervised) for 30 minutes/session (MODERATE) or 60 minutes/session (HIGH). Between 12-24 months there was no intervention. Primary outcomes were 0-24 month changes in: body weight, waist and hip circumference, total body fat (dual energy X-ray absorptiometry scans), and subcutaneous and intra-abdominal fat (computed tomography scans). The proportion of BETA participants with 24-month adiposity data was 82.5% and 84.5% of the MODERATE and HIGH groups, respectively (n=334 of n=400 baseline participants). Between 0-24 months, total fat reduction was greater for the HIGH versus MODERATE group, though not significantly (least-square mean difference (95% CI): - 1.12 (-1.72, -0.51) kg versus -0.42 (-1.02, 0.19) kg, P=0.09). Significant dose effects were found for BMI (-0.66 (-0.97, -0.36) kg/m2 versus -0.25 (-0.55, 0.05) kg/m2, P=0.04) and subcutaneous abdominal fat area (-32.18 (-39.30, -25.06) cm2 versus -22.20 (-29.34, -15.05) cm2, P=0.04). Between 12-24 months on average, all adiposity measures increased with no significant dose effects (P?0.46). At 24 months, HIGH and MODERATE groups both self-reported ~180 min/wk moderate-vigorous physical activity on average. Given a single exercise intervention, more aggressive goal-setting may be worthwhile in healthy postmenopausal women to induce greater fat loss, and possibly greater decreases in cancer risk, over the long-term. Our study suggests further that fat regain is likely irrespective of exercise dose.

Co-Author(s): Christine Friedenreich, Heather Neilson, Yibing Ruan, Aalo Duha, Kerry Courneya

Comorbid substance use disorders, major depression and generalized anxiety disorders in nationally representative samples: A systematic review and meta-analysis.

Presented by: **VIVIAN ONAEMO**, student, University of Saskatchewan

To assess the strength of association between co-morbid substance use disorders (SUDs), major depression (MDE) and generalized anxiety disorders (GADs) as reported in general population studies. An extensive search of Medline, CINAHL, PsycINFO and EMBASE, Scopus, Web of Science and gray literature was conducted to cover articles published between January 1st, 1980 to December 31st, 2016. Inclusion criteria were publications in English Language, original research, nationally representative samples, and non-clinical randomly selected adult populations. We conducted a systematic review and metanalysis of the prevalence and ORs for comorbid SUDs, MDE and GADs. A total of 133 articles were identified by the electronic searches. A full-text review yielded, 25 publications on 19 nationally representative epidemiological surveys. 12-month and lifetime comorbidity estimates were extracted and used for the meta-analysis. The strongest associations were for Substance dependence and GAD (OR 3.93, 95%CI 2.96-5.22) and Substance dependence and MDE (OR 3.62, 95%CI 2.83-4.63). In addition, strong correlations existed between Cannabis use disorder (CUD) and depression (OR 2.59, 1.59-4.23), CUD and GAD (OR 2.67, 95%CI 1.51-4.75), Substance use disorder (SUD) and depression (OR 2.33,95%CI 1.72 -3.15), and SUD and GAD (OR 1.81, 95%CI 1.42-2.31). This review confirms the evidence of high comorbidity between substance use, major depression and generalized anxiety which has been shown to negatively affect outcomes. Proactive and integrated management of SUDs and comorbid psychiatric disorders and vice versa are necessary to improve patient outcomes.

Co-Author(s): VIVIAN ONAEMO, Timothy Fawehinmi, Muzi Li, Kenneth Carl D'Arcy

Alcohol dependence and the persistence of Major depression

Presented by: VIVIAN ONAEMO, student, University of Saskatchewan

The purpose of this study was to prospectively assess the role of alcohol dependence in the 6-year persistence of major depression. Data was drawn from The National Population Health Survey (NPHS, 1994/1995-2010/2011), a prospective epidemiologic survey of individuals 12 years and older, living in ten Canadian provinces. Participants were re-interviewed every 2 years for 9 cycles. The study population was a cohort of individuals who at baseline met the diagnosis of a 12-month major depressive episode (MDE), ICD-10 criteria. Six-year persistence of major depression was defined as the consistent diagnosis of MDE in every cycle for six years from baseline. Discrete-time survival analysis, the proportional hazards (PH) models were used to model alcohol dependence and the persistence of major depression with STATA 14. The unadjusted HR relating the risk of 6-year persistence of major depression among respondents with alcohol dependence was 2.58 (95%CI: 1.25-5.29, p=0.001). Alcohol dependence was significantly associated with increased likelihood of 6-year persistence of major depression (HR: 3.27, 95%CI:1.47-7.27, p=0.004) even after adjustment for sociodemographic factors, psychobiological, sustaining and illness-related factors. Other determinants of 6-year persistence of major depression were female sex, childhood traumatic events, chronic pain restricting activities, daily smoking and low self esteem. Comorbid alcohol dependence was found to be a strong predictor for the persistence of major depression.

Co-Author(s): VIVIAN ONAEMO, Timothy Fawehinmi, Kenneth Carl D'Arcy

Source attribution of foodborne Shiga toxin-producing Escherichia coli infection using a meta-analysis of case-control studies of sporadic infections: a protocol

Presented by: Carolina Oremus, Postdoctoral Fellow, University of Waterloo,

Shiga toxin-producing Escherichia coli (STEC) are an important bacterial cause of foodborne infections, causing over 33,000 foodborne illnesses in Canada, and over 1.1 million foodborne illnesses globally, each year. In addition to acute diarrhea, severe consequences like hemolytic-uremic syndrome, end-stage renal disease, and death can occur. Our objective is to attribute the annual global number of foodborne STEC cases to specific food products, to inform national and international prevention and control efforts. We will conduct a systematic review and meta-analysis to determine the relative proportions of different food sources causing STEC infection in humans. We will search Medline, Embase, CINAHL, Web of Science and all the Cochrane databases from commencement to May 2017, as well as track references from earlier reviews of related studies. We will also search reports and documents from the World Health Organization, the Food and Agriculture Organization to the United Nations, government websites, and reports of STEC studies from different countries or geographic regions, as well as contact international experts for additional grey literature reports. We will include case-control studies of sporadic human infections, conducted in all age groups and written in all languages. Two reviewers will independently apply the inclusion criteria to the citations retrieved and extract data from the identified studies. We will conduct the assessment of risk of bias and grade the strength of evidence of the included studies. Data will be analyzed using R and Comprehensive Meta-analysis software. Foods will be categorized using the food categorization scheme produced by the United States' Interagency Food Safety Analytics Collaboration. This abstract reports the proposal for a systematic review that will commence in the spring of 2017. Ultimately, the results of this study will support prevention and control of STEC infection, enabling important health and economic gain.

Co-Author(s): Carolina Oremus, Larissa Nagora, Sara Monteiro Pires, Brecht Devleesschauwer, Shannon Majowicz

Skin cancer in Canada attributable to ultraviolet radiation, indoor tanning, and sun behaviour habits.

Presented by: **Dylan O'Sullivan**, PhD Candidate, Queen's University

Estimate the proportion of skin cancer cases in Canada attributable to ultraviolet radiation (UVR) and the proportion that are attributable to UVR risk factors – indoor tanning, sunburn, and sunbathing. Population attributable risk (PAR) was estimated by comparing skin cancer rates in 2012 to rates in an earlier period with lower levels of UVR exposure using melanoma rates for Canada and non-melanoma rates for Manitoba. To estimate a modifiable PAR, we derived Canadian specific relative risks for each UVR risk factor in combination with estimates of prevalence of exposure from the 2006 National Sun Survey. The Levin formula was used to derive PARs for each UVR risk factor, and a combined modifiable PAR was derived using the joint distribution of exposures and multiplicative relative risks. In the comparison of current rates with historical skin cancer rates we estimate that 73.6% of melanomas, 63.6% of basal cell carcinomas (BCCs), and 74.3% of squamous cell carcinomas (SCCs) in Canada to be attributable to contemporary increases in UVR exposure. We estimate that indoor tanning is responsible for 6.1% of melanomas, 5.9% of BCCs, and 11.9% of SCCs. Additionally, a history of severe sunburn was estimated to cause 11.1% of melanomas, 5.6% of BCCs, and 8.1% of SCCs. Finally, intentional sunbathing was found to be responsible for 13.3% of melanomas, and 15.9% of BCCs. Overall, we estimate that 27.6% of melanomas, 25.3% of BCCs, and 19.0% of SCCs in Canada to be attributable to modifiable UVR risk factors. To examine historical trends in UVR risk factor behaviours in order to quantify the future preventable burden of skin cancer due to these exposures in Canada. Additionally, we will estimate the preventable fraction of cases related to potential intervention initiatives.

Co-Author(s): Dylan O'Sullivan, Will D. King, Paul A Demers, Paul Villeneuve, Perry Hystad, on behalf of the ComPARe Team

A Quality Assessment of Health Management Information System (HMIS) Data for Maternal and Child Health in Jimma Zone, Ethiopia

Presented by: **Mariame Ouedraogo**, MSc Student in Epidemiology, University of Ottawa, School of Epidemiology, Public Health and Preventive Medicine

To assess the quality of maternal and child health (MCH) data collected through the Ethiopian Ministry of Health's Health Management Information System (HMIS) in three districts of Jimma Zone. The World Health Organization data quality report card was used to appraise the quality of MCH data collected from July 2014 to June 2015 for the 26 primary health care units (PHCUs) located within three districts of Jimma Zone (Gomma, Seka Chekorsa, Kersa). Seven MCH indicators were considered: antenatal care first (ANC1) and fourth (ANC4) visit, skilled birth attendance, early postnatal care, outpatient visits, and Diphtheria-Tetanus-Pertussis first (DTP1) and third (DTP3) dose. Data quality factors assessed included completeness and timeliness of reporting, zero/missing values, moderate/extreme outliers, and consistency over time and between indicators expected to correlate (DTP1/ANC1, DTP3/DTP1). Completeness and timeliness of reporting were highest in Gomma 75.8% and 70.9%, respectively, while lower rates were observed in Seka Chekorsa (49.5% for both) and Kersa (33.5% and 32.8%, respectively). Zero/missing values across the seven MCH indicators ranged from 0% for Seka Chekorsa to 1.1% for Kersa. 4.3% of MCH indicators were moderate outliers in Gomma, compared to 4.5% in Kersa and 3.0% in Seka Chekorsa and extreme outliers were observed in 4 PHCU reports. Reporting of MCH indicators improved over time for all PHCUs. However, large differences were observed between PHCU- and district-level ratios, suggesting reporting errors. 88.5% of PHCUs had >10% difference between their ANC/DTP1 ratio and their district ratio. Four PHCUs had DTP3 immunizations greater than DTP1. Our findings suggest that the quality of MCH data collected in the Ethiopian HMIS could be improved. A further assessment of the agreement between MCH indicators collected through the HMIS, and estimates of these indicators obtained from a population-based survey, is planned.

Co-Author(s): Mariame Ouedraogo, Jaameeta Kurji, Lakew Abebe, Ronald Labonté, Sudhakar Morankar, Kunuz Haji Bedru, Gebeyehu Bulcha, Muluemebet Abera , Marie-Hélène Roy-Gagnon, Manisha Kulkarni

Increasing and balancing the power of multiple tests in optimal treatment duration clinical trials -- A new analysis plan when these durations have overlaps

Presented by: **Yongdong Ouyang**, Student, University of British Columbia

Design optimal analyses for treatment durations which have overlaps. Determine how much power can be gained by using optimal analyses and balance the power when testing multiple hypotheses. We simulated a three-arm trial to test three possible optimal durations (0, 6 and 12 months). Each arm has equal size. Suppose the outcome is survival time. For the 0 vs 6-month comparison, we include patients in the 12-month arm as patients in the 6-month arm for the first 6 months and censoring at 6 months. Moreover, for 6 vs. 12-month comparison we include patients who stay on the trial after 6 months. Note that with equal allocations, events during the first 6 months will reduce the power of 6 vs. 12-month analysis. We have new sample size allocation procedure to balance the power. Data was simulated by assuming constant hazard h0 when patients were in placebo and h1 when they were in treatment. The optimal analyses increased the power (6-month vs. 12-month and 6-month vs. placebo). Based on the simulation results, the optimal analyses give us monotonically larger power no matter what combinations we use for h0 and h1; In the new analyses, the mean of estimated hazard ratios (h1/h0) for 6 vs. 12 month was roughly the same as the hazard ratios we set up for simulation, which indicates we could get unbiased estimates from the new analyses; Comparing to the simulation results, the sample size calculation procedure generally underestimates n2 and n3, but overestimates n1. However, by using it, the power is much more balanced than conventional design. If event rate is high during first 6 months, we need to increase the number of patients assigned to 6 and 12-month arms to detect the difference.

Co-Author(s): Yongdong Ouyang, Hubert Wong

Sedentary work and the risks of colon and rectal cancer by anatomical sub-site in the Canadian Census Health and Environment Cohort (CanCHEC)

Presented by: **Manisha Pahwa**, Research Associate, Cancer Care Ontario

Sedentary work is common in Canada. Previous studies suggest associations with colorectal cancer, but few are sufficiently detailed. This analysis aimed to evaluate possible relationships by anatomical sub-site and sex. A large administrative cohort of approximately 2 million Canadians with 18 years of cancer incidence follow-up was used for this analysis. Sedentary work, based on working body position category (a. sitting; b. standing and walking; c. sitting, standing, and walking; d. other), was assigned to occupations reported by 1991 Canadian Census respondents based on national occupational counseling guidelines. Adjusted hazard ratios (HR) and 95% confidence intervals (CI) were estimated for primary incident cancers of the colon (overall, proximal, and distal) and rectum for men and women diagnosed from 1992-2010. Compared to "sitting" jobs, men in occupations with "other" (non-sitting, non-standing, or non-walking) body positions had a weakly significant reduced colon cancer risk (HR=0.93, 95% CI: 0.89, 0.98) primarily attributed to protection at the distal site (HR=0.90, 95% CI: 0.84, 0.97). Men in "standing and walking" and "sitting, standing, and walking" jobs did not have significantly reduced colon cancer risks. No significant effects were observed for rectal cancer in men or for colon and rectal cancer in women. The single significant finding of this analysis should be followed-up in further investigations with additional information on potentially confounding variables. Null findings for rectal cancer were consistent with results from other studies.

Co-Author(s): Manisha Pahwa, Anne Harris, Jill MacLeod, Michael Tjepkema, Paul A Peters, Paul A Demers

Risk Factors For Healthcare-Associated Clostridium difficile Infection (HA-CDI), 2013- 2015, Scarborough and Rouge Hospital (SRH)

Presented by: **Senthuri Paramalingam**, Clinical Epidemiologist, The Scarborough and Rouge Hospital

The rates of HA-CDI have been high at SRH and in order to create a targeted reduction strategy, a retrospective case-control study was undertaken to identify modifiable risk factors. Cases were identified using the Infection Prevention and Control Department data and all HA-CDI cases ?1 years of age admitted and discharged between 2013 and 2015 were included. Controls were matched on 2:1 ratio based on site, age (±10years), length of stay (±2days) and program. Univariate analysis was completed, and a forward model building approach was used to identify significant variables for conditional logistic regression. Risk factors assessed include: antibiotic class; gastric acid suppressants; immunosuppressive therapy; comorbidities; exposure to CDI in the room; and burden of CDI on the unit. A total of 200 HA-CDI were included at the study with 59 (29.5%) at site A and 141 (70.5%) at site B. On average, cases stayed in hospital for 19 days, and were primarily medicine patients. At site A exposure to: CDI in the room, cephalosporins, gastric acid suppressants and fluoroquinolones emerged as risk factors with adjusted odds ratios of 3.2 (95% CI: 1.1-9.2), 2.6 (95% CI: 1.1-6.2), 2.7 (95% CI: 1.3-6.1), and 1.5 (95% CI: 0.7-3.4), respectively. At site B significant risk factors include cephalosporins, fluoroquinolones, and gastric acid suppressants, with adjusted odds ratios of 3.6 (95% CI: 2.1-6.4), 1.8 (95% CI: 1.0-3.1), and 1.9 (95% CI: 1.2-3.0), respectively. The results of this study are consistent with the literature on risk factors for HA-CDI. This study helps to recognize the need for greater focus on antibiotic stewardship and environmental cleaning to decrease HA-CDI at SRH.

Co-Author(s): Senthuri Paramalingam, Zahir Hirji, Murtuza Diwan, Jayvee Guerrero, Ronny Leung, Katherine Perkin, Stanescu Tiberius, Vydia Nankoosingh

Improving the Canadian Institute for Health Research's (CIHR) Grant Applications: A SWOT Analysis of the Policies Governing the Funding Process

Presented by: **Raywat Deonandan**, Assistant Professor, University of Ottawa

We sought to examine the effectiveness of CIHR's reforms in reaching their stated objectives in decreasing application workload, alleviating peer review burden, improving consistency, in reducing program complexity. An online questionnaire composed of both qualitative and quantitative questions was administered to health researchers in various disciplines, regarding their perceptions of the CIHR application process. Eligibility criteria included the minimum submission of one grant application to the CIHR in the last five years. Participants were recruited using convenience and snowball sampling. The data were analyzed thematically using SWOT (strengths, weaknesses, opportunities and threats) analysis techniques. These findings were used to conduct an exploratory policy analysis to identify areas for improvement. Quantitative data were analyzed descriptively using SPSS 24. There were 22 respondents. Strengths of the CIHR process included: ease of submission, clarity of process, communication of expectations, and lightened administrative burden. Weaknesses included: fluctuating timelines, dated information policies, standardization of the CCV system, and high level of competition for grant applications. Opportunities included: the creation of researcher-specific grants, provide new venues for communication between CIHR staff and applicants, and the recognition of new fields of health research into sub-categories of research. Threats included: bias towards researcher status, non-expert reviews, and inconsistency in peer reviews with the implementation of the new online peer-review system. There was no significant relationship between age, gender, number of years of research experience, previous application success, domain of research, nor satisfaction with the grant application process. The reforms attained two objectives: reduced administrative burden and complexity of administering funds. However, more policy revisions and quality assurance systems are needed to reduce bias and conflict of interest, and to adapt to the needs of the evolving scientific community.

Co-Author(s): Raywat Deonandan, Sheridan Parker

How we measure cancer in First Nations, Inuit and Métis communities: a knowledge exchange project

Presented by: **Maegan Prummel**, Senior Research Associate , Cancer Care Ontario

Equip First Nations, Inuit and Métis decision makers with greater comprehension of the kinds of population health statistics they see about their communities in reports from health agencies The Aboriginal Cancer Control Unit at Cancer Care Ontario is developing knowledge exchange materials to enhance understanding of population health statistics and why they are important. The materials introduce core measures used to describe cancer at a population level (incidence, survival, mortality and prevalence) and topics that are of particular importance to Indigenous cancer statistics, such as age standardization, comparing cancer in populations of different sizes and methods of collecting cancer information in the absence of Aboriginal data identifiers. A knowledge exchange process was used to develop these educational materials in consultation with First Nations, Inuit and Métis partner organizations across Ontario. Seventeen key informant interviews and focus groups were held with representatives from First Nations Political Territorial Organizations, the Chiefs of Ontario, the Métis Nation of Ontario, Inuit service provision organizations, the Aboriginal Tobacco Program, healthcare providers specializing First Nations, Inuit and Métis health and the Canadian Cancer Society. Recommendations included the need for more introductory background information on cancer risk factors and screening, and more examples of real-world cancer rates. The final deliverable will be in two different formats: a video webinar and a booklet of fact sheets, to be released Spring 2017.

Co-Author(s): Caroline Cawley, Maegan Prummel, Beth Theis, Loraine Marrett

Substance use disorder among emerging and young adults: an epidemiological study

Presented by: Rana Qadeer, Student, McMaster University

We investigated the prevalence of substance use disorders (SUDs) among emerging adults and quantified the extent to which emerging adults, compared to young adults, are at increased odds for SUDs. Data come from the 2012 Canadian Community Health Survey – Mental Health. Respondents were 15–39 years of age (n=9228) and were categorized as: early emerging adults (15-22 years); late emerging adults (23-29 years); and, young adults (30-39 years). SUDs (alcohol or drug abuse/dependence) were measured using the Composite International Diagnostic Interview 3.0. The prevalence of SUDs was compared across age groups using design-based chi-square analyses. Odds ratios (OR) and 95% confidence intervals (CI) were computed from logistic regression models adjusting for sociodemographic and health covariates. All analyses were weighted to maintain representativeness of the study sample to the Canadian population. The prevalence of alcohol disorder was 8.0%, 6.6%, and 2.7% for early emerging adults, late emerging adults, and young adults respectively. For drug disorder, the prevalence was 6.4%, 3.6%, and 1.3%. Compared to young adults, early and late emerging adults were more likely to report SUDs ($p < 0$ .01). The prevalence of drug disorder was higher among early versus late emerging adults ($X2=119.8$, $p=0.01$). Among all age groups, males were more likely to report alcohol or drug disorders ($p < 0$ .05 for all). After covariate adjustment, early and late emerging adults had greater odds of reporting alcohol (OR=3.2, 95% CI=2.2-4.9 and OR=2.4, 95% CI=1.6-3.4, respectively) or drug (OR=4.2, 95% CI=2.5-7.0 and OR=2.5, 95% CI=1.6-4.1, respectively) disorders compared to young adults. Emerging adulthood represents an important developmental period in which individuals are at increased odds of reporting SUDs. This finding has implications for the provision of screening and treatment of SUDs as these individuals transition from the paediatric to adult healthcare system.

Co-Author(s): Rana Qadeer, Kathy Georgiades, Michael Boyle, Mark Ferro

Evidence Reversal and randomized controlled trials within the New England Journal of Medicine: An analysis of trial characteristics from 2000 to 2016

Presented by: Riaz Qureshi, Student, University of Western Ontario

Evidence Reversal (ER) is the phenomenon whereby new and stronger evidence contradicts a current claim. Our objective is to determine if any characteristics of RCTs may be associated with ER. This review was undertaken to replicate, update, and expand a review of medical reversals published by Prasad et al. in 2013. We screened all papers in the New England Journal of Medicine published as original research articles from January 2000 until December 2016. Included studies must have met the following inclusion criteria: test a clinical practice, procedure, or technology; be a Randomized Controlled Trial; and test a clinical practice which is already established or in use. Descriptive statistics for the sample of trials have been replicated and expanded from "A Decade of Reversal." 3560 articles were screened for inclusion criteria of which: 834 were excluded for not being a clinical practice, procedure or technology; 964 were excluded based on study type; and 1147 were excluded because they did not test an established claim. The final number of included RCTs was 611. All trials have been extracted and descriptive statistics include: 54% of articles indicating reversal of the tested claim; average trial sample size of 3305 subjects; proportions of trials with primary outcomes being dichotomous, having significant ($p < 0.05$) differences, having positive conclusions, and using hard (clinical) outcomes of 78%, 45%, 42% and 45% respectively; and the most common PICOTS, Risk of Bias, and GRADE assessments being, respectively, 'Somewhat insufficient' (48%), 'Probably low' (35%), and 'Very low' (31%). Once the data has been cleaned and edited, the strength of associations between relevant trial characteristics and reversal or confirmation of current claims will be tested in a multivariable logistic regression, the results of which will inform the development of a framework of reversal.

Co-Author(s): Riaz Qureshi, Desiree Sutton, Janet Martin

A simulation study to assess the impact on screening results of introducing next-generation sequencing technology into newborn screening

Presented by: **Alvi Rahman**, MSc. Student, University of Ottawa

To determine the impact on newborn screening (NBS) results, of changing technology by introducing targeted next-generation genomic sequencing (T-NGS) in parallel with current tandem mass spectrometry (MS/MS). Secondary analysis of retrospective screening data collected between August 2006 and November 2015 (n=1,300,000) and a simulation of the proposed screening approach was conducted, using phenylketonuria (PKU) and MCADD as case studies. Frequencies of positive and negative screening results using current MS/MS technology were calculated. To simulate results of T-NGS, two genetic databases, the Genome Aggregation Database and ClinVar, were abstracted for information regarding known variants of the PAH and ACADM genes (associated with PKU and MCADD, respectively). Simulated T-NGS results will be combined with retrospective MS/MS screening data to identify new categories of results and their expected frequencies. T-NGS results were expressed as genotypes that were classified based on a modified version of ACMG guidelines: (i) pathogenic/pathogenic, (ii) pathogenic/uncertain significance, (iii) pathogenic/benign, (iv) uncertain significance/uncertain significance, (v) uncertain significance/benign, and (vi) benign/benign. Hardy-Weinberg genotype proportions were determined for the genes of interest. For PAH, estimates for genotypic proportions were as follows: (i) 8.1x10-5, (ii) 1.3x10-4, (iii) 1.8x10-2, (iv) 4.9x10-5, (v) 1.4x10-2, and (vi) 9.7x10-1. For ACADM, estimates of genotypic proportions were: (i) 6.0x10-5, (ii) 7.6x10-3, (iii) 1.5x10-2, (iv) 1.5x10-5, (v) 7.6x10-3, and (vi) 9.8x10-1. Retrospective MS/MS screening data will be analyzed to determine the frequency of positive and negative screening results as well as measures of screening efficacy. Sensitivity analyses will be conducted by determining ranges for the estimates of genotype proportions and assessing changes in final screening results.

Co-Author(s): Alvi Rahman, Beth Potter, Marie-Helene Roy-Gagnon, Lemuel Racacho, Dennis Bulman, Pranesh Chakraborty, Brenda Wilson

Leveraging clinical information systems to facilitate knowledge translation in emergency medicine

Presented by: **Laura Rivera**, Research Associate, W21C, O'Brien Institute for Public Health, University of Calgary

Data from clinical information systems have the potential to support knowledge translation (KT) in healthcare. We describe an initiative developed to leverage these data to facilitate KT in emergency medicine. We developed two methods to disseminate clinical data to Calgary Zone emergency physicians using Tableau: (1) a static report designed for PDF export and e-mail distribution, and (2) an online dashboard including interactive features and regular updates. Metrics addressed emergency department flow (e.g. 72-hour readmission rate), health services use (e.g. % visits with CT), and clinical indicators (e.g. median assessment to antibiotic administration for sepsis). A web survey collected clinician perceptions of the initiative, while dashboard analytics indicated physician engagement. Quantitative data from the survey and analytics were analyzed descriptively, while free-text survey data were analyzed using thematic analysis. Of 177 emergency physicians in Calgary, we received 49 responses (28%). A large proportion of physicians indicated an intention to take action based on the data, including engaging in self-reflection (91%) and modifying specific aspects of their practice (63%). Most respondents (86%) were satisfied/very satisfied with the static report, felt that data was displayed effectively (90%), and wished to receive future iterations of the report (90%). However, clinician engagement with the online dashboard was more challenging, where a small proportion of physicians have ever accessed the dashboard (< 1 0%). Many barriers were cited, where it was most frequently mentioned that the platform is only accessible from within an institutional firewall, as well that end-users experience difficulty locating the resource within the institutional intranet. We elicited knowledge-user preferences for the dissemination of clinical information system data, and our team will use these results to inform future iterations of this initiative. We foresee that our work will have implications for those involved in leveraging data to support KT.

Co-Author(s): Laura Rivera, Kevin Lonergan, Shawn Dowling, Eddy Lang

A comparison of central and disseminated school absenteeism syndromic surveillance public health practice in two Canadian provinces

Presented by: **Laura Rivera**, Research Associate, W21C, O'Brien Institute for Public Health, University of Calgary

The role of school absenteeism (SA) data within infectious disease surveillance varies. We compared the SA use between Ontario, with decentralized public health agencies, and Alberta, which is centralized. In Alberta, SA is centrally collected by the Ministry of Education and shared with Alberta Health Services. We recruited two of five Alberta Health Zones, one of which analyzes centrally collected data to produce alerts, while the other relies on public health nurses communicating with school principals. In Ontario, we recruited six of 36 public health units (PHU), where each obtains SA data from their school boards and use unique local systems for data collection, analysis and dissemination. We collected data from these eight public health agencies regarding SA alerts generated and whether alerts supported increased outbreak detection. The number of alerts per agency varied tremendously, with the lowest number reported from one agency being 20 alerts, and the highest being 355. The highest number of detected outbreaks (n=19) occurred in the Alberta Zone using centrally collected data from 246 alerts. No outbreaks were reported by two Ontario PHU, despite generating high number of alerts (n=355, n=199). While detecting outbreaks was the stated purpose of 7 of the 8 agencies' SA systems, we noted that SA supported declaring the start of respiratory season for 3 agencies. The most common investigation activity based on SA was for surveillance epidemiologists to contact schools experiencing high absenteeism. One Ontario PHU was not able to generate alerts since their absenteeism denominators were not consistently reported. Widespread variation in both the purpose and operation of school absenteeism surveillance systems were noted across the two provinces. For the purpose of outbreak detection, surveillance systems that analyzed centrally collected SA data appear to be more effective in detecting such outbreaks.

Co-Author(s): Ian Johnson, Laura Rivera, Lennon Li, Rachel Savage, Faiza Habib, Hussain Usman, David Strong, Christopher Sikora, Laura Rosella, Shelly Bolotin, Natasha Crowcroft

Estimating Combined Population Attributable Risks for Multiple Lifestyle Risk Factors: Examining Risk of Colorectal Cancer in Alberta

Presented by: **Yibing Ruan**, Statistical Associate, Alberta Health Services

To determine the optimal method for estimating the combined population attributable risk (PAR) across multiple risk factors, we tested different methods for multiple risk factors for colorectal cancer. Current methods for estimating combined PAR for multiple exposures (Steenland, Parkin) require assumptions of independent exposures and multiplicative risks for joint effects, which rarely exist. To understand how violating these assumptions might bias PAR estimates, we used exposure data from Alberta's Tomorrow Project (ATP) to estimate the prevalence of smoking, obesity, and fruit/vegetable insufficiency, and modeled the marginal and joint hazard ratios (HR) of these risk factors for colorectal cancer. We estimated PAR from the joint distributions of prevalence and associated risks, which do not require any assumptions, and compared the results to PARs obtained from the Steenland /Parkin methods. We estimated colorectal cancer risk (based on 237 incident cases) among 26,137 participants of ATP with a median follow-up of 11.1 years. Risk factors were categorized into 3, 3, and 2 levels, respectively, resulting in a total of 18 joint exposure combinations. We calculated overall PAR using the joint prevalence and HRs distributions, estimated from a 3-way interaction model, also adjusted for 11 covariates. The PARs for smoking, obesity, fruit/vegetable insufficiency and combined risk factors were 15.6%, 34.2%, 12.4%, and 59.8%, respectively. We also applied the Steenland/Parkin method using marginal prevalences and risks (estimated from a main effect model with the 3 risk factors, adjusting for the same covariates). The resulting PARs for smoking, obesity, fruit/vegetable insufficiency, and combined were 14.9%, 33.5%, 12.3%, and 50.4%. We observed that when exposures are correlated and risks for joint effects are not multiplicative, the Steenland/Parkin method will differ from the joint PAR estimate. Caution is required when combined PARs are estimated from marginal prevalences and risks.

Co-Author(s): Yibing Ruan, Stephen Walter, Christine Friedenreich, Darren Brenner, on behalf of the ComPARe team

Occupational cancer in Ontario: Risk factors and prevention

Presented by: **Elizabeth Rydz**, Research Associate, Cancer Care Ontario

The objectives of this project were to identify and describe major risk factors for occupational cancer in Ontario, and to propose policy recommendations for reducing occupational cancer risk. Occupational exposure and cancer burden estimates created by CAREX Canada and the Occupational Cancer Research Centre, respectively, were used to identify the major occupational carcinogens in Ontario. Substances classified as definite carcinogens by the International Agency for Research on Cancer to which 5,000 or more workers were occupationally exposed and that caused at least 10 new cancers annually in Ontario were included. Occupational exposure and cancer burden results were summarized by occupation or industry; burden results were further summarized by sex. A policy advisory committee was consulted in order to develop general and risk factor-specific policy recommendations. We identified 11 carcinogens that cause approximately 3,000 incident occupational cancers annually in Ontario. Solar radiation was the most prominent risk factor in terms of the number of workers exposed (450,000) and burden of cancer (1,400 non-melanoma skin cancers). Other significant occupational cancer risk factors were asbestos (52,000 exposed, 790 mesothelioma, lung, ovary and larynx cancers), diesel engine exhaust (301,000 exposed, 210 lung cancers), and crystalline silica (140,000 exposed, 200 lung cancers). Most occupational cancer diagnoses occurred in men. The industries and occupations with the greatest burden varied considerably by carcinogen and was taken into account in the prevention recommendations. Broad prevention recommendations include updating existing occupational exposure limits, requiring workplace exposure surveillance and reporting, and enhancing the existing Toxics Use Reduction legislation. Occupational exposures to the four most prevalent risk factors cause approximately 2,600 cancers annually. This is substantial, especially because occupational exposures are largely preventable. These findings can help to prioritize exposure prevention and reduction measures. Additional research is underway to estimate the associated economic burden.

Co-Author(s): Elizabeth Rydz, Manisha Pahwa, Shelley A Harris, Stephanie Young, Elisa Candido, Alice Peter, Paul A Demers

Risks and Benefits of Mood-Stabilizer Treatment in Pregnant Women with Bipolar Disorder: A Population-Based Cohort Study

Presented by: **Misbah Salim**, Graduate Student, Western University

The aim of this study was to examine various risks and benefits associated with treatment use for bipolar disorder during pregnancy. Design: This was retrospective population based cohort study using secondary data housed at the Institute for Clinical Evaluative Sciences (ICES). ICES data consists of multiple linked health administrative databases with physician billings and hospitalizations for the entire province of Ontario, Canada, and prescription drug use for a subset of the population. Setting: Our cohort consisted of women aged 13 to 50 who had a singleton delivery between 2000 and 2014 and had a prior record of hospitalization for bipolar disorder. All women must have been covered under the provincial drug plan during their pregnancy. Given that those eligible for the drug plan are a selected sample of the Ontario population, the study population of interest (treated) and the comparison group (untreated) will be well balanced with respect to important confounding factors. Exposures: The exposure is the use of mood stabilizer treatments, alone or in combination with antipsychotics, anxiolytics, and antidepressants. Main outcomes: We will compare important clinical maternal and neonatal outcomes (gestational diabetes, hypertensive disorders of pregnancy, venous thromboembolism, preterm birth, small/large for gestational age), delivery outcomes, health service use, and mortality rates between the treated group and the untreated comparison group. Statistical analyses: Propensity scores will be used to balance the groups on observed baseline covariates and eliminate the effects of confounding by indication. Regression analyses will then be used to determine treatment effects.

Co-Author(s): Misbah Salim, Kelly Anderson, Verinder Sharma, Igor Karp

Lifetime caffeine intake and the risk of epithelial ovarian cancer

Presented by: **Simran Sandhu**, MSc. Epidemiology Candidate, Queen's University

To examine the association between lifetime caffeine intake and risk of epithelial ovarian cancer (EOC) overall, according to tumour behaviour (invasive vs. borderline), and by Type 1 vs. Type 2. The Prevention of Ovarian Cancer in Quebec (PROVAQ) is a population-based case-control study in Montreal (2011-2016) that recruited 497 cases and 904 controls who reported lifetime consumption of caffeinated beverages and other variables through in-person interviews for calculation of cumulative caffeine intake. Unconditional multivariable logistic regression was used to estimate adjusted odds ratios (with 95% CIs) for the association between quartiles of caffeine intake and risk of EOC. A combined Directed Acyclic Graph (DAG) and change-in-estimates procedure was used for confounder assessment. Polytomous logistic regression was used for associations by tumour behaviour and cancer type. Preliminary results indicate that there is no association between lifetime caffeine consumption and overall EOC risk. The adjusted OR for the highest versus lowest quartiles of caffeine intake was 1.21 (95% CI: 0.85-1.70). When examining associations by tumour behaviour, there was a non-significant suggestion of a trend of increasing risk with increasing quartile of caffeine consumption for invasive but not for borderline EOC. The OR for the highest versus lowest quartiles of caffeine intake was 1.32 (95% CI: 0.90-1.93) for invasive EOC, and 0.99 (95% CI: 0.54-1.80) for borderline EOC. There was no appreciable difference in risk between Type 1 and Type 2 invasive tumours. Caffeine consumption does not appear to influence overall EOC risk; results according to tumour behaviour were too imprecise to discern differences in magnitude of association. Sensitivity analyses incorporating latency periods and subgroup analyses by caffeine source will be conducted and associations by menopausal status examined.

Co-Author(s): Simran Sandhu, Anne Grundy, Kristan Aronson, Anita Koushik

Alzheimer's disease and related dementia in Indigenous populations: A systematic review of risk factors

Presented by: **Grace Scott**, Student, Laurentian University

We aimed to systematically review the evidence on risk factors for Alzheimer's disease and related dementia in Indigenous populations and to identify key differences in the risk factor profile. This study was a systematic review of all published literature using Medline, Embase, and PsychINFO as of October 2016. Subject headings included terms related to three concepts: Indigenous populations, dementia and risk. All the relevant words, phrases or a combination were used for each concept. After all duplicates were removed, abstracts of remaining records were screened according to inclusion criteria. Titles, abstracts and full manuscripts were independently assessed by two reviewers and an initial agreement score was calculated. Difference of opinions were resolved by consensus. A quality assessment tool was developed and applied in this study. In total, 139 articles were identified from the search; 12 articles met the inclusion criteria. Authors identified protective, potentially modifiable and non-modifiable risk factors. Protective factors included higher education and physical activity; potentially modifiable risk factors included head injury, hypertension, obesity, smoking, alcohol use, marital status, employment status, poor mobility, and urinary incontinence; non-modifiable risk factors included increasing age, male sex, epilepsy, family history of dementia and Microtubule-associated protein tau gene (site 2 & 9). The majority of studies included a clearly stated objective, defined a specific Indigenous population, and implemented outcome measures consistently across all participants. However, most of the studies did not identify any engagement with Indigenous communities or model positive outcomes and strength-based factors. There remains a paucity of high quality epidemiological research on the risk factors for Alzheimer's disease and related dementias in Indigenous populations. However, contemporary epidemiological trends support the need for responsive and culturally appropriate policies and programs.

Co-Author(s): Grace Scott, Kristen Jacklin, Jennifer Walker

Intake of Dietary Fibre and Lifetime Nonsteroidal Anti-inflammatory Drug (NSAID) Use and the Incidence of Colorectal Polyps in a Population Screened for Colorectal Cancer

Presented by: **Eileen Shaw**, Research Associate, Alberta Health Services

Increased dietary fibre intake and use of non-steroidal anti-inflammatory drugs (NSAIDs) are associated with decreased colorectal cancer risk. However, effects on precursors of colorectal cancer have shown mixed results. A cross-sectional study of 2,548 individuals undergoing colonoscopy at the Forzani & MacPhail Colorectal Cancer Screening Centre (Calgary, Canada) was conducted. Dietary fibre intake and NSAID use were assessed using the Diet History Questionnaire I or II and Health and Lifestyle Questionnaire. Colorectal outcomes were documented as a polyp or high-risk adenomatous polyp (villous histology, high grade dysplasia, ?10mm or ?3 adenomas). Crude and adjusted odds ratios (ORs) and 95% confidence intervals (CIs) were estimated using unconditional logistic regression. Total dietary fibre intake was associated with a decreased presence of high-risk adenomatous polyps (OR=0.50, 95% CI: 0.29-0.86) when comparing the highest to lowest quartiles and was observed with both soluble (OR=0.51, 95% CI: 0.30-0.88) and insoluble (OR=0.51, 95% CI: 0.30-0.86) fibre. Stronger inverse associations were observed among obese and Non-White ethnicity individuals (p¬interaction < 0 .05). Ever use of NSAIDs also showed an inverse association with high-risk adenomatous polyps (OR=0.65, 95% CI: 0.47-0.89), an effect observed with both monthly (OR=0.60, 95% CI: 0.37-0.95) and daily (OR=0.53, 95% CI: 0.32-0.86) use. Dietary fibre intake and NSAID use were associated with a decreased risk of having a high-risk adenomatous polyp at screening in this study population.

Co-Author(s): Eileen Shaw, Matthew Warkentin, S. Elizabeth McGregor, Susanna Town, Robert Hilsden, Darren Brenner

The effect of perceived stress on cancer incidence using data from Alberta's Tomorrow Project

Presented by: **Eileen Shaw**, Research Associate, Alberta Health Services

Stress has been associated with increased incidence of a number of diseases, including cardiovascular and immune diseases. In this study, we investigate the association between perceived stress and cancer incidence. Data from the baseline Health and Lifestyle Questionnaire from 31,121 participants in Alberta's Tomorrow Project (ATP) were used. Stress was measured using a 17-item questionnaire on chronic strains from the 1994/95 Statistics Canada National Population Health Survey. Because there were no meaningful cut-offs for this stress score, low stress (first tertile of non-zero stress score) was used as the reference group to compare to no or high stress. Cancer incidence data were obtained through record linkage with the Alberta Cancer Registry. Cox proportion hazards regression was used to model the effect of stress on cancer incidence in the ATP cohort. Preliminary results suggest that there is no significant association between stress and all cancer incidence in the ATP cohort. In examining site-specific cancers, we observed a significantly higher risk incidence in the highest tertile of stress scores, after adjusting for age, sex, body mass index, physical activity and smoking status, for breast cancer (adjusted hazard ratio (HR) = 1.34, 95% confidence interval (CI): 1.06-1.71) and a borderline significant effect for leukemia incidence (HR=1.59, 95% CI: 0.92-2.75). Conversely, there was a significantly lower risk of prostate cancer among the second (HR=0.70, 95% CI: 0.54-0.91) and third (HR=0.63, 95% CI: 0.47-0.83) highest tertiles compared to the lowest tertile of non-zero stress score. While stress did not have significant associations with all cancer incidence in the ATP cohort, site-specific effects were observed with increased incidence of breast cancer and leukemia and decreased incidence of prostate cancer with increasing stress. Additional analyses are underway to further investigate these effects.

Co-Author(s): Eileen Shaw, Amanda Barberio, Christine Friedenreich, Darren Brenner

The crossover design for studies of infertility: a methodological appraisal

Presented by: **Daniel Shi**, Undergraduate Student, McMaster University

To survey the methodological features of crossover trials for infertility involving in-vitro fertilization, with a secondary focus on the reporting of key results. Search strategies were built to retrieve crossover trials on infertility interventions published from Medline (1946 to 2016) and Embase (1980 to 2016) databases. Horizon analysis was used to estimate the number of relevant studies that were not retrieved by our strategy. Two reviewers independently undertook study selection and used the Cochrane tool to assess risk of bias in order to assess the methodological rigour of included studies. Important features of the crossover design were summarized. Meta-analysis methods were employed to display treatment effects for pregnancy outcomes across studies. The search identified 112 studies. Reviewers selected 15 studies for inclusion, and horizon analysis estimated that six potentially eligible studies had not been identified. Many studies did not clearly report blinding or outcome data, and they were therefore deemed to have unclear risks of bias. Overall, ten studies were deemed to have high risks of bias, usually because of incomplete reporting of outcome data. Sample size reporting was also problematic, with ten studies only reporting sample sizes by period, and only reporting results aggregated over treatment periods. Most studies that reported sample sizes by group for both periods found negative risk differences, suggesting poorer pregnancy outcomes associated with their interventions. Despite the issues identified in our study, consideration should still be given to using the crossover trial design in future infertility research. Taking account of missing data and complete reporting of outcome data may significantly reduce the risk of bias.

Co-Author(s): Dalton Budhram, Daniel Shi, Sarah McDonald, Stephen Walter

Effects of Ambient Air Pollution on Incident Parkinson's Disease in Ontario, 2001 to 2013: A Population-Based Cohort Study

Presented by: **Sae Ha Shin**, Student, Public Health Ontario

Recent studies have linked air pollution to neurodegenerative diseases. However, evidence relating air pollution and Parkinson's disease (PD) remains elusive. We evaluated the association between air pollution and incident PD. Using linkable health administrative databases, we conducted a population-based cohort study of all adults (n=2,194,519) aged 55-85 years who lived in Ontario on April 1, 2001. Individuals were followed up until PD diagnosis, death, becoming ineligible for provincial health insurance, or March 31, 2013. Long-term average exposures to fine particulate matter (PM2.5), nitrogen dioxide (NO2), and ozone were derived from satellite-derived measurements, land-use regression models, and fusion-based methods, respectively. We applied Cox proportional hazards models, adjusting for individual- and area-level confounders. We performed sensitivity analyses, such as adjusting for longer lags in exposure, and subgroup analyses according to selected characteristics. During the 13-year follow-up period, we identified 38,745 newly diagnosed cases of PD. Each interquartile increment (3.8μg/m3) of PM2.5 was associated with a 4% increase in incident PD [hazard ratio (HR)=1.04; 95% confidence interval (CI), 1.01-1.08] after adjusting for all available individual- and area-level confounders. The association for PM2.5 was robust to sensitivity analyses. Exposures to NO2 and ozone were positively linked to PD, but these associations were attenuated after further adjusting for PM2.5 and when considering longer lags. In exploratory subgroup analyses for PM2.5, we observed a higher risk of PD among rural residents [HR=1.15; 95%CI, 1.09-1.20] than urban residents [HR=1.03; 95%CI, 0.99-1.07; P=0.001]. Long-term exposure to PM2.5 was associated with increased incidence of PD in Ontario. More research on exposure to air pollution is required to further our understanding of the PD development and to determine the public burden of neurodegenerative disease attributable to air pollution.

Co-Author(s): Sae Ha Shin, Richard Burnett, Jeffrey Kwong, Perry Hystad, Aaron van Donkelaar, Jeffrey Brook, Karen Tu, Mark Goldberg, Paul Villeneuve, Ray Copes, Randall Martin, Brian Murray, Andrew Wilton, Alexander Kopp, Hong Chen

The impact of organized breast assessment on survival by stage for screened women diagnosed with invasive breast cancer

Presented by: Courtney R. Smith, Research Associate, Cancer Care Ontario

This study compares survival by stage between women diagnosed with screen-detected breast cancer through multidisciplinary Breast Assessment Centres (BAC) with patient navigation versus those assessed through usual care (UC). A retrospective design identified two concurrent cohorts of women diagnosed with screen-detected breast cancer at a BAC (n=2,010) and UC (n= 1,844) between January 1, 2002 and December 31, 2010 and followed until June 30, 2016. Demographic and assessment characteristics were obtained from the Ontario Breast Screening Program. Abstraction of medical charts provided prognostic, treatment, and recurrence data. Death data were assessed from linkage with the Registered Person's Database and the Ontario Registrar General All-Cause Mortality File. A Cox proportional hazards model compared overall and recurrence-free survival by assessment type (BAC/UC), stratified by stage and adjusted for demographic, prognostic, and treatment characteristics. There were 505 deaths (BAC=239; UC=266) during the study period, and 301 women with at least one recurrence (BAC=166; UC=135). Among women with stage I breast cancer, those diagnosed in a BAC had a 31% reduced risk of mortality (Adjusted Hazard Ratio (HR): 0.69, 95% Confidence Interval (CI): 0.53-0.90) and 14% reduced risk of recurrence (HR=0.86, 95% CI=0.59-1.26) compared to UC, although the latter was not statistically significant. Among women with stage II/III breast cancer, there was no difference in overall or recurrence-free survival between BAC and UC. Among those with stage I screen-detected breast cancer, women assessed through a BAC had significantly better overall survival, providing further support for organized assessment in Ontario.

Co-Author(s): Courtney R. Smith, Anna M Chiarelli, Kristina Blackmore, Anjali Pandya, Vicky Majpruz, Lucia Mirea, Frances P. O'Malley, May Lynn Quan, Claire M.B. Holloway, Derek Muradali

Using Tableau Dashboards to Communicate Enteric Pathogen Surveillance Information

Presented by: Kate Snedeker, Surveillance Epidemiologist, Alberta Health Services

To create an effective, timely and meaningful method of communicating enteric pathogen surveillance information in Alberta to public health decisions makers, including medical officers of health and environmental health officers. Data is collected using surveillance systems including the Communicable Disease & Outbreak Management System and the Alberta Real-Time Syndromic Surveillance Net. Epidemiologists at AHS then have used Tableau to link data from the surveillance systems to dynamic, web-based dashboards which can be automatically or manually updated. Surveillance data is cleaned and analyzed using SAS; further analysis is performed within the Tableau software as needed. Unlike paper-based or PDF reports, Tableau dashboards allow users to filter data by important variables, and can be updated as frequently as needed. Additionally, the dashboards include efficient, interactive case and choropleth mapping capabilities. Relevant staff within AHS including environmental public health officers, communicable disease nurses, medical officers of health, epidemiologists and laboratory staff have access to three dashboards with enteric pathogen data. The Enteric Pathogens dashboard is updated weekly and contains case, outbreak and syndromic data as well as maps of data. Information on enteric pathogens is provided as part of the Communicable Disease Outbreak Dashboard, which is updated monthly. There is also a FoodNet dashboard which is updated monthly with data captured in Alberta as part of the FoodNet project. Development of the Tableau Dashboards has allowed staff with AHS to have more timely, effective access to data on enteric pathogens. Surveillance epidemiologists continue to meet with stakeholders regularly to update and improve the dashboards.

Co-Author(s): Kate Snedeker, Lance Honish, Linda Chui, Adrienne MacDonald

Assessment of an algorithm for detecting higher than expected counts of enteric pathogens in Alberta

Presented by: **Kate Snedeker**, Surveillance Epidemiologist, Alberta Health Services

This study will assess the ability of an adapted version of the NESP flagging algorithm to flag known outbreaks and clusters of enteric pathogens in Alberta in 2016. SAS code for the NESP flagging algorithm, which uses a cumulative Poisson probability to flag when counts of enteric pathogens are significantly higher than expected, will be adapted for use within Alberta (provincially and by health zone). Data on case counts in Alberta will be obtained from the Communicable Disease/Outbreak Management system. The code will be run for all weeks in 2016, and instances where significantly higher than expected counts were flagged for one, two and four week periods will be compared with the dates of known clusters and outbreaks of reportable enteric pathogens.

Co-Author(s): Kate Snedeker

Maternal health care access in rural communities in southwestern Uganda: antenatal care (ANC) attendance and delivery experiences among Indigenous Batwa and non-Indigenous Bakiga women

Presented by: **Vivienne Steele**, Student (Masters), University of Guelph

This study aims to examine and characterize ANC attendance and birth experiences in order to identify barriers and facilitators of maternal health care access for both Indigenous and non-Indigenous women. While Bwindi Community Hospital (BCH) in southwestern Uganda specifically targets the health of the Indigenous Batwa women in the region, disparities in maternal health care access persist.Through collaboration with BCH, health records for ANC and delivery attendance were collected for the period of 2012 to 2015. Guided, semi-structured community interviews and focus groups were conducted with local Indigenous Batwa and non-Indigenous Bakiga communities to explore community members' experiences and establish barriers and facilitators of access to both ANC and delivery services. The identified barriers and facilitators will be evaluated through an explanatory mixed methods approach, using thematic analysis in conjunction with descriptive statistics. Despite Bwindi Community Hospital's aim to address the maternal health care needs of the Batwa women, ANC and delivery attendance was found to be significantly lower among Batwa women as compared to non-Indigenous Bakiga women. Hospital records collected for ANC delivery attendance (n=3692) indicate that the majority of recorded delivery patients are Bakiga women (n=3211). Many barriers to ANC access were identified as likely influencing factors of low ANC and birth attendance for Batwa women, including distance to hospital, limited transportation options, inability to afford care and poor treatment from hospital staff. While similar barriers were identified by Bakiga women, preliminary results show that Batwa women face additional challenges which further limit their ability to access care. Ideally, understanding the factors influencing ANC attendance and delivery location among Indigenous and non-Indigenous women in this context will inform maternal health care policies in this region and within Uganda.

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Determinants of Physical Activity in a Cohort of Prostate Cancer Survivors

Presented by: Chelsea Stone, Masters Student, Alberta Health Services

The aim of this study is to identify factors related to changes in physical activity patterns from pre- to post-diagnosis in prostate cancer survivors. The primary objective is to determine which demographic, medical, quality of life related (e.g. physical and mental) and/or lifestyle factors (e.g. age, marital status, diet, smoking behaviours, tumour stage and occupation) are related to changes in physical activity patterns in prostate cancer survivors. A prospective cohort of 830 prostate cancer patients who participated in a population-based case-control study between November 1997 and December 2000 in Alberta, Canada were followed continually for mortality outcomes to 2016. Cases were histologically confirmed, invasive cases of stage T2 or greater prostate cancer in men under the age of 80 years. All surviving cases from the case-control study were contacted for voluntary recruitment into the cohort. Interviewer-administered questionnaires were used to assess physical activity with the previously developed Lifetime Total Physical Activity Questionnaire at baseline to assess pre-diagnosis activity levels and then re-administered two years post-diagnosis to capture the activity done since diagnosis. Subsequently, the Past Year Total Physical Activity Questionnaire (PYTPAQ) was completed by the participants at two more time points between 2004 and 2007. Demographic, quality of life and environmental risk factors were also collected via questionnaires, while medical chart abstractions were performed to capture clinical variables as well as any disease progressions or outcomes. Logistic regression modelling will be used to determine which medical, demographic, quality of life and lifestyle factors are associated with changes in total physical activity from pre- to post-diagnosis as well as maintenance of physical activity after diagnosis. Relative risks and their 95% confidence intervals will be reported for unadjusted results, as well as adjusted results after accounting for covariates.

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The Effect of Synthetic Oxytocin Used For Induction Or Augmentation of Labor On Early Breastfeeding Initiation and Continuation: A Systematic Review And Meta-Analysis

Presented by: Anusree Subramonian, Msc. Clinical epidemiology student, Memorial University of Newfoundland

A systematic review and meta-analysis to examine the effect of intra-partum Synthetic Oxytocin on breastfeeding initiation and continuation. A systematic search of Medline, Embase, CINAHL and Cochrane databases was conducted. Observational and non-observational studies were eligible if they were (i) conducted in healthy pregnant women irrespective of mode of delivery, (ii) intervention using intravenous SynO during first or second stage of labor, (iii) outcomes related to initiation and/or continuation of breastfeeding. Studies about administration of SynO during the third stage of labor were excluded. Data was extracted from seven selected articles, including descriptive data and effect sizes. Article quality was rated using the Newcastle Ottawa scale. Two reviewers independently assessed each study. From 454 studies, the systematic review included seven studies, of which four were included in the meta-analysis. The analysis, using random effects, showed that SynO reduces the likelihood of (i) initiation of breastfeeding within 48 hours after birth (OR= 0.70; 95% CI: 0.62-0.78; p < 0 .0001) and (ii) continuation of breastfeeding for 1 to 3 months (OR=0.5; 95%CI: 0.28-0.88; p=0.02). Furthermore, SynO increases the risk of formula feeding before hospital discharge (OR=1.77; 95%CI: 1.14-2.77; p=0.01). We found evidence that exposure to intrapartum SynO negatively affects breastfeeding outcomes. This review recommends both the creation of universal clinical guidelines for regulating oxytocin use during labor as well as larger, prospective studies with better validated outcome measurements.

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Socioeconomic Status and Risk Perceptions of Smoking: Preliminary Results From A Systematic Review

Presented by: **Imran Syed**, Student, Centre for Addiction Mental Health; University of Western Ontario Department of Epidemiology and Biostatistics

Tobacco use, being the leading cause of preventable death in the world, influences different risk perceptions among various people (Mantler, 2012). For example, risk perceptions of cigarette smoking predict smoking behaviour (Slovic, 2010), and the existing research suggests perceived risks are lower amongst smokers of low socioeconomic status (SES) (Peretti-Watel et al., 2014). This review will aim to improve the understanding of the association between SES and risk perceptions of smoking among adults. We are conducting a systematic review of studies on SES and risk perceptions of cigarette smoking for adult (18+ years) populations. In February 2017, five databases (Ovid, MEDLINE, EMBASE, CINAHL, and PsychInfo) and sources of grey literature were searched with keywords and subject headings relevant to the search concepts of cigarette smoking, adult populations, and perceived risk. No restrictions were included in the search. Approximately 3019 articles were included after screening for duplicates. Articles excluded during title-abstract screening were unrelated to risk perceptions for tobacco products, did not include adult populations, and were not research studies. During full-text screening we will exclude articles that do not use measures for risk perception and SES, do not have distinct analyses for adult populations, and assess tobacco use but not cigarette smoking. Data extraction will focus on both measures and trends connecting SES to risk perceptions of smoking. A data collection form will be used to extract study design, sample size, study location, relevant participant-related information such as SES indicators, and outcome measurement. Data quality will be assessed using a validated scale (e.g. STROBE). Sources of potential bias will also be assessed. Qualitative data will be summarized and presented, and where practicable, a thematic synthesis may be conducted. Quantitative data will be evaluated for the possibility of meta-analysis.

Co-Author(s): Imran Syed, Patrick Kim, Tara Elton-Marshall, Samantha Wells

Mathematical modelling of the West African Ebola virus epidemic

Presented by: **John Marcello Colabella**, Student, Mount Royal University

Our objective is to achieve optimal Bayesian tracking of an epidemic in both space and time with data that is (a) irregularly aggregated, and (b) only episodic in its availability. We present a variant of the SEIR (susceptible-exposed-infectious-recovered) stochastic population-based compartment model of epidemiology to capture the spatial transmission dynamics of the Ebola virus disease epidemic in Sierra Leone, Liberia, and Guinea. Model parameters were set in advance based on the characteristics of Ebola "Data Assimilation" is a general class of techniques for tracking a state vector in time, using Bayesian updates applied to a dynamic model. The ensemble optimal statistical interpolation (EnOSI) data assimilation method has been shown to produce optimal Bayesian statistical tracking of emerging epidemics (Cobb et al., 2014). Using registered data from the World Health Organization (WHO) situation reports we attempt to capture the transmission dynamics and the spatial spread of the Ebola epidemic. We use Ebola disease incidence as a posterior from the WHO reports. The projected number of newly infected and death cases are estimated and presented. Without data assimilation, the model would only be able to blindly forecast the epidemic without any correction from real-world data. We observe that the prediction improves as data is assimilated over time. The analysis thus provides a realization conditioned on all prior data and newly arrived data. We compare simulated maps with real data map compiled by WHO. This research showed that ensemble based filtering methods can assimilate incoming noisy epidemic data. We also found that EnOSI can efficiently adjust its estimated spatial distribution of the number of infected, if and when the epidemic jumps to a new city.

Co-Author(s): John Marcello Colabella, Michael Wendlandt, Ashok Krishnamurthy, Loren Cobb

Prediction of neonatal sepsis using newborn screening analyte data

Presented by: **Lindsay Wilson**, Research Assistant, Ottawa Hospital Research Institute

Our study aimed to assess whether newborn screening metabolic profiles could be utilized beyond their traditional application to identify neonates at high risk of developing sepsis. We conducted a population-based retrospective cohort study using a province-wide newborn screening registry linked with health administrative databases in Ontario. We identified cases of neonatal sepsis that occurred among infants with completed newborn screening born in Ontario between 2010 and 2015. Our primary definition comprised infants with a diagnostic code for newborn sepsis recorded during any hospitalization initiated within the neonatal period (i.e., prior to 28 days of age). We examined the association between sepsis and individual screening metabolites and ratio combinations using multivariable logistic regression models. Following study exclusions, there were 810,179 infants in the study cohort, 5,930 of whom were diagnosed with sepsis during the neonatal period (7.32 per 1,000 live births). Preliminary results indicate that rates of sepsis were highest among infants born at very preterm gestation (130.8 per 1,000 live births < 3 2 weeks) and decreased as gestational age at birth increased. Almost half (47%) of all cases of neonatal sepsis occurred among infants born prior to 37 weeks' gestation. Rate of sepsis were also higher among neonates with a birth weight under 2,500 grams and among infants born from a multifetal gestation. We will conduct further analyses to validate both our model and the administrative codes used to define neonatal sepsis against an external standard. In this way, we will generate valuable knowledge that may improve the way in which neonatal sepsis is diagnosed and clinically managed.

Co-Author(s): Deshayne Fell, Steven Hawken, Coralie Wong, Lindsay Wilson, Malia Murphy, Pranesh Chakraborty, Kumanan Wilson

Exploring the relationship between newborn screening analytes and childhood outcomes related to autism spectrum disorders

Presented by: **Lindsay Wilson**, Research Assistant, Ottawa Hospital Research Institute

Despite the increasing prevalence of autism spectrum disorders (ASD), the etiology of these conditions is unclear. Evidence suggests that biomarkers, such as those measuring oxidative stress, may be predictive of ASD when considered in combination with other characteristics. Through the examination of newborn screening metabolic profiles, we will identify biomarkers that may predict future development of ASD. Identifying reliable biomarkers could facilitate earlier diagnosis and targeted therapies for children who may develop ASD. We will conduct a retrospective cohort study linking using a province-wide newborn screening registry linked to health administrative databases and the provincial birth registry. The study cohort will include all live-born infants in Ontario between April 1st, 2012 and March 31st, 2016 who have a newborn screening record with available analyte measurement data, and who also have maternal and neonatal data available in the birth registry. We will consider newborn screening analytes, maternal exposures, and perinatal exposures and their relationship with a child's results in an array of domains captured by the Child and Adolescent Needs and Strengths (CANS) tool. In this way, newborn screening metabolic profiles can be used to predict a range of behaviours across a broad spectrum rather than a dichotomous outcome (i.e., diagnosis of autism). Given the heterogeneity of ASD, this approach could offer patients, families, and healthcare providers valuable knowledge that could be used to target therapies and interventions more effectively for children who will go on to develop ASD.

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Subtle degrees of frailty result in adverse cardiac surgery outcomes

Presented by: **Emma Wilson-Pease**, Research Assistant, Nova Scotia Health Authority

The objective of the current study is to explore the relationship between more subtle degrees of frailty and cardiac surgical outcomes in more detail. This non-interventional study subjects all consented participants fitting inclusion criteria to the same questionnaires. The assessment is comprised of the Frailty Assessment for Care-Planning Tool (FACT) for both patient and their collateral, and the EQ-5D-3L. A similar interview process is repeated 5-7 months after surgery, with the addition of a qualitative interview. Pilot study results (n=57) show that 52% of the participants were positive for at least one category of frailty at a level of 4/7 (vulnerable). Results also demonstrated that 3.8% of participants who scored zero deficits on the FACT were discharged to an institution for follow up care compared to 19.3% of participants with one or more deficits. Overall, participants were much frailer than expected, with over half being considered vulnerable or worse on the FACT scale. This signifies an increase in frailty in the elderly population, which supplies rationale for the current study.

Co-Author(s): Emma Wilson-Pease, George Kephart, Ryan Gainer, Jahanara Begum, Greg Hirsch

Breast cancer risk and stage at diagnosis among immigrant and non-immigrant women in British Columbia

Presented by: **Ryan Woods**, PHD Student, University of British Columbia/BC Cancer Agency

Our study aims to assess breast cancer risk, breast cancer severity at diagnosis and screening behavior in immigrant and non-immigrant populations. Linked-health and immigration data were accessed from PopulationData BC, a linked-data platform that facilitates access to data for research purposes. Breast screening eligible women (age ?40) were identified from provincial health registration files and linked to data from Citizenship and Immigration Canada to identify region of birth. Data from the BC Cancer Registry were obtained to identify incident breast cancers diagnosed 2010-2014 including information on stage at diagnosis. Breast screening information was obtained from the Screening Mammography Program of BC. Age-specific and age-standardized breast cancer incidence rates and measures of cancer severity and screening history were compared across study groups. Age-specific incidence rates were similar or lower among Chinese immigrant women (CHI) and South Asian immigrant women (SAI) compared to non-immigrant women (NI). Age-specific incidence rates revealed a flat relationship between risk and age in SAI and CHI, differing from the increasing risk with age observed among NI. Thus, a higher percentage of tumours are diagnosed at younger ages in these specific immigrant groups. A higher proportion of node-positive tumours were noted in SAI (41%) compared to CHI (33%) and NI (34%). SAI also demonstrated a lower proportion of stage I cancers (34%) compared to CHI (49%) and NI (45%). History of prior screening in women diagnosed with breast cancer was lower among SAI (66%) compared to CHI (70%) and NI (75%). Our preliminary results suggest South Asian immigrant women present with more advanced breast cancer at diagnosis. Regression models will be utilized to further explore this relationship and other explanatory variables including physician characteristics, socioeconomic status, duration in Canada and screening frequency.

Co-Author(s): Ryan Woods, John Spinelli, Erich Kliewer, Kimberlyn McGrail

Fall risk classification in community-dwelling older adults using a smart wearable and the resident assessment instrument (RAI) system

Presented by: **Rena Yang**, Graduate Student, University of Waterloo

Investigate the similarities and differences of three independent older adult faller groups using a smart wearable; create and evaluate fall risk classification models utilizing wearable data and the RAI system. A prospective, observational study was conducted to investigate the similarities and differences among three independent faller groups (non-fallers, single fallers and recurrent fallers) in a sample of community-dwelling older adults, with continuous measurements of physical activity, heart rate and night sleep using a smart wearable. The wearable and resident assessment instrument for home care (RAI-HC) assessment data were further analyzed and utilized to create fall risk classification models, with two supervised machine learning algorithms: logistic regression and decision tree. The calculation of a set of performance metrics was performed to evaluate the classification performance of each final model. Of 40 participants aged 65-93, 16 (40%) had no previous falls, while 8 (20%) and 16 (40%) experienced one and multiple (> = 2) falls. The wearable components of physical activity measurements extracted from the smart wearable were significantly different between groups. Daily walking heart rate and daily activity time were identified as the best subset of predictors of fall risk utilizing wearable data. Classification models derived from the RAI-HC data set containing 40 participants' latest assessments outperformed those based on wearable data only. The best classification model was a decision tree using the combination of both data sets with 80.0% of overall classification accuracy, and accuracies of 87.5%, 50.0%, and 87.5% in classifying the non-faller, single faller and recurrent faller group, respectively. Continuous measurements of physical activity, heart rate, and night sleep with a commercially-available smart wearable appear to complement the RAI-HC system in facilitating fall risk stratification. Future fall risk assessment studies should consider leveraging wearable technologies to supplement the resident assessment instruments.

Co-Author(s): Rena Yang

Spatial associations between metrics of noise, and traffic-related air pollution: a passive monitoring campaign in Ottawa, Canada

Presented by: Natasha Prince, M.Sc. candidate, Carleton University

The objective of this study is to characterize urban noise on and around the Central Experimental Farm and to evaluate associations between noise, traffic-related air pollutants and other land uses. A passive monitoring campaign consisting of 40 sites was conducted from September 21 to October 7, 2016. Volatile organic compounds (VOCs) and nitrogen dioxide (NO2) were measured concurrently at each site along with noise. Two-minute noise levels were measured using Noise Sentry meters and used to calculate daily average (LAeq24h), weighted daily average for day and night (Ldn24hr), proportion of time in exceedance of a public health threshold value (P1x >Ti), proportion of time each station exceeded the study's 95th percentile value (P2x >Lxp95), and the coefficient of variation (LxCV). Each daily noise metric was averaged over the two-week period. Considerable variation was observed for the 2-week average LAeq24h values across the 40 sites (median(IQR) =58(53-67) dBA). Spatial variation was also seen for benzene (median (IQR) = 0.36(0.25-0.49) µg/m3) and toluene (median (IQR) = 0.94(0.75-1.15) µg/m3). However, levels of NO2 (median (IQR) = 6.0(6.0-8.0) ppb) and ethylbenzene (median (IQR) = 0.1(0.1-0.1) µg/m3) showed very little variation which suggests little or no relationship with urban noise. Point estimates for traffic counts have been compiled for 2011-2016 for comparison with urban noise. Green space has been represented using the Normalized Different Vegetation Index (NDVI). Road network information is represented as categories of 'local', 'arterial', and 'highway' and land uses as 'industrial', 'commercial', and 'residential'. The relationships between these noise metrics will be determined, as well as relating urban noise to air pollution, traffic and green space. Moreover, best-fit multivariate linear regression models will be developed using noise data to produce land use regression (LUR) models in the study area.