ORAL PRESENTATIONS

Location: Cassio AB

Presentation 1

Title: Embedding Shared Decision-Making and Patient-Centred Care in Community Rehabilitation Programs in Alberta: Phase 1 Pilot Study

Authors: Kaitlyn Wong BHSc Honours (2019)*; Kiran Pohar Manhas ; Sunita Vohra Centennial; Katie Churchill; Sylvia Teare; Jean Miller; Karin Olson; Tracy Wasylak

Background: Shared decision-making (SDM) is an interdependent decision-making process between patient and provider. Patients share their values and preferences, and providers share best clinical expertise, to make decisions together. SDM is linked to better patient health outcomes and satisfaction, and decreased healthcare costs. Enhancing SDM through patient-centred care is a priority. SDM research has focused on hospital settings, physician encounters, or prescription medicine use. There remain gaps in our understanding of SDM in community rehabilitation.

Objective: The purpose of this pilot study was to promote understanding of patient-centred care and SDM in community rehabilitation, particularly around organizational, provider, and patient experiences and perceptions of SDM and its barriers and facilitators.

Methods: Our methods included interviews, surveys and observations. Convenience sampling directed survey recruitment while purposive sampling directed qualitative recruitment. We interviewed and observed providers and patients. Thematic analysis guided coding of transcripts, with 4 researchers independently then collaboratively developing the coding framework. Patients completed surveys on SDM, quality of life, and engagement; providers completed SDM surveys paired with patients. Quantitative data was used to provide context to the qualitative analysis and to determine feasibility for the larger Phase-two study.

Results: Data collection occurred at two urban community rehabilitation sites in Alberta. Data collection is nearing completion. Currently, 19 patients completed surveys (63% female); 3 patients and 10 providers participated in interviews. From our preliminary results, patient buy-in, provider confidence, and time for discussion are major emerging themes. Patient-provider communication and trust are frequently discussed. Quantitative analyses show most patients and providers describe the SDM as excellent or acceptable and quality of life above 50%. Further analyses will explore the relationships, if any, between SDM and patient or provider socio-demographic factors.

Conclusions: In community rehabilitation, it appears that SDM is practiced inconsistently when choosing treatment interventions, and that patient preferences influence duration not type of treatment. Patient-provider communication allows for explanation, but does not guarantee understanding. While time periods related to provider experience and appointments is described as important, across participants influences were inconsistent and unclear. For Phase-two, we have refined our recruitment methods and study plan.

Location: Cassio AB

Presentation 2

Title: Engaging with immigrant youth to create mini-health-champions

Authors: Amira Kalifa*, BHSc, Undergraduate student; Didem Erman, MSc; Tanvir Turin Chowdhury, MBBS, MSc, PhD

Background: Canada is a multicultural society with a rich history of immigration from all around the world. In 2016 alone, 27% of youth aged 15-35 identified themselves as a visible minority compared to only 13% in 1996. Furthermore, 41% of all youth in Canada can be classified as either first or second-generation immigrants. Immigrant communities experience increased vulnerability to various illnesses, which are often exacerbated by disparities in the social determinants of health, such as socioeconomic status, education, health care access, etc. Currently, little is known about the perception and level of engagement immigrant youth populations have when attempting to overcome these barriers among the immigrant communities.

Objective: The objective of this project is to engage and discuss with the immigrant youths about health and wellness issues they observe among their communities. As well as to understand their perception of playing a role as 'mini-health-champions' within their respective communities.

Methods: The immigrant and refugee health interest group, out of the Cummings School of Medicine, sought to devise a series of summer youth learning sessions (YLS) surrounding various health and wellness topics. We reached out to various immigrant communities to invite high school youths to participate the YLS program. We are planning to run interactive sessions with our immigrant youth participants focusing on four main umbrella terms; physical health, mental health, social health and skill development. After each session, we will be conducting semi-structured interviews with the YLS participants as a part of their reflections on the idea of being 'mini-health-champions' for their respective communities. This qualitative data will be analyzed using thematic analysis.

Results: Although this study is currently in progress, we anticipate the interviews and sessions will give us insight into the perception immigrant youths have when it comes to contributing to their communities' health and wellness where they can bridge the gap between the health care system and community members.

Conclusion: Overall, our aim of this project is to both understand the importance and perception immigrant youth populations feel towards being 'mini-health-champion', as well as to foster the learning of the youth participants through interactive sessions.

Location: Cassio AB

Presentation 3

Title: The Case for a Knowledge Translation Framework as a Comprehensive Strategy for Health Research Impact Assessment

Authors: Kelly J Mrklas*, BSc, BSc, MSc, PhD Candidate

Background: Health research impact assessment has developed rapidly over 20 years. Despite its evolution, challenges and gaps, few attempts to connect health research impact assessment (HRIA) with knowledge translation (KT) approaches and lever their similarities, exist. The Knowledge to Action Framework (K2A) (Graham et al, 2006 & 2007) is a well-validated, flexible framework that can accommodate (HRIA) needs, and help remedy some of its most serious flaws. This study contributes to health research impact assessment through the identification of key challenges and opportunities, and using a KT lens.

Objectives: To review key reviews (systematic, realist, narrative, focused literature, among others) undertaken between 1990 and 2018 and identify (if possible) KT approaches. To document the historical and developmental underpinnings, purpose and approach, strengths and limitations of a K2A approach, and to explore how these features may help address current challenges and opportunities in HRIA.

Methods: A focused search for reviews was undertaken to identify studies published from 1990-2018 that describe research impact assessment frameworks/models. Reviews were assessed to identify and describe current challenges and opportunities, and to document the inclusion of KT/ implementation frameworks/methods as HRIA approaches. Findings related to the historical development, underpinnings, purpose, approach, key strengths and weaknesses were extracted for any relevant approaches. A detailed examination of K2A was undertaken to explore how to best fill gaps, address challenges and lever opportunities.

Results: Twelve published reviews and a very few KT/implementation frameworks were identified. A review of the history, underpinnings, purpose, approach, key strengths and weaknesses demonstrated alignments to help overcome linearity, attribution, double counting, knowledge user participation, resource and time costs, evaluative burden, and other challenges. Review of the K2A revealed opportunities for integration, process efficiency, potential reductions in cost/resource burden, contribution and attribution, and potential opportunities to identify and understand the "how and why" of impact.

Conclusions: A review of reviews on health research impact assessment can help identify and resolve challenges, and can inform the development of novel strategies. Deliberate linkage of health research impact assessment and KT/implementation frameworks/models has potential for quickly advancing this field.

Location: Cassio AB

Presentation 4

Title: The role of zinc and gut microbiota in obsessive compulsive disorder in youth

Authors: Emily Macphail, BHSc. (hons.), MD/MSc. student*; Paul Arnold, MD, PhD; Raylene Reimer, PhD, RD

Background: Obsessive compulsive disorder (OCD) affects ~5-10.5 million North Americans and can be quite disabling, falling into the leading ten causes of disability world-wide according to the World Health Organization. Zinc is integral for health; yet, zinc deficiency is quite prevalent. Greater deficiency risks exist in young adulthood, a time period when such deficiency is also more problematic due to zinc's developmental importance. Neural zinc levels affect neuroplasticity (and hence cognitive flexibility), and zinc supplementation is found to improve mental health. Additionally, zinc deficient animals have shown altered gut microbiota.

Objectives:

1) To investigate, in youth with and without OCD, associations between zinc, cognitive flexibility, gut microbiota, and OCD symptoms.

2) To explore effects of prebiotic supplementation on OCD severity and gut microbial diversity.

Methods: Data collection includes clinical interview and self-report symptom measures, cognitive flexibility testing for set-shifting and perseveration, and stool sample analysis via qPCR and 16S rRNA sequencing. Zinc status will be analyzed via intake, serum, and hair levels. Youth with OCD are given a prebiotic or placebo (double-blind RCT) for 8 weeks. Data will be compared for youth with vs. without OCD, and pre- vs. post-intervention.

Results: Many youth with OCD have dietary restrictions that are relevant to their zinc intake, as indicated by frequent suboptimal zinc consumption. Biological samples are still under analysis. Additionally, it has been identified that recruiting youth with OCD presents unique challenges compared to recruitment of healthy controls.

Conclusions: Nutritional status' impact on mental health is underexplored. No literature to date combines analysis of zinc, cognitive flexibility, and gut microbiota, particularly in OCD, and given the dietary restrictions observed thus far, it is an important area of investigation. This research has potential to aid adjunct OCD therapy development for youth, opening up new treatment possibilities for those hesitant to use psychotropic medications and/or unable to access therapy.

Location: Cassio AB

Presentation 5

Title: International Classification of Diseases (ICD): Coding Training Worldwide

Authors: Lucia Otero Varela*, BSc; Cathy Eastwood, RN, PhD; Pallavi Mathur, HIM professional; Hude Quan, PhD

Background: The International Classification of Diseases (ICD) is globally used for coding morbidity statistics, however, its use, as well as the training provided to individuals assigning codes, varies greatly across countries.

Objective: To characterize ICD-coded data collection and understand the quality of coder training worldwide.

Methods: After an in-depth grey and academic literature review, an online survey was created to poll the 194 World Health Organization (WHO) member countries. Questions focused on hospital data collection systems and the training provided to the coding professionals. The survey was distributed to potential participants that meet the specific criteria, as well as to organizations specialized in the topic, such as WHO-CC (WHO Collaborating Centers) and IFHIMA (International Federation of Health Information Management Association), to be forwarded to their representatives. Answers will be analyzed using descriptive statistics.

Results: This ongoing project aims to capture responses from as many countries as possible, and thus far, data from 48 respondents from 24 different countries has been collected. Initial results reveal worldwide use of ICD, with variations in the maximum allowable coding fields for diagnoses and interventions. Coding specialists are the main personnel assigning codes, followed by physicians, and although minimum training is not mandatory in all countries (Sweden, Italy, Germany and Thailand), in those where it is, college/university degree is the most common requirement. Coding certificates most frequently entail passing a certification exam. Continuing education for coders is offered in all countries except one (Nigeria). Once more information is available, countries will be ranked and those depicting a better performance will be highlighted.

Conclusion: These survey data will establish the current state of ICD use and coding training internationally, which will ultimately be valuable to the WHO for the promotion of ICD and the rollout of ICD-11, for better international comparisons of health data, and for further research on how to improve ICD coding.

Location: Cassio AB

Presentation 6

Title: Built environment and child bicycling injury risk between in route injury and random control sites

Authors: Christian Tsang* BHSc; Mairead Whelan; Tate Hubka MAppSc; Antonia Stang MD; Carolyn Emery PhD; Stephen Freedman MD CM; Pamela Fuselli MSc; Andrew Howard MD FRCSC; Alison Macpherson PhD; Gavin McCormack PhD; Alberto Nettel-Aguirre PhD; Kay Teschke PhD; Meghan Winters PhD; Brent Hagel PhD

Background: Active transportation is a form of physical activity that can be easily integrated into the daily routines of children. Bicycling is a popular form of active transportation, as 82% of children have reported bicycling in the past year. Bicycling is also the third leading cause of unintentional injury-related hospitalizations in Canadian children. Built environments, artificial surroundings that provide the setting for human activity, can be designed to improve the safety of active transportation. Pilot work indicated higher injury risk to be associated with downhill grade and debris on the ground, while lower injury risk is expected to be associated with riding on the sidewalk.

Objective: To compare child injury sites to random control sites along the bicyclists route to determine the association between elements of the built environment and child bicyclist injury.

Methods: Injured bicyclists presenting to the Alberta Children's Hospital Emergency Department between May and August 2018 were interviewed and asked to map their bike route. Using a case-crossover approach, information on the injury site and a randomly selected control site along their bicycling route was recorded. A researcher blinded to injury site status visited each location to conduct an audit of the built environment. Built environment features such as road surface and grade were compared between sites.

Results: Data collection is underway. Descriptive statistics will be calculated to compare injury and control sites. Matched odds ratios will be calculated to determine if certain aspects of the built environment are associated with bicyclist injury.

Conclusions: The impact the built environment has on child bicyclist injury risk will be used to recommend implementation strategies for built environment interventions at the municipal level, promoting safe active transportation use in children and adolescents.

Location: Escalus

Presentation 1
Title: Bicycling injury and safety from the perspective of a child bicyclist.

Authors: Janet Aucoin* BKIH; Mairead Whelan; Tate Hubka MAppSc; Antonia Stang MD; Carolyn Emery PhD; Stephen Freedman MD CM; Pamela Fuselli MSc; Andrew Howard MD FRCSC; Alison Macpherson PhD; Gavin McCormack PhD; Alberto Nettel-Aguirre PhD; Kay Teschke PhD; Meghan Winters PhD; Brent Hagel PhD

Background: While bicycling has been shown to improve the physical and mental health of children, there is an ongoing decline in bicycle participation in part due to the risk of traffic related injury. Bicycling injuries are one of the leading causes of sport and recreation related ED visits, hospitalizations, and deaths for children in Canada; with Calgary's Alberta Children's Hospital seeing over 600 bicycling related injuries each year. Children's vulnerability to bicycling injuries is unique, due to their ongoing neurocognitive development and their different use of the built environment such as traffic infrastructure when compared to adults.

Objective: To explore how child bicyclists' perceived safety and injury risk is influenced by built environment factors and individual characteristics.

Methods: Children aged 5-17 years that were injured while riding their bicycle recreationally within city limits who presented to the Alberta Children's Hospital Emergency Department were recruited. Participants completed semi-structured interviews designed to capture detailed information on injury circumstances and perceived built environment information from sites along their route. Child perspective related to their site of injury was compared to a randomly selected control location along the injured child's route.

Results: To date, two participants have completed interviews. Preliminary analysis suggests perceived environmental factors such as debris, hill grade, and visibility along with injury circumstances such as self-reported speed of the bicyclist, motor vehicle involvement, and risky behaviour contributes to the child's perceived injury risk and safety.

Conclusions: Findings from this study will allow for the development of primary prevention strategies and provide an evidence base for recommendations to create safer environments for child bicyclists in Calgary.

Location: Escalus

Presentation 2

Title: Does the use of non-invasive brain stimulation enhance surgical skill acquisition and retention?

Authors: Adam Kirton, MD MSc FRCP(C); Patrick Ciechanski, PhD; Marcia Clark, MD MSc FRSC(C) DIP. Sport Med; Adam Watson, MD; Kent Hecker, PhD; Alissa Kazakoff, BSc.*

Background: Recent changes in medical training environments and restrictive work-hour regulations have greatly impacted trainees, limiting opportunities to gain proficiency in procedural skills. Non-invasive brain stimulation (NIBS) technologies have been proven to modulate cortical excitability and motor learning. Transcranial direct-current stimulation (tDCS) is a form of NIBS whereby weak electrical current is delivered through regions of the brain via electrodes. Recently, we demonstrated enhancements of motor learning in healthy children in a randomized, double blind, sham controlled trial of tDCS. These results suggest precedent in exploring the ability of tDCS to enhance the acquisition and retention of surgical skills.

Objective: tDCS is a form of NIBS that has yet to be applied in surgical skills training. Our goal is to determine if tDCS improves the acquisition and retention of basic suturing skills.

Methods: Medical students, Surgical and Emergency Residents were recruited for the study and randomized into a sham or intervention group. A questionnaire was completed to determine demographic characteristics. The Purdue Pegboard Test was performed at baseline and following the post-training session to ensure that tDCS was not associated with decay in overall hand function. Participants then viewed a standardized basic suturing training video and completed basic suturing training on synthetic skin pads. A GoPro recorded the task for retrospective scoring, with raters blinded to level of trainee and intervention. A survey was given following the session, in which the participants self-reported tolerability and sensations associated with tDCS.

Results: We anticipate that tDCS will improve the acquisition and retention of basic suturing skills. For this pilot feasibility study, 20 participants will be recruited, with 10 participants in the intervention group and 10 in control. The study is ongoing, however, 14 students have been recruited and of those, 13 have been administered the follow-up testing and have completed data sets. Results are pending full analysis for fall 2018.

Conclusions: Research conclusions are pending completion of data acquisition and analysis.

Location: Escalus

Presentation 3
Title: Antibiotic-associated obesity is prevented with prebiotic supplementation in rats

Authors: Teja Klancic, M.Sc.*, Ashley C Choo, B.Sc., Jodi E Nettleton, B.Sc., Nicole A Cho, B.Sc., Alissa C Nicolucci, M.Sc., Fatima Chleilat, M.Sc., Raylene A Reimer, Ph.D., R.D.

Background: Early life exposure to antibiotics increases risk of obesity. Prebiotics improve metabolic health and reduce fat mass. Our aim was to examine if prebiotic supplementation during pregnancy/lactation reduces antibiotic-associated obesity risk in dams and their offspring.

Methods: 10 week old female Sprague-Dawley rats (n=60) were mated and randomized to: 1)control [C], 2)antibiotic [A] (low dose penicillin (LDP)), 3)prebiotic [P] (10% oligofructose (OFS) diet) or 4)antibiotic+prebiotic [A+P] (LDP+10%OFS diet). Mothers received treatments from the third week of pregnancy through lactation. At 10 wk of age, offspring were fed high fat/high sugar (HFS) diet for 8 wk to unmask obesity risk. Fecal samples were collected repeatedly and cecal matter, tissues and blood were collected at sacrifice.

Results: Dams given antibiotics (A) had higher body weight and higher body fat % during lactation than C, P and A+P groups; A group had impaired metabolic hormones, which was improved with prebiotics. At birth, fecal Enterobacteriaceae abundance was increased and Lactobacilli were decreased in antibiotic dams compared to other groups. At the end of lactation, health promoting Bifidobacterium were increased in prebiotic groups (P and A+P). Greater glucose sensitivity was seen in prebiotic groups with lower levels of hepatic triglycerides.

Antibiotic offspring (A) had increased growth rates after weaning and were heavier after high fat/sugar (HFS) diet challenge than other groups. This phenotype was preventable with prebiotics. Higher fat mass was seen in male antibiotic offspring. Male offspring (A) were insulin resistant before the HFS diet challenge, whereas female offspring (A) developed insulin resistance after the challenge; prebiotics rescued insulin sensitivity.

Conclusion: This is the first study to show that antibiotic consumption during pregnancy/lactation impairs “normal” postpartum weight loss in dams. Co-administering prebiotics with antibiotics prevents early-life antibiotic associated obesity risk in offspring, likely in part through altered maternal and offspring microbiota.

Location: Escalus

Presentation 4

Title: Evaluating the effect of an educational video on rates of risky behaviour and injury in school ski and snowboard programs

Authors: Sheharzad Mahmood*, BHSc student; Tatum Mitra, BKin, BSc, MSc; Maya Djerboua, MSc; Alberto Nettel-Aguirre, PhD, PStat; Kelly Russell, PhD; Jeff Caird, PhD; Carolyn Emery, PhD; Brent Hagel, PhD

Background: Ski and snowboard-related injuries continue to be one of the leading causes of sports injury in Canadian youth. Currently, limited evidence exists to support the use of preventive interventions such as educational videos to reduce risky behaviour and injuries on the ski hill; therefore, continuous efforts to reduce the burden of ski and snowboard-related injury in youth is necessary.

Objective: The primary objective was to determine if, in children and adolescents, rates of risky behaviour and rates of injury seen at the ski hill were lower for those exposed to an educational injury prevention video.

Methods: This blinded cluster randomized controlled trial investigated students (ages 6-15) from 18 Calgary schools who were enrolled in school-sanctioned ski and snowboard programs. Consenting schools were randomly assigned to intervention or control status. The control group followed standard preparation including watching an orientation video. The intervention group followed a similar procedure but instead viewed the intervention video focused on injury prevention that was informed by focus group findings, expert opinion, and current evidence. The Risky Behaviour and Actions Assessment Tool was used by blinded research assistants to observe and record the risky behaviours of participants at an Alberta ski hill. 407 observations were used to estimate the rate of risky behaviour and Accident Report Forms were used to evaluate the rate of injury.

Results: The rate of risky behaviour observed on the ski hill in the control group was 23.31/100 person-runs and 22.95/100 person-runs in the intervention group. The most commonly observed risky behaviours in both groups were skiing too close to other skiers/snowboarders and near collision with an object/person. The injury rate in the control group was 3.5/1000 outings and 9.4/1000 outings in the intervention group.

Conclusions: The control and intervention groups showed similar rates of risky behaviour and also demonstrated the same most common types of behaviour. This will help to inform future ski and snowboard school program safety protocols. However, the injury rate for the intervention group was higher than the control group. This indicates the need for further investigation of covariates and circumstances/mechanisms of injury in both groups.

Location: Escalus

Presentation 5
Title: A cross-sectional survey and qualitative assessment of non-motor symptoms affecting life-space mobility in Parkinson's disease

Authors: Ryder-Burbidge, Charlotte*; Jones, Allyson

Background: Persons with Parkinson's disease (PD) have a lower health related quality of life (HRQoL) than their counterparts in the general population. Virtually all people with PD experience non-motor symptoms (NMS) related to the disease, which often affect HRQoL to a greater extent than motor symptoms. Life-space mobility (LSM) quantifies a person's experience manoeuvring through their home and community, and is linked to functional status and HRQoL.

Objective: The objective of this study is threefold: 1) to examine LSM in people with PD; 2) to identify non-motor symptoms that are associated with LSM of people with PD through statistical modelling; 3) to qualitatively explore experiences of navigating home and community with PD.

Method: A cross-sectional survey of members of the Parkinson Association of Alberta will measure LSM using the Life-Space Assessment. The sample population will consist of people with PD, over 65 years of age and living in Edmonton, AB. Data on the presence and severity of NMS will be collected quantitatively through the Non-Motor Symptoms Scale. Statistical descriptives will be applied to define the sample population and develop an explanatory model of patient-related factors affecting LSM. Individual interviews will be completed with a subset of participants to gain a richer depiction of the challenges of LSM. For this qualitative inquiry, transcripts from participant interviews will be coded through a line-by-line examination to identify major themes relating to symptoms of the disease, LSM and HRQoL.

Expected Results: It is expected that LSM will decrese with increasing number and severity of symptoms, and that people with PD will have lower LSM scores, thus lower HRQoL, than people in the general population.

Anticipated Impact: NMS are not the focus of current treatments for PD, despite evidence that they greatly affect HRQoL. It is hoped that the results of this study can be used to inform interventions, caregivers and policy decisions relating to mobility and PD.

Location: Escalus

Presentation 6

Title: Delirium and Symptoms of Major Depressive Disorder and Generalized Anxiety Disorder in Caregivers of the Critically Ill

Authors: Brianna Rosgen*, Karla D. Krewulak PhD, Henry T. Stelfox MD, PhD, E. Wesley Ely, MD MPH, Judy E. Davidson DNP, RN, FCCM, FAAN, and Kirsten M. Fiest PhD

Background: Many caregivers of critically ill patients witness patient delirium, an acute confusional state characterized by impaired awareness and attention. The prevalence of major depressive disorder (depression) and general anxiety disorder (anxiety) is higher in caregivers compared to the general population (depression: 36% vs 4.7%; anxiety 24% vs. 2.5%). To our knowledge, current literature has not evaluated how delirium impacts depression and anxiety symptomology in caregivers of critically ill patients.

Objectives: To evaluate the burden of depression and anxiety in caregivers of critically ill patients with and without delirium.

Methods: Consecutive, eligible patient and caregiver dyads or independent caregivers enrolled in an ongoing study at Foothills Medical Centre, Calgary, Canada. Caregivers completed the Patient Health Questionnaire 9-item for depression and the General Anxiety Disorder 7-item for anxiety, once daily. Patient delirium was assessed by study personnel twice daily using the CAM-ICU-7. Descriptive statistics were calculated, including proportions and means.

Results: In the first two months of recruitment, 15 dyads and 4 independent caregivers were enrolled. Caregivers were most commonly female (73.7%, 14/19) and the spouse of a patient (47.4%, 9/19), with a mean age of 51.2 years. 36.8% (7/19) and 52.6% (10/19) of caregivers demonstrated symptomology of depression or anxiety, respectively. Delirium was identified in 57.9% (11/19) of patients at least once during their stay. Median delirium severity was 5 (out of 7) (range 0-7). There was a non-significant association between more severe delirium and increased odds of depression and anxiety in caregivers.

Conclusions: Caregivers of critically ill patients have an increased burden of depression and symptomology, compared to the general population. There was an association between more severe delirium and increased odds of depression and anxiety in caregivers, though larger sample sizes are required to obtain more precise estimates of effect.

Location: Bianca

Presentation 1

Title: Mentorship at the O'Brien Institute for Public Health: Creating an Evidence Base for Effective Mentorship in Public Health

Authors: Helen Pethrick*; Dr. Aliya Kassam, PhD; Diane Lorenzetti, PhD

Background: Formal mentoring programs have been implemented for professionals and faculty members working in higher education institutions as a means of encouraging career growth, improving retention, and facilitating professional development. Research has shown formal mentoring to have a number of benefits in these settings, such as increased job satisfaction, research outcomes, and career development. However, the influence of program design on participants' experiences of formal mentoring within public health academic institutions remain understudied. In particular, the potential benefits of mentoring for the multidisciplinary field of public health warrant further investigation. The O'Brien Institute for Public Health at the University of Calgary has offered a formal mentorship program for its members since 2012. As a result of a previous program evaluation in 2015, a number of changes were implemented to the design of the mentoring program, which remain to be evaluated for their effectiveness.

Objective: This study evaluates the recently revised Mentoring Program at the O'Brien Institute for Public Health and explore how program design and organizational context influence participants' formal mentoring experiences.

Methods: This study used a qualitative grounded theory approach. Semi-structured interviews were conducted with O'Brien Institute members who had participated in the Program from January 2016 to October 2017. In a thematic analysis, data were coded, categorized, and analysed for higher-level themes.

Results: In total, seven participants were recruited, including four mentees and three mentors. The themes described a number of influencing factors on O'Brien Institute members' experiences with formal mentoring: 1) individual motivations; 2) program structure; 3) organizational incentives; and 4) challenges.

Conclusions: While participants described fulfilling and positive mentoring experiences within the O'Brien Institute Mentoring Program, possible changes to the design of the program (particularly the matching process and communication from the program) could positively influence participants' experiences. Such changes must be considered in the context of organizational culture and support for mentoring. It is possible that formal mentoring could have unique benefits for faculty members in public health, especially in navigating the multidisciplinary nature of public health as an academic field.

Location: Bianca

Presentation 2

Title: Concurrent validity of the Neighbourhood International Physical Activity Questionnaire (N-IPAQ) in a Canadian sample.

Authors: Levi Frehlich, MSc*, Christine Friedenreich, PhD, Alberto Nettel-Aguirre, PhD, Jasper Schipperijn, PhD, Gavin R. McCormack, PhD

Background: There is increasing interest into how the neighbourhood built environment supports or constrains physical activity. Despite this increased interest, few self-report questionnaires capture neighbourhood-based physical activity. Further, among the few existing self-report neighbourhood-based physical activity questionnaires, there is little evidence about their measurement validity. Notably, self-reported neighbourhood physical activity has not been validated against objective measures of physical activity intensity and location using combined and concurrent accelerometer and global positioning system (GPS) assessed physical activity, respectively.

Objective: This study estimated the concurrent validity of the Neighbourhood International Physical Activity Questionnaire (N-IPAQ), a newly developed questionnaire for capturing self-reported neighbourhood-based physical activity.

Methods: Seventy-five adults (age >18 years), from four Calgary Alberta neighbourhoods, wore an accelerometer (Actigraph®, model: wGT3X-BT; ActiGraph LLC, Pensacola, FL) and GPS monitor (Qstarz BT-Q1000XT®; Qstarz International Inc., Taiwan) for seven consecutive days. Immediately following the seven-day wear period participants self-reported their physical activity from the past week using the N-IPAQ. To measure agreement and concurrent validity, Bland and Altman plots were created and Spearman correlations were estimated between accelerometer/GPS physical activity (estimated for the administrative boundary, 400 m and 800 m radial buffers) and the self-reported physical activity captured from the N-IPAQ. Bland and Altman plots that show lower mean differences, and positive Spearman correlations of high magnitude both demonstrate high consistency between N-IPAQ and accelerometer-GPS measured physical activity.

Results: The mean (95% Confidence Interval) difference between the N-IPAQ and accelerometer/GPS estimated total daily minutes of physical activity was the lowest for the 400 m radial buffer (1.9 min, -26.2 to 29.9). The mean difference increased as the neighbourhood definition became larger ([800 m radial buffer; 10.6 min, -16.0 to 37.1], [administrative boundary; 14.7 min, -11.5 to 41.0]). Spearman correlations between the N-IPAQ captured leisure walking and the administrative boundary accelerometer-captured moderate-intensity physical activity (r=.42), and the N-IPAQ and administrative boundary accelerometer-captured vigorous-intensity physical activity (r=.43) produced the highest estimates.

Conclusions: Relative to combined accelerometer-GPS measured physical activity, the N-IPAQ provides valid estimates of neighbourhood-based physical activity in adults and could be used when investigating neighbourhood correlates of physical activity.

Location: Bianca

Presentation 3

Title: Estradiol and angiotensin II responsiveness in women throughout the menstrual cycle.

Authors: Cindy Kalenga* MSc; Sharanya Ramesh PhD; Sandi Dumanski BScN MD MSc; Jennifer MacRae MSc MD; Kara Nerenberg MSc MD, Amy Metcalfe PhD; Darlene Sola; BScN, Sofia Ahmed BSc MMSc, MD

Background: Women with chronic kidney disease have low estradiol levels due to abnormal hypothalamic-pituitary-gonadal activity, and low estrogen status may be associated with increased cardiovascular (CV) risk. Whether estradiol level is associated with increased arterial stiffness through an upregulation of the renin angiotensin system, an important to CV risk factor, is unknown.

Objectives: To evaluate the association between estradiol and arterial responsiveness to Angiotensin II, a validated marker of arterial renin angiotensin system activity, in healthy women throughout the menstrual cycle.

Methods: 11 healthy premenopausal women who were not taking any medications (including hormonal therapy) were studied in a fasting, high-salt state during both low and high estradiol phases of the menstrual cycle. Arterial stiffness [aortic augmentation index (AIX) and pulse wave velocity (PWV)] was measured by applanation tonometry at baseline and in response to Angiotensin II challenge (3ng/kg/min x30 min, 6ng/kg/min x60 min). Results from the low and high estradiol phases were compared using paired non-parametric analysis and are presented as mean and standard error.

Results: 11 women aged 33±3 years with mean BMI 24.6 ±0.9 kg/m2, SBP 107 ±1 mmHg, DBP 66 ±2 mmHg; and were studied twice (low estradiol 259±58 vs. high estradiol 550±83 pmol/L; p=0.003). No significant differences were observed in any baseline measures of arterial stiffness between low and high estradiol states (AIX: 7.70±3.72 vs. 5.45±5.65 m/s, p=0.48; PWV: 6.75±0.36 vs. 6.79±0.38 m/s p=0.84; all values low vs. high estradiol). Similarly, no differences in Ang II arterial responsiveness were observed between the low and high estradiol states (ΔAIX: 14.33±2.33 vs. 12.45±2.59 m/s; p=0.54; ΔPWV: 0.878±0.216 vs. 0.472±0.211 m/s; p=0.086).

Conclusions: Arterial renin angiotensin system activity does not vary throughout the menstrual cycle. Further studies are required to evaluate the potential underlying mechanism of CKD-mediated low estrogen status in mediating increased CV risk in this high-risk population.

Location: Bianca

Presentation 4

Title: Employment of Occupational Concepts within Return to Work (RTW) Literature

Authors: Wentao Li*, Bachelor of Community Rehabilitation, Department of Community Health Sciences, Cumming School of Medicine, University of Calgary, Calgary, AB; Gregor Wolbring, Associate Professor, Department of Community Health Sciences, Cumming School of Medicine, University of Calgary, Calgary, AB

Background: Humans can be viewed as occupational beings that seek belongingness through their productivity. Therefore, return to work (RTW) or back to work (BTW) processes are designed to integrate employees back into employment positions they held prior to acquiring impairments. RTW/BTW professionals must generate best practices for clients to meet these outcomes. Some clients may opt to seek alternative occupations, however, like caring for their family members, rather than wishing to return to work. Therefore, RTW programs may less effectively address the needs of such individuals. RTW professionals come from traditions including occupational science and occupational therapy; they may use various occupational concepts, such as occupational marginalization and occupational rights, to describe their clients' well-being. We argue that the use of such vocabulary in RTW research will influence professionals to evaluate common needs between all clients.

Objective: To assert which occupational concepts are employed within RTW/BTW academic literature, and to investigate which occupational professional fields are engaged in the RTW process.

Methods: We conducted a scoping review where we sought the presence of n=48 occupational concepts in RTW/BTW academic literature. We sourced articles from three databases, EBSCO all, itself an aggregate of over 70 databases, Scopus, including the full Medline collection, and Web of Science, so we could generate both qualitative and quantitative data.

Results: The field of occupational therapy was mentioned in n=1379 articles, whereas occupational health and safety was mentioned in n=408 articles and occupational science in n=22 articles. Occupational health (n=5020) and occupational rehabilitation (n=2583) were mentioned in the most amount of RTW academic articles. Occupational health and safety related concepts, like occupational safety, were mentioned in significantly more articles than concepts used by occupational therapists and occupational scientists. RTW articles rarely featured concepts that discussed the impact of occupation on personal identity, the perceived quality of occupations, and occupational participation as a right.

Conclusions: The RTW academic field could benefit from incorporating various occupational concepts to guide RTW professionals when working with diverse clients. Furthermore, RTW researchers can also use these concepts to determine whether formal employment is necessary for clients to feel productive and engaged.

Location: Bianca

Presentation 5

Title: Child and Adolescent Bicycling Injuries and the Built Environment: An Intersection Matched Case-Crossover Study.

Authors: Brooklynn Malec*; Mairead Whelan; Tate Hubka MAppSc; Antonia Stang MD; Carolyn Emery PhD; Stephen Freedman MD CM; Pamela Fuselli MSc; Andrew Howard MD FRCSC; Alison Macpherson PhD; Gavin McCormack PhD; Alberto Nettel-Aguirre PhD; Kay Teschke PhD; Meghan Winters PhD; Brent Hagel PhD

Background: Bicycling provides Canada's youth with numerous benefits including improved physical and mental health. However, bicycles are implicated in injuries more than any other non-motorized consumer product.

Evidence suggests that adult bicycling injury risk is associated with the built environment, which describes human-made components of street infrastructure. However, little is known about how the built environment affects injury risk for youth cyclists. Previous research regarding adult bicyclist injury risk may not translate to children, as children are physically, cognitively, and behaviourally different from adults.

Objective: To examine the associations between the built environment and youth bicycling injury risk using youth injury sites, and an intersection matched control site along the same route.

Methods: This study used a case-crossover design, and recruited injured bicyclists from the Alberta Children's Hospital's Emergency Department. Participants were interviewed regarding their bicycle route, the location of their injury site and a randomly selected intersection matched control site along their route. The built environment at the injury and matched control sites were audited by a blinded research assistant. The audits were matched to the injury times based on whether the injury occurred on a weekday or weekend, and the time of the injury within Â± one hour.

Results: Data collection is ongoing. Presently, 23 individuals have been screened, 16 of whom were eligible. Four interviews are currently scheduled; two interviews and one audit have been conducted. We plan to examine associations between youth bicyclist injury and downhill road grade, debris along the cycled path, the presence of bicycling infrastructure, and the presence of light rail transit tracks based on the results of pilot work and previous research with adults.

Conclusion/Implications: This study may inform future urban planning policies across Canada, which has the potential to reduce the incidence of bicycling related injuries and fatalities across Canada. Improving the safety of bicycling in Canada will ensure that children are better able to reap the benefits that bicycling provides.

Location: Bianca

Presentation 6

Title: A culture-independent mass spectrometry based assay for the rapid detection of urinary tract infections

Authors: Spencer Wildman*, Heather Semeniuk, Ryan Groves, Dominique Bihan, PhD., Daniel Gregson, M.D., Ian Lewis, PhD.

Background: Urinary Tract Infections (UTIs) are one of the most common infections, leading to 10.5 million ambulatory visits, and costing $2.3B in the US annually. As one of the major routes leading to serious bloodstream infections, sepsis, and death, the negative potential of UTI is frequently underestimated. One major risk factor for developing these serious complications is the length of time needed to identify and treat UTI pathogens--often several days for a traditional culture-based approach. Therefore, a new approach to diagnosing UTIs with no microbial culture steps would be immensely useful both for patients and for physicians.

Objective: The objective of this project is to discover unique biomarkers of bacterial metabolism capable of distinguishing UTI-positive urine from healthy patient urine samples, and to develop a rapid analytical assay for the detection of these molecules.

Methods: Previous analyses from the Lewis Research Group have demonstrated several characteristic secreted metabolites from bloodstream pathogens, detected by HPLC-MS. To determine the presence of these biomarkers in UTIs, negative controls (N = 60) and UTI-positive (N = 88) urine samples were diluted 10-fold in 50% methanol and analyzed on a high-resolution mass spectrometer. Next, a large-scale trial with 322 urine samples was conducted. An analytical HPLC method was developed to analyze each sample in 6 minutes on a standard clinical diagnostic-grade mass spectrometer, with a metabolite detection limit of 10 nM. To ensure replicability between batches, a 13C isotope-labelled internal standard was generated from an Escherichia coli culture, purified using solid phase extraction, and spiked into these samples.

Results: In a large cohort of patient urine samples, the assay proved to be sensitive towards Enterobacteriaceae (85% of all UTI-causing bacteria), while discriminating negative urine samples effectively (True positive fraction = 0.94, false positive fraction = 0.01, N = 322).

Conclusions: This metabolic screening assay predicts UTI with a high level of accuracy compared to other culture-independent approaches. Since uncultured urine samples can be processed quickly and efficiently, this method may be adopted in clinical diagnostics laboratories, and could potentially cut down the time to diagnosis by up to a day.

Location: Bianca

Presentation 7

Title: Breast Cancer Survivors' Perspectives on Utilizing Wearable Technology during a Physical Activity Intervention - A Mixed Methods Approach

Authors: *Renee, Kokts-Porietis, BSc. Chelsea, Stone, BSc. Christine, Friedenreich, PhD. Jessica, McNeil, PhD

Background: Canadian females are more likely to develop breast cancer (BC) than any other cancer, with one in eight females expected to develop BC in their lifetime. Cancer diagnoses and treatments frequently produce negative psychosocial and physical side effects, which participation in physical activity (PA) has been shown to mitigate during and after treatment. The use of wearable technology to facilitate PA has recently increased in popularity in the general population, however BC survivors' perceptions of wearable technology remain unclear.

Objectives: To gain BC survivors' perspectives on participation in a home-based PA intervention, with particular emphasis on the use of wearable technology throughout the intervention. A secondary objective was to provide insights for future PA intervention research from the participant's perspective.

Methods: Semi-structured interviews were conducted with six women who had participated in a 12-week home-based PA intervention using a Polar A360® activity tracker. Additionally, 23 participants from the PA intervention provided scaled responses to barriers of PA on weeks 3, 6, 9 and 12 of the intervention. Thematic analysis was used for qualitative data.

Results: Perceptions of a home-based PA intervention were categorized into three main themes: facilitators of PA, barriers to PA and, perception of wearable technology (i.e. source of accountability and motivation, added responsibility). Facilitators were subdivided to include intrinsic (i.e. wanting to be healthy, achieve personal goals) and external components (i.e. support from others, accountability to study). Barriers to physical activity encompassed external barriers (i.e. bad weather) and individual barriers (lack of knowledge, comorbidities). Insights into the study design and process were categorized into three main themes: recruitment (i.e. timing of contact), study design/logistics (i.e. communication, measurement devices) and knowledge dissemination. The top three reported barriers from the scaled responses were "being busy", "lack of motivation" and "weather".

Conclusion: The use of wearable technology by BC survivors who participated in a PA intervention was perceived largely as a facilitator to exercise adherence but technological difficulties were viewed as a barrier. Participant perspectives of home-based PA interventions provided insights into how future research can improve participant recruitment, study design and knowledge dissemination for BC survivors.

Location: Ballroom

Presentation 1

Title: End-of-Life Care in the Rural Setting

Authors: Noëlle Sedgwick, MN (c), BN, RN*; Shannon Spenceley, RN, PhD

Background: In the rural hospital setting, you 'are it'. Being 'it' represents the considerable responsibility that rural acute care nurses hold in their practice. There are very few studies that specifically explore nurses' experiences providing end-of-life care in the rural hospital setting and the implications of the rural setting on the delivery of end-of-life care.

Objective: The aim of this exploratory qualitative study is to describe the experiences of nurses during the provision of end-of-life care in the rural hospital setting by asking the following two research questions: What are the experiences of regulated nurses in providing end-of-life care in the rural hospital setting? How does the rural hospital setting influence regulated nurses' experiences in providing end-of-life?

I suggest that the significance of this research lies in that there is a unique rural culture that needs to be accounted for in the delivery of care, but little is known about nurses' experiences in providing end-of-life care in the rural hospital setting.

Methods: Due to a lack of research on the provision of end-of-life care in rural settings, I chose to conduct an exploratory qualitative descriptive study. Rural hospitals selected offered 24/7 healthcare services and were within a 2-hour drive from Lethbridge. Nine participants were recruited from five different rural hospital sites and participated in semi-structured interviews.

Results: Data analysis is underway using thematic analysis and preliminary results will be shared in this presentation. Ideas that have emerged from my data include: the intimacy of the rural setting in the provision of end of life care, the importance of relationships during the provision of care, and the significance of dying at 'home'.

Conclusions: I cannot draw firm conclusions from a small qualitative exploratory study, and I have learned that additional research is needed in this area. However, I anticipate that my research will reveal what is important for nurses in the rural hospital setting during end of life care, and the extent of the influence of the rural setting has on the kind of care nurses provide.

Location: Ballroom

Presentation 2

Title: A systematic review of Patient Safety Indicators for patient admitted to the Intensive Care Unit

Authors: Guosong Wu*, PhDc; Jamie Boyd, MSc; Hude Quan, MD PhD; Henry T. Stelfox, MD PhD

Background: Patients admitted to the Intensive Care Unit (ICU) are the sickest in the healthcare system, with complex medical problems that require urgent treatment with life support technologies. Canadian Institute for Health Information reported that ICU patients in Canada have an average mortality rate of 9%, which suggests an opportunity for improvement in Canadian ICUs. To date, ICU Patient Safety Indicators (PSIs) have been proposed by professional societies, however, there is variation in the procedures used to develop PSIs.

Objective: This review aimed to determine potentially relevant ICU PSIs from the literature.

Methods: A comprehensive search strategy was developed with the help of two information experts. The Ovid MEDLINE, Ovid EMBASE, CINAHL and Cochrane Central Register of Controlled Trials were systematically searched from inception. Grey literature was searched through Google and selected ICU professional websites. The original research studies were selected that reported any PSIs on the safety of care delivered to the ICUs patient >18 years of age. Two reviewers independently reviewed the abstracts and full texts of all retrieved citations and subsequently extracted data and assessed the study quality. Kappa statistic was employed in both screen stages to measure the agreement between reviewers.

Results: 10010 citations were identified, of which 79 citations were eligible for full-text review. 21 articles were included in this study. Inter-rater agreement for full-text inclusion was excellent (K=0.83). Most studies were published after 2000 (62%) in the US (33%) and France (24%). Prospective (43%) and retrospective (9%) cohorts were the most common study designs. A total of 45 unique PSIs were identified, of which 24 measured healthcare outcomes, 18 hospital processes and 3 healthcare structure. Twelve studies reported on the validity of 25 PSIs. Reliability was reported in one single study on 4 PSIs. The most common reported PSIs were Ventilator-associated pneumonia, Blood stream infection, Pressure ulcer and Catheter-related infection.

Conclusions: PSIs have been developed to measure ICU performance but have undergone limited evaluations of reliability and validity.

Location: Ballroom

Presentation 3

Title: Co-Designing Digital Health Solutions for Assisted and Supported Living Communities

Authors: *Sophia Larsen-Rosner; Georgina Freeman, MSc; Jessica Lee, BA; Sydney Johnson, MA; Jaime Kaufman, PhD; Doreen Rabi, MD, FRCPC, MSc; Lora Oehlberg, PhD.

Background: Assisted and supported living communities (ASLCs) uniquely serve as both residence and medical care spaces. There are many benefits to living in ASLCs - including the increased availability and accessibility to health information. While health information management could potentially improve the efficiency of healthcare delivery in ASLCs, accommodating the diverse and complex needs of stakeholders (older adult residents, their families, and medical and nonmedical staff) in the design of these technologies is challenging.

Co-design allows stakeholders to directly participate in the design process and provide key insights into the problems faced by their community. In co-design, the researcher's role shifts from translating people's problems into design, to facilitating others in generating and communicating design ideas.

Objective: Our objective is to identify the best strategies for implementing co-design in ASLCs, thereby generating a guide for future research and design best-practices for digital health technologies in ASLCs.

Methods: We will perform a literature review to develop a clear plan for co-design workshops with ASCLs. The literature review topics will focus on co-design methods: with older adults, in healthcare, and in supportive communal living spaces. Based on our analysis of the literature, we will develop an initial draft of a co-design workshop schedule of activities. We will conduct interviews with recreational therapists (RT) to further inform modifications to our initial workshop plans. The design workshops will engage participants in: identifying the gaps in care quality, generating guiding principles that reflect the issues within ASLCs, and creating new technology prototypes for digital health solutions.

Results: The study will provide detailed information on how to incorporate co-design approaches into ASLC recreational activities for family, residents, and staff. This will contribute to the growing knowledge of co-design processes, as well as their applications, and will continue the practice of designing alongside older adults in broader fields and settings.

Conclusion: The study results will provide comprehensive recommendations for implementing co-design methods and developing conceptual designs for digital health solutions for use in ASLCs.

Location: Ballroom

Presentation 4

Title: Alignment of Métis cultural interventions in harm reduction services and treatment options for members of the Métis community, who experience problematic substance use in Saskatoon, Saskatchewan

Authors: Indiana, Best, MPH- thesis (candidate), BHSc (Honours)*; Colleen, Dell, PhD; Barbara, Fornssler

Background: A disproportionate burden of harm is experienced by Indigenous People regarding problematic substance use. This project applies an Indigenous wellness framework which emphasizes a holistic worldview: mental, emotional, spiritual, and physical wellbeing. This holistic view was applied in the national framework Honouring Our Strengths: A renewed framework to address substance use issues among First Nations People in Canada that outlines guiding principles for an adequate continuum of care (HOS: Renewed Framework). Subsequently the Native Wellness Assessment (NWATM) a clinical tool developed to measure the effect of cultural interventions on a person's wellness, from a strengths-based perspective. However, Métis culture is noticeably absent from the HOS: Renewed Framework. This project utilizes the Two-Eyed Seeing approach, allowing health to be viewed by the strengths of both Indigenous and Western knowledge/worldviews, which will allow Métis community members to set the direction of the research question. Objectives: 1) Gain an understanding of Métis cultural teachings surrounding problematic substance use, 2) Evaluate the cultural compatibility of the HOS: Renewed Framework and NWATM instrument for delivering services and resources to Métis populations in Saskatchewan.

Methods: Engagement with Métis and Indigenous Elders, knowledge keepers, and prominent members of the Métis community will inform development of the research question(s). Quality of Life indicators for Métis clients with problematic substance use will be established through collaboration with these key members. Interviews and focus groups will be conducted to inform traditional Indigenous or Métis specific teachings on problematic substance use.

Results: 1) Inform and add information to Saskatoon treatment centre's cultural resource library 2) Provide policy change recommendations to promote culturally relevant services and resources delivered to Métis clients 3) Produce recommended clinical practice guidelines that will inform the NWATM for Métis clients.

Conclusions: Addressing the gap in knowledge of traditional Métis teachings on addictions and problematic substance use will allow development of Métis knowledge and culturally relevant healing approaches to be applied within established addiction services and resources and provide recommendations for front line community organization and health professionals.

Location: Ballroom

Presentation 5

Title: Hardened tendencies: Persistence of initial appraisals following simulation-based stress training.

Authors: Connor O'Rielly, BSc (Honours)*; Philip Aucoin, BSc (Honours); Chris Hicks, MD, FRCPC, Med; Andrew Petrosoniak, MD, MSc (Med Ed), FRCPC; George Mastoras, MD, FRCPC; Vicki LeBlanc, PhD

Background: Stress impairs the performance during high acuity medical simulations.

Objective: Investigate the effects of two training interventions on stress responses to simulated trauma scenarios.

Methods: Twenty Emergency Medicine residents were randomly assigned to either Crisis Resource Management (CRM) or Stress Inoculation Training (SIT). CRM targeted non-technical skills required for effective teamwork. SIT targeted skills related to cognitive reappraisal and relaxation training. Each group received a 3-hr training session: didactic teaching with simulation scenarios and debriefing. Participants served as team leaders in simulated trauma scenarios pre and post intervention. Stress levels and responses (peak minus baseline) were measured with the State Trait Anxiety Inventory (anxiety), cognitive appraisal (degree situation interpreted as threat vs challenge) and salivary cortisol.

Results: Both CRM and SIT resulted in decreased overall cortisol and anxiety scores post interventions (mixed-design ANOVAS, $p<0.05$). However, the magnitude of the cortisol and anxiety responses did not decrease post-intervention. Stepwise regression analyses showed that the only predictor of post-intervention stress responses was the residents' appraisal responses to that scenario ($r2 = 21\%$ and 28% for cortisol and anxiety). Post-intervention appraisals were predicted by the residents' pre-intervention appraisals and gender ($r2 = 53\%$ and 15%).

Conclusions: Stress regulation interventions led to reductions in stress levels, with limited impact on responses. Those who appraised an initial scenario as more threatening were more likely to interpret a subsequent scenario as threatening. In turn, they were likely to have larger stress responses. Approaches to stressful events may represent hardened tendencies; significant training & practice is likely needed to overcome coping approaches developed over a lifetime.

Location: Ballroom

Presentation 6

Title: Exploring guardians' health-seeking behaviour and bacterial antimicrobial resistance patterns of young children with diarrhea in Shinyanga, Tanzania

Authors: Preetha Gopalakrishnan* BHSc Student; Hollyn Maloney DVM Student; Aoife Hogan

DVM Student; Zecherias Igembe; Zabron Uholya; Karin Orsel; Frank van der Meer; Elias Charles Nyanza; Dr. George Masigati; Dr. Rashid Said Mfaume; Jeremiah Seni

Background: Diarrhea is a major cause of mortality for children under five years in low and middle-income countries (LMICs); the burden of diarrhea is exacerbated by antimicrobial resistance (AMR). AMR can result from antibiotic misuse due to poor diagnostic capabilities and practices (within the health care system) or to inappropriate health-seeking behaviours (including antibiotic use without a prescription).

Objective: The objective of this study was to identify possible links between health-seeking behaviours of guardians who present children for treatment at the hospital and the characteristics of pathogens causing diarrheal disease.

Methods: Stool samples were obtained from diarrhea patients under five years of age at the Shinyanga Regional Referral Hospital (SRRH) and Kambarage Health Centre (KHC). A short questionnaire was used to collect socio-demographic and clinical information from patients' guardians. A CerTest rapid diagnostic test screened the stool for common gastrointestinal viruses and stool samples were cultured to identify and isolate bacterial pathogens. Ten antibiotics were used in drug susceptibility tests to determine AMR profiles of E. coli, Shigella spp., or Salmonella spp. isolates.

Results: During this two-week study, 12 children presented at the SRRH and KHC with diarrhea. Five of these children's guardians finished primary school and six guardians were subsistence farmers. Seven guardians had obtained antibiotics from a health facility prior to their hospital visit. All 12 children enrolled in the study had received rotavirus vaccinations.

None of the stool samples tested positive for gastrointestinal viruses. All E. coli (n=8), Shigella (n=1), and Salmonella (n=1) isolates were ampicillin-resistant. Six E. coli, the Shigella, and the Salmonella isolate were trimethoprim/sulphamethoxazole-resistant. Five E. coli isolates were tetracycline-resistant. Two E. coli isolates exhibited the extended spectrum beta lactamase (ESBL) phenotype, indicating resistance to multiple commonly used antibiotics.

Conclusion: Two key statements can be made from these results: i) guardians tend to medicate their children with antibiotics prior to receiving a diagnosis for their child's diarrhea and ii) children presented to healthcare facilities often have gastrointestinal bacteria resistant to multiple antibiotics. This study underscores the need for effective AMR management strategies, as these will limit morbidity and cost from drug-resistant bacterial infections.

POSTER PRESENTATIONS

1

Title: Developing an Innovative Approach to the Wellness of the Nursing Student

Authors: Sylwia Ciezar Andersen* RN, BscB, BScN; Dr. Duffett-Leger, PhD

Background: With the looming nursing shortage, it is imperative that we keep our nurses healthy to keep them in the workforce. Nurses report high levels of stress and back injuries as the main reasons for leaving. A culture of self-care needs to be promoted in nursing, starting at the root; nursing students can be taught to focus on physical and mental self-care through yoga. Yoga has been associated with improved mental and physical health in a variety of populations. Existing evidence of the feasibility and effectiveness of a yoga intervention for nursing students is sparse and of weak methodological quality.

Design: A three stage Participatory Design framework will be employed to involve nursing students at the University of Calgary in intervention design. In Stage 3, a randomized controlled trial will test the effectiveness of the intervention; nursing students will be randomly assigned to intervention (eight-week yoga program) or control.

Measurement: In Stages 1 and 2, focus groups, design sessions, and pilot interventions will provide feedback for reiterations of the design. In Stage 3, a randomized controlled trial will assess intervention effectiveness through a series of subjective and objective pre/post measures; Perceived Stress Scale (PSS-10), hair cortisol, salivary alpha-amylase, core strength, and proprioception.

Analysis: In Stages 1 and 2, data will be qualitatively analyzed for common themes using NVivo 11. In Stage 3, and following descriptive statistics and baseline comparisons, data will be analyzed using Analysis of Covariance to test for between group and within group changes, while controlling for covariates.

Timeline and Budget: The proposed study is expected to take place between January 2019 and January 2022. The projected budget is $15,800. Ethical Implications. Ethical approval will be sought from CHREB prior to study commencement, and standards of ethical research including beneficence, respect for human dignity, and justice will be adhered to.

2

Title: Analysis of Engagement Between Ethics and Return-to-Work (RTW) Discourses in Respective Academic Literature

Authors: Wentao Li*, Bachelor of Community Rehabilitation, Department of Community Health Sciences, Cumming School of Medicine, Calgary, AB; Gregor Wolbring, Associate Professor, Department of Community Health Sciences, Cumming School of Medicine, Calgary, AB

Background: Return-to-work (RTW)/back-to-work (BTW) programs are designed for impaired individuals to return to employment roles. Yet, professionals may face many emerging challenges when leading such programs. For example, when tasks in many industries become automated, RTW clients may no longer have positions to return into. This key concern may challenge whether RTW programs are viable in the first place. Ethics concepts, principles, and theories can direct RTW professionals and researchers on how they should respond to these challenges. Through engagement with ethics discourses, professionals and researchers can also anticipate how the definition of work will change as a result of new technological developments. On the other hand, ethicists have been concerned about whether their advices are used in the real-world to propel social changes; these theorists can also benefit from evaluating if their guidance is seen as relevant with a field as practical as RTW.

Objective: To outline to what extent ethics concepts, principles, and theories are employed in RTW academic literature, and to which extend ethics-related literature have discussed RTW.

Methods: We conducted a scoping review to probe the presence of n=13 ethics concepts and n=20 ethics theories RTW/BTW academic literature. We also determined to what extent RTW/BTW was mentioned in articles from ethics-related academic journals. All articles were sourced from three databases, including EBSCO all, itself a compilation of over 70 databases, Scopus, including the full Medline database, and Web of Science.

Results: We found articles that engaged with RTW and 11 of n=13 ethics concepts. For searches involving n=20 ethics theories, only four returned article results relevant to RTW. Only one article in an ethics-related journal covered RTW, but it was also found in previous searches.

Conclusions: Ethics concepts, theories and principles were not used extensively in relevant RTW literature and vice versa. Professionals in both fields, however, could benefit from interdisciplinary collaboration with each other; academic authors in both fields ought to first use relevant vocabulary in order to initiate this process. Future research could include interviewing RTW professionals on whether they might find engagement with ethicists useful, and vice versa.

3

Title: Employment of Occupational Concepts in the Governance of Science and Technology Discourse

Authors: Manel Djebrouni, bachelor of Community Rehabilitation and Disability Studies, Dept of Community Health Sciences, Cumming School of Medicine; Gregor Wolbring, Associate professor at the Department of Community Health Sciences, stream of Community Rehabilitation and Disability Studies, Cumming School of Medicine.

Introduction: Being occupied. Occupational well-being is a central issue underpinning factors that constitute a good life including health. Occupational Therapy and Occupational Science are two fields that generated concepts around occupation to analyze occupational well being and to understand humans as occupational beings. Science and technology continue to impact the landscape of occupation. The occupational concepts developed within Occupational Science and Occupational Therapy can be used to inform the governance of science and technology as it pertains to occupational well-being.

Purpose: The purpose of this research was to investigate how n=24 existing occupational concepts were employed in science and technology governance discourses and to investigate the contemporary challenges emerging science and technology products and processes such as robots, autonomous cars and human enhancement pose on occupation.

Method: Step 1: We conducted a descriptive quantitative analysis (using Scopus, EBSCO All (all 70 databases including Medline) and Web of Science) of how n=24 occupational concepts developed within the occupational therapy and occupational science academic literature were employed in science and technology governance and robots, autonomous cars and human enhancement discourses. Step 2: We analyzed deductively and inductively the content of articles found under step 1.

Results: We found little engagement with and deployment of occupational concepts, in the governance of science and technology discourses. Occupational language was rarely to not at all used to address the influence of science and technology on occupation.

Conclusion: We suggest that our results could trigger an interest to enrich the governance of science and technology discourses and inform policy.

4

Title: Comparing the performance of different statistical learning techniques within a colorectal cancer screening setting

Authors: Devon Boyne*, MSc, Lisa Lix, PhD, Susanna Town, PhD, Steven Heitman, MD, MSc, FRCPC, Robert Hilsden, MD, PhD, FRCPC, Darren Brenner, PhD

Introduction: The majority of clinical prediction models to date have been built using logistic regression. The extent to which the predictive accuracy of these models could be improved using alternative machine learning approaches is unknown. The aim of this study is to compare the performance of different statistical learning techniques in an applied clinical setting.

Methods: The sample was comprised of persons between the ages of 50 and 74 who were undergoing a screening-related colonoscopy (n=2,364). The outcome of interest was one or more high-risk adenoma polyps (n=190). Information on demographics, lifestyle, and medical history were obtained from a baseline health questionnaire. Quantitative variables considered in these analyses were age and body-mass index. Dichotomous predictors included sex, ethnicity, daily alcohol consumption, ever smoker, moderate to low levels of physical activity, regular use of non-steroidal anti-inflammatory drugs, family history of colorectal cancer, diabetes, and a previous fecal occult blood test. Risk prediction models were developed using the following six approaches: 1) maximum likelihood (ML) logistic regression; 2) logistic regression with least absolute shrinkage and selection operator (LASSO) regularization; 3) bagged decision tree, 4) random forest; 5) support vector machine with a kernel radius basis function; and 6) artificial neural network with two hidden layers and twelve hidden units. The data was split in a 3:1 ratio into a training set (n=1,773) and test set (n=591). The DeLong test was used to compare the C-statistic of each model within the test set.

Results: The highest performing model was the LASSO logistic regression model (AUC=0.67). The c-statistic of the LASSO logistic regression model was not significantly different from that of the ML logistic regression model (AUC=0.67; p=0.40), random forest (AUC=0.62; p=0.15), or support vector machine (AUC=0.58; p=0.06). The LASSO model performed significantly better than the bagged decision tree (AUC=0.59; p=0.04) and the neural network (AUC=0.54; p=0.01).

Conclusions: In this particular dataset where the sample size was limited, the outcome was rare (<10%), and the number of predictors was small, logistic regression outperformed other statistical learning techniques. These findings support the continued use of logistic regression in applied clinical risk prediction settings.

5

Title: A Web-Based, Patient-Centered Tool for the Management of Chronic Conditions

Authors: *Alexandra Kellington, BHSc; Julie Babione, BSc, MSc; Jenny Kelly, BA, MA; Sydney Haubrich BSc; Jaime Kaufman BSc, PhD; William Ghali, MD, MDH, FRCPC; Doreen M. Rabi, BSc MSc MD, FRCPC,

Background: There is evidence that individuals with chronic conditions have better clinical outcomes when they are empowered to make decisions about their care. However, the management of chronic diseases is often disjointed, and patients may only interact with their healthcare providers (HCP) a few times a year. This does not capture the ongoing patient experience of chronic disease management, which requires daily decision making and constant monitoring. Thus, there is a need for patients to have access to the information they need to self-manage their disease(s), and to engage patients in their own self-management (i.e., basic knowledge, symptom tracking, goal setting).

Objective: To assess what disease management strategies patients and HCP want, what tools and information are currently offered, and to bridge gaps between what is needed and what is available through or tool development.

Methods: Focus groups and interviews were conducted with patients (n=18) and HCP (n=38) to gain an understanding of current chronic condition management practices and existing challenges in effectively supporting chronic care management. A preliminary literature search was conducted by searching Medline (OVID) with the search terms ‘Patient Care Management’ and ‘Chronic Disease or chronic conditions’ and ‘User-Computer Interface’. Relevant studies and reviews were included if they discussed management strategies using an online interface, or if they discussed patient/provider opinions on management strategies. Grey literature from English-speaking, credible Canadian, US, and UK health organizations were also searched.

Anticipated Results/Conclusions: HCP feel that patients are not well-informed about their own health. Patients have expressed interest in resources to help with management between in-clinic visits, such as care plans, goal setting support, individualized information, and frequent check-ins from HCP. Our tool is a response to concerns that patients and HCP have about chronic condition management by facilitating patient health learning, providing avenues for patient engagement, and allowing rapid communication between patients and HCP, leading to more efficient in-clinic visits and better clinical outcomes. Results from these findings will inform tool content development. Further user testing with patients will help guide the content of the tool to better address problems faced by individuals living with chronic conditions.

Title: What is the Effect of a Change in the Newborn Emergency Response Process on the Self-efficacy of Postpartum Nurses?

Authors: Jasmeet Kaur Dhadda RN BN Master's student *, Cynthia Mannion RN PhD Faculty of Graduate Studies University of Calgary

Background: Nurses questioned their self-efficacy after changes were made to the newborn emergency response process (NERP) at the Peter Lougheed Centre (PLC). Nurses used to take newborns to the nursery for resuscitation; however, the changed process requires nurses to resuscitate newborns in patient rooms.

Objective: The aim of this proposal is to determine the effects of a change in the NERP on the self-efficacy of postpartum nurses at the PLC.

Methods: In this study, a convenience sample of a minimal of 34 postpartum nurses from the PLC will be asked to complete a pre-and post-Basic Resuscitation Skills Self-Efficacy Scale prior to and after the education, simulation, and debriefing intervention. To conduct a repeated-measures analysis of covariance comparing the levels of self-efficacy pre-and post-intervention SPSS will be used.

Results: The anticipated results of this study are that self-efficacy decreases with the changed NERP and self-efficacy will increase post-education, simulation, and debriefing intervention.

Conclusion: Recommendations are then made to implement the educational, simulation, and debriefing interventions to increase postpartum nurses' self-efficacy with resuscitation skills. This intervention can then be used in the annual education day for postpartum nursing staff at PLC to maintain self-efficacy levels.

7

Title: Serum levels of angiogenic factors in preeclampsia and the HELLP syndrome

Authors: Aishwarya, Khanduja, Bachelor of Health Sciences Student, University of Calgary*; Kamran, Yusuf, MD, FAAP Associate Professor, University of Calgary

Background: Preeclampsia is a pregnancy specific disorder characterized by new onset hypertension and proteinuria after twenty weeks of gestation. The disease has a worldwide distribution affecting 5% to 8% of all pregnancies and is a major cause of maternal and neonatal morbidity and mortality. The disorder contributes significantly to both low birth weight and prematurity, and in Alberta, 40% of women with preeclampsia deliver preterm babies of less than 37 weeks' gestation. Although the cause of preeclampsia is unknown, the dysfunction of placenta is thought to play a part. It is a two stage disease where it is initiated by reduced placental perfusion which thereafter results in a release of angiogenic factors that affect the maternal endothelium.

A complication of preeclampsia is the HELLP syndrome, which is characterized by hemolysis, elevated liver enzymes, and low platelet count. It is unknown why some mothers develop preeclampsia and some HELLP syndrome and there is limited existing literature offering explanations as to why some mothers acquire one or the other.

Objective: The aim of this project is to estimate levels of cytokines and angiogenic factors in order to differentiate between preeclampsia and the HELLP syndrome.

Methods: Our study sample consisted of pregnant mothers recruited from the Obstetrics Department at Foothills Medical Centre with preeclampsia mothers (n=40) and HELLP syndrome (n=35). The exclusion criteria included mothers with chronic hypertension, gestational hypertension, any cardiovascular, renal, or endocrine disease and mothers in labour. Placental Growth Factor (PlGF), soluble Vascular Endothelial Growth Factor Receptor (VEGFR) 1 and soluble VEGFR2 were assessed by enzyme-linked immunosorbent assays (ELISA). The Mann-WhitneyU test was used to assess continuous variables and chi-squared test for categorical variables. P-value of <0.05 was considered statistical.

Results & Conclusions:

1. Compared with mothers with preeclampsia we found lower levels of Placental growth factor in mothers with HELLP syndrome

2. Placental growth factor levels may be used to differentiate between HELLP and Preeclampsia

3. Our results need validation in a larger cohort

8

Title: Dietary Intake of Adults with Non Alcoholic Fatty Liver Disease

Authors: Michelle Aktary*, BSc; Lindsay K. Eller, PhD; Raylene A. Reimer, PhD

Background: Non Alcoholic Fatty Liver Disease (NAFLD) is characterized by the accumulation of fat in the liver in the absence of excessive alcohol intake. Weight loss, through diet and physical activity, remains the most effective treatment. Studies indicate that individuals with NAFLD tend to consume diets higher in energy, total fat, saturated fats (SFA) and lower in polyunsaturated (PUFA) fats and fibre.

Objective: This study assessed the dietary intake of individuals with NAFLD compared to the average intake of adult Canadians and correlated intake to markers of liver health.

Methods: Three-day food records were collected from study participants enrolled in a randomized controlled trial. Baseline weight, height, waist circumference (WC), liver fibrosis (FibroScan) and liver fat (magnetic resonance imaging (MRI)) were measured. Food records were analyzed using FoodWorks nutrient analysis software. Nutrient intake was compared to data from the 2004 and 2015 Canadian Community Health Surveys (CCHS). Pearson's correlation coefficient was used to assess correlations between nutrient intake and anthropometrics.

Results: A total of 31 participants with NAFLD (58% males, mean age 51.2 Â± 9.2 years, BMI 33.3 ± 5.2 kg/m2, MRI liver fat 12.6 ± 5.9%, FibroScan 9.5 ± 6.8 kPa) completed a 3-day food record. Compared to the national average, study participants consumed more energy, sodium, fibre, %fat, and %saturated fat. No significant relationships were observed between total fat, SFA, MUFA, PUFA, or fibre intakes and liver health. A significant, negative correlation was observed between magnesium (Mg) intake and MRI liver fat ($r = -0.460$, $p \leq 0.05$), FibroScan ($r = -0.415$, $p \leq 0.05$), and weight ($r = -0.437$, $p \leq 0.05$). A positive correlation was also observed between liver fat and weight ($r = 0.562$, $p \leq 0.01$), BMI ($r = 0.678$, $p \leq 0.01$), and WC (0.693, $p \leq 0.01$).

Conclusion: NAFLD study participants have a higher intake of energy, sodium, fibre, %fat, and %SFA than the average adult Canadian. The correlation observed between MRI and weight, BMI, and WC suggests that abdominal weight gain is associated with increased liver fat. The negative relationship between Mg intake and weight, MRI, and FibroScan warrants further investigation.

9

Title: Enhancing Person-Centred Practice in Pediatric Community Care: Implementation & Evaluation of Quality Indicators Informed by the Patient Voice

Authors: Kimberly Manalili*, MPH, Catherine M. Scott, PhD, Maeve O'Beirne, MD, PhD, Brenda Hemmelgarn, MD, PhD, & Maria J. Santana, PhD

Background: Person-Centred Care (PCC) aims to provide care that is respectful and responsive to patient and family preferences, needs, and values. While healthcare systems have begun to embrace PCC as a model of care, in practice, it is difficult to realize. The implementation of Person-Centred Quality Indicators (PC-QIs) in clinical care is a potential solution to drive the change needed to improve the provision of PCC. Quality indicators will allow healthcare providers and organizations to identify gaps in PCC and lead to improved quality of care for patients and families.

Objectives: My proposed study will inform PC-QI implementation and evaluate how their use in two pediatric primary care settings in Calgary will improve PCC practice and quality of care for patients and families. In collaboration with Alberta Health Services and the Primary Care Networks, we will achieve the following objectives:

1.) Assess the feasibility, including the barriers and facilitators to implementation.

2.) Conduct a systematic review of effective strategies for implementing quality indicators in primary care. The first two objectives will inform the development of an implementation strategy.

3.) Evaluate PC-QI implementation to assess: reach and adoption of the intervention; effectiveness, through measurement of changes in PCC delivery and patient outcomes and experiences; how well PC-QIs were implemented; and sustainability, including tracking costs and resources associated with implementation.

4.) Co-develop an implementation guide with healthcare providers, quality improvement managers, patients, families, and our collaborators based on the findings from this research to inform future adaptation and scale up across Alberta.

Results: In my ongoing research, we have effectively engaged a network of key stakeholders, forming a strong collaboration for PC-QI implementation across Alberta. This work is highly aligned with Alberta's priorities to develop and implement patient and family-centred care indicators. Ongoing collaboration will ensure study feasibility and effective knowledge translation.

Conclusions: This research will further advance the knowledge translation science of promoting the integration of evidence-based interventions, by embedding principals of quality improvement and patient-oriented research. Finally, the findings will contribute significantly to making PCC a reality, and ensure that patients and families receive the care they need and deserve.

10

Title: Potential Benefits of the Integrated Geriatric Services Initiative for Professional Care Providers and Family Care Partners of PLWD

Authors: Staci Hastings*, BA, Greg Wells, PhD, Scott Oddie, PhD,

Margo Schmitt-Boshnick, M.Ed.

The current study examined the impact of the Eldercare Assessment Clinic (ECAC) on the caregiving capacity of care providers and care partners of people living with dementia (PLWD). As the proportion of individuals diagnosed with dementia continues to grow, effective identification and management of dementia is vital. Existing homecare for PLWD is inadequate, informal care partners experience high rates of caregiver burden, and many primary healthcare workers lack the confidence and knowledge needed to accurately and timely recognize and diagnose dementia. To address these existing limitations in the provincial healthcare system, the Integrated Geriatric Services Initiative has been implemented. As part of the initiative, the ECAC program was developed to improve self-efficacy, knowledge, attitudes, and skill for care providers and care partners of PLWD through mentoring and better integrated care for PLWD. The present study evaluated the potential benefits of the clinic by analyzing care partner and care provider perspectives using standardized questionnaires and interview responses. It was hypothesized that participant attitudes towards dementia, knowledge of dementia, and caregiving self-efficacy, would improve as a result of their involvement in the ECAC program. Care provider attitudes towards mentoring and care partner quality of life were also expected to improve. Qualitative results from the study support the effectiveness of the ECAC in fulfilling these expectations as improvements were reported in care provider dementia knowledge, skills, and caregiving self-efficacy, as well quality of care received by patients and their care partners. The findings from this study suggest that both care providers and care partners serve to benefit from the ECAC program. Moving forward, the study's results will be used to inform potential future improvements to the Eldercare Assessment Clinic and improve the level of care and support provided to care partners and PLWD.

11

Title: Utility of Scientific and Technology Governance from the Perspective of Occupational Therapy Students

Authors: Manel Djebrouni*. Undergraduate student in the Cumming School of Medicine, Department of Community Health Sciences, majoring in Community Rehabilitation and Disability Studies ; Gregor Wolbring. Associate professor in the Cumming School of Medicine, Department of Community Health Sciences, the stream of Community Rehabilitation and Disability Studies.

Background: Being occupied and having an occupation is essential for humans. Various professions and groups engage with the term “occupation”. The occupational health and safety profession sees it in terms of paid work and employment and how to prevent injury and promote safety within one’s paid occupation. Occupational Therapy defines occupation as everyday activities that people do as individuals, in families and with communities to occupy time and bring meaning and purpose to life. The goal of occupational therapy is to promote health and well-being by enabling people to obtain, maintain and enjoy occupation. Achieving this goal may be advanced by scientific and technological innovations (STI) but may also be impeded, e.g. robots are seen to displace humans in many occupations and human enhancement might force people to modify themselves to obtain occupation. The goal of STI governance is to ascertain the societal implications of STI in order to decrease negative and increase its positive impacts.

Purpose: to ascertained the views of and knowledge of student on 1) STI governance; 2) specific emerging STIs - robotics, autonomous cars, brain-machine interfaces -; and 3) one increasingly enabled consequence of STI - human enhancement.

Method: We conducted a descriptive quantitative and qualitative analysis from an online survey from students in two Occupational Therapy programs

Result: Students felt that how we govern STI impacts occupational therapy on all levels but at the same time, they were not familiar with STI governance discourses in general and around the STIs covered. Our findings indicate a gap in the knowledge of the students, a gap the students felt should be filled on the undergraduate level or in occupational therapy degrees.

Conclusion: Education actions are warranted on the level of students and practitioners based on the education mandate of OT, the demand occupational therapy has on occupational therapists and of the indicators of the success of STI governance.

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Title: Neighbourhood characteristics associated with initiation of, and adherence to a pedometer-based physical activity intervention among inactive Canadian adults.

Authors: Anna Consoli, MA* ; Dr. John Spence, Phd; Dr. Alberto Nettel-Aguirre. Phd; Rosemary Perry, MSc; Dr. Gavin McCormack, Phd (supervisor)

Background: Regular physical activity is associated with a reduced risk of cardiovascular disease, ischemic stroke, type 2 diabetes, certain cancers, depression, overweight and obesity. However, only 15% of Canadian adults report engaging in the 150 minutes/week of moderate-to-vigorous physical activity recommended to achieve these health benefits. Consistent evidence suggests that the neighbourhood built environment can support physical activity. However, the extent to which the built environment might support physical activity among new initiators, such as those beginning a physical activity program or intervention, is yet to be explored. Understanding the role of the built environment and physical activity initiation and adherence is important given that even small increases in physical activity can provide substantial health gains among inactive adults. Encouraging 10% of inactive adults to become more physically active could significantly reduce the risk of major chronic health conditions and positively impact the population health.

Study Aim: Our study will examine the role of the built environment in modifying the effectiveness of a 3-month pedometer-based exercise intervention (Alberta UWALK) among formerly inactive adults. Our hypothesis is that UWALK participants residing in high walkable neighbourhoods will be more likely to initiate and adhere to the program and will participate in higher pedometer-based physical activity compared with UWALK participants residing in low walkable neighbourhoods.

Method: Between May 2016 and August 2017 we recruited 571 physically inactive Calgarian adults (>18 years of age) via community association print and electronic newsletters. Eligible consenting volunteers received a pedometer and instructions for joining the online UWALK program. Participants were asked to join the UWALK program and report their pedometer steps into the online program on a weekly basis. We will use Walk Score®, linked to participant's households based on the 6-digit postal code to estimate neighbourhood walkability. We will use generalized linear mixed models and survival analysis to examine the association of UWALK initiation, adherence, and pedometer-measured physical activity with neighbourhood walkability.

Significance: This study is unique as it will provide evidence about the intersect between individually targeted (UWALK) and population-level (built environment) interventions and their influence on the behaviour of initially physical inactive adults.

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Title: Use of an educational initiative targeting LPN clinical leadership skills within supportive living

Authors: Parivash, Enghiad, BScN/RN; Heather, Moquin, PhD; Lorraine, Venturato, PhD

Background: Providing care for an older adult population is increasingly challenging in light of the aging population and nursing shortage in North America. The majority of nursing care in Supportive Living (SL) in Alberta is provided by Licensed Practical Nurses (LPNs) who lead teams of health care aides and liaise with registered nurses and managers. Effective clinical leadership (CL) skills are essential for LPNs in these environments to support efficient and caring work environments and work teams. Few resources have been devoted to developing educational initiatives aimed at improving clinical leadership skills for LPNs.

Objectives: This presentation reports on a study exploring the impact of clinical leadership development (CLD) for LPNs working in SL. Specifically, the study is focused on determining the effect of the CLD on LPNs' attitudes, experiences, knowledge, skills, and values, and evaluate the feasibility of work-based learning on a broader scale for LPNs in SL.

Methods: This research is the second phase of a multi-phase research project. It employs a single-case study design using multiple methods, including observations, interviews, focus groups and a pre-post knowledge test questionnaire. Participants include LPNs working in SL in Calgary, Alberta. Qualitative data will be analyzed thematically in light of established CL theory and models.

Findings: This presentation will elaborate on the development and content of the CLD program and examine the impact on participants' attitudes, experiences, knowledge, and skills. Findings related to the feasibility of this program, in relation to timing and scheduling, delivery mode, and administration, will also be presented.

Conclusion: Strong clinical leadership skills within SL are critical to prepare LPNs to become effective leaders in the clinical environment. However, more work is needed to develop targeted training on clinical leadership for LPNs in order to ensure the provision of high quality of care. Findings from this study provide greater understanding on the impact of clinical leadership development and specific practical features of such a program in a broader sense.

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Title: The effect and safety of postmenopausal hormone therapy and selective estrogen receptor mediators on kidney outcomes in women: A systematic review

Authors: Sandi Dumanski, MD; Sharanya Ramesh, PhD; Matthew James, MD; Amy Metcalfe, PhD; Kara Nerenberg, MD; Ellen Seely, MD; Helen Lee Robertson, MLIS; Sofia Ahmed, MD

Background: The number of postmenopausal women with or at risk of chronic kidney disease is increasing exponentially. The benefits and risks of postmenopausal hormone therapy and selective estrogen receptor modulators on kidney health outcomes in these women are poorly understood.

Objectives: Our study aims to: 1) determine the effects of postmenopausal hormone therapy, including selective estrogen receptor modulators, on kidney function and albuminuria in women, and, 2) establish the risk of adverse outcomes of postmenopausal hormone therapy, including selective estrogen receptor modulators, in the chronic kidney disease (CKD) population, who already possess an increased risk of venous thromboembolism and malignancy.

Methods: We searched published and unpublished studies (1950- December 2016) examining the effect of postmenopausal hormone therapy, including selective estrogen receptor modulators, on kidney function and albuminuria, as well as the risk of adverse outcomes of these treatments in women with CKD. Two independent investigators screened identified publications examining the effect of postmenopausal hormone therapy and selective estrogen receptor modulators on kidney outcomes in the general population, as well as adverse outcomes in the CKD population. Data was independently extracted from each eligible study, and risk of bias was assessed. Along with descriptive presentation of data, outcome measures were presented as meta-analyses using a random effects model.

Results: An electronic literature search was completed using a peer reviewed search strategy in MEDLINE, EMBASE, and Cochrane Central Register of Controlled Trials. Other relevant studies were accessed by searching clinicaltrials.gov, tables of contents of relevant journals and conference proceedings. A total of 3,087 studies were identified. Data extraction and analysis is ongoing.

Conclusions: A systematic review and meta-analysis of selected relevant studies has the potential to aid in optimizing care of the postmenopausal woman with or at risk of chronic kidney disease.

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Title: Identifying sustainability factors of a gravity-based drinking water system in rural Haiti

Authors: Heather Nixdorff*, Dr. Nicholas Ashbolt, Dr. Gene Cole, Marc Aurel, Matthew Petit

Background: The country of Haiti has faced myriad challenges associated with adequate water, sanitation, and hygiene (WASH) infrastructure for decades. Haiti Health Initiative (HHI) is a grassroots organization that has been present in the community of Timo, Haiti for 10 years. HHI has established a gravity-based water system serving approximately 200 residents in the region, yet there are growing concerns regarding the sustainability of the water system being voiced from both the organization and residents of Timo.

Objective: The purpose of Heather's MSc. research is to understand factors that may influence/improve the sustainability of a gravity-based water system in Timo, Haiti, by way of assessing the experience and perceptions of the residents. Water quality testing of the water system will also be completed to compare perceived risk to actual microbial risk.

Methods: Qualitative description will be used under a community-based participatory research (CPBR) framework. Using purposeful sampling, approximately 25 semi-structured interviews will be conducted with adult residents of the community of Timo who have experience with the water system. Interviews will be conducted by a Haitian research assistant under Heather's guidance. Water quality testing of the four reservoirs will be undertaken utilizing E. coli-based assessment of faecal contamination.

Intended Results: Results from this project will provide insight into the various factors that influence the sustainability of the water system in the rural village of Timo. By understanding the experience of the residents using this water system, we aim to identify ways in which the system could be better maintained and sustainable in future years. This research will also inform those working on creating more context-specific WASH systems in rural/remote sites globally.

Conclusions: Data collection will be completed May-June 2018. Conclusions will be made after this time.

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Title: Prevalence of obesity and the associated risk among patients with Total Knee Arthroplasty in Alberta

Authors: Fatemeh Baghbaninaghadehi, MSc*; Susan Armijo Olivo, PhD1; Marry Forhan, PhD; Carla Prado, PhD; and Linda J Woodhouse,PhD;

Background: An increasing demand for total knee arthroplasty (TKA) in younger population with higher BMI has raised concern among orthopaedic surgeons as to whether there are greater risks of complications with obesity. Controversy remains as studies have used different obesity definitions and have not considered the confounding effects of parameters including sex and age in the analysis.

Objective: We examined the prevalence of obesity in patients who underwent TKA, and compared comorbidities and complications between different BMI groups, adjusted for confounder effects.

Methods: We included 31,697 individuals who underwent unilateral TKA in Alberta between 2011-2016. BMI scores were available for 15,504 individuals; and we categorized them according to the World Health Organization into five groups: normal, over-weight, obesity class I, II, and III. We examined the rise in prevalence of obesity in patients over the 6-year period, and determined whether obesity was associated with year of surgery, age, sex, comorbidities, or complications.

Results: The proportion of TKAs performed in patients with obesity class I, II, and III increased 6.0%, 0.3%, and 4.5%, respectively, from 2011 to 2016. Patients within obesity class I, II and III were at higher risk of requiring TKA at a younger age compared to the normal BMI. The risk of having TKA for males was higher in overweight (1.69), obesity class I (1.61), and II (1.18), compared to females. The risk of having three comorbidities was higher in all obesity classes compared to normal BMI. Higher BMI was not associated with higher surgical complications.

Conclusions: There was a higher demand for TKA among patients who were younger and had higher BMIs. Patients with higher BMIs had more comorbidities. Increase in BMI was not associated with increase in complications, and BMI alone should not be considered a risk factor for complications. The number of comorbidities, in addition to BMI, is more informative with respect to surgical risk and thus, both should be assessed preoperatively.

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Title: Design of a cluster-randomized stepped-wedge trial of clinical risk prediction and decision support for prevention of contrast-induced acute kidney injury

Authors: B Ma*, MM Graham (MD), B Har (MD), B Tyrrell (MD), SB Wilton (MD, MSc), ML Knudtson (MD), N Pannu (MD, SM), T Sajobi (PhD), J Spertus (MD, MPH), MT James (MD, PhD)

Background: Contrast Reducing Injury Sustained by Kidneys is an ongoing quality improvement initiative that aims to reduce the rates of contrast-induced acute kidney injury (CI-AKI) in the three cardiac catheterization laboratories in Alberta.

Objectives: To report the study design, power, and sample size considerations for the quality improvement program.

Methods: The intervention consists of randomized introduction of risk prediction and decision support tools to 32 cardiologists who perform diagnostic and therapeutic procedures. Contrast RISK involves four key, evidence-based points: automated identification of patients at high risk of CI-AKI using a risk prediction model, embedded clinical decision support to identify maximum safe contrast doses, tailored recommendations for individualized prophylactic intravenous (IV) fluid orders, and appropriate patient information and follow-up according to their risk.

The study is evaluating the impact of this intervention using a stepped-wedge design, implemented and assessed using an existing computerized clinical registry (the Alberta Provincial Project for Outcomes Assessment in Coronary Heart Disease; APPROACH). Cardiologists will be randomly grouped into clusters that then randomly begin utilizing the intervention at one of eight possible start points. The study is powered to detect a 20% relative risk reduction in acute kidney injury applied to patients identified as being above average risk for acute kidney injury. Using 32 participants, 8 time points for stepping-in clusters of cardiologists, and an anticipated within cluster correlation coefficient of 0.65, a sample size of 1044 patients enrolled over 76 weeks is required.

Results: The project is currently ongoing and tracking processes of care, acute kidney injury rates, downstream health outcomes, and costs using APPROACH to evaluate the degree to which the initiative achieves the expected improvement in use of appropriate CI-AKI prevention strategies (i.e. exceeding safe contrast dye limits and properly using IV fluids) and reducing CI-AKI incidence.

Conclusion: Should Contrast RISK reduce the incidence of CI-AKI by 20%, as observed by other quality improvement programs for CI-AKI, patient quality of life can be substantially improved and over $1.8 million in annual, direct CI-AKI health care costs can be saved.

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Title: Rescuing cortical neurons from anesthetic-induced toxicity with mitochondrial division inhibitor P110

Authors: Fahad Iqbal* (BHSc 2020), Ryden Armstrong (Msc), Sean A. Hasan (BSc 2016), Luke Goudie (MSc), Hussain Raza (BHSc 2019), Saba Riaz (BSc 2019), Simon SV. Wong (BSc ENEE 2019), Jean Kawasoe, Wali Zaidi, Jane Shearer (PhD), Naweed I. Syed (PhD, FRCP Edin)

Background: Inhalational anesthetics are implicated in exhibiting neurotoxic side-effects on developing brain cells in the pediatric population. Clinically used concentrations of desflurane - a commonly used inhalational anesthetic perturbs developing neural circuit formation during critical periods of synaptogenesis, particularly by compromising their mitochondrial integrity. Conversely, a specific inhibitor of excessive mitochondrial fission (P110) is known to preserve mitochondrial integrity and improve cell viability. However, it is unclear whether P110 peptide could also rescue neurons from anesthetic-induced toxicity. In this study, we tested the hypothesis that the selective mitochondrial inhibitor (P110) protects rat cortical neurons from desflurane induced cytotoxicity by preserving mitochondrial morphology.

Objective: To determine if pathologically selective mitochondrial fission inhibition can attenuate anesthetic-induced neurotoxicity.

Methods: Sprague-Dawley rat cortical neurons were isolated from post-natal day-0 rats and exposed to 4.3% desflurane for one hour in an airtight modular incubator chamber (Billups-Rothenberg). %Desflurane-medical air gas mixtures were vaporized using a Datex-Ohmeda Aestiva vaporizer and concentrations were monitored with a GE Healthcare Gas Analyzer. This concentration is approximately 0.5 MAC. For one hour prior to anesthetic exposure, cells were treated with P110 (0.5μM, 1μM, and 10μM). After 1 h of exposure, the neurons were maintained in an incubator (37 °C, 5 % CO2) until use. Cell viability was assayed by staining neurons with Calcein AM and ethidium homodimer-1. Neurons were then stained for mitochondrial morphology with MitoTracker Red and cytoskeletal proteins with neurofilament.

Results: Primary rat cortical neurons were exposed to clinically relevant concentrations of desflurane for 1 hour. Our results demonstrate that an acute exposure of primary rat cortical neurons to desflurane reduces cell viability, inhibits neurite processes, and compromises mitochondrial morphology, thus perturbing neuronal network function. Remarkably, P110-pretreatment protected neurons from this cytotoxicity.

Conclusions: Our data demonstrates that though desflurane, a commonly used inhalation anesthetic exerts neurotoxic effects on cultured cortical neurons, these cells are rescued by P110. This study thus validates the use of P110 peptide as a potential neuroprotective agent when applied in concomitant with conventional anesthetic agents. The data presented here thus underscores the importance of invoking potential clinical trials for P110 peptide.

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Title: Developing and Refining Person-Centred Quality Indicators: The Consensus Process

Authors: Bijan Mohamed, Sadia Ahmed, Kimberly Manalili, Chelsea Doktorchik, Ashton Chugh, Maria J Santana

Background: Person-centred quality indicators are units of measurement of the healthcare system or organizational or individual performance, that quantify individuals' experience with the care received and measure the experience of any individual who needs to contact healthcare services. Consensus methodologies are often used to inform the development of such indicators by ensuring they are supported by the voices and opinions of experts and key stakeholders. However, these processes have not traditionally included the voices of patients, who are the recipients of care.

Objective: To include the patient perspective in the consensus process, to ensure that further development and refinement of a core set of 39 generic person-centred quality indicators reflects what matters most to patients when evaluating the provision of care.

Methods: A two-day modified Delphi consensus panel consisting of twenty-five national and international panelists with diverse expertise in person-centred care was held in Calgary. The panel was assembled of 9 patients and caregivers, 5 patient-centered care researchers, 5 health quality improvement leaders, 4 community members, and 2 physicians. The research team summarized discussion points and captured group dynamics among participants throughout the consensus. Audio recordings and notes were analyzed for the extraction of prominent themes.

Results: By the end of the discussions we had reduced the number of person-centred indicators from 39 to 24. The following themes helped to refine these PC-QIs. Five key themes were identified in the development of the quality indicators: 1) specifying the measurement properties of the indicators to ensure they are quantifiable and actionable; 2) considering the applicability of indicators on a system, organization, and individual level; 3) ensuring the suitability of the indicators within the established framework and philosophy of person-centred care; 4) adjusting the semantics of indicator descriptors to ensure they are inclusive; and 5) exploring the logistics and resources needed to improve aspects of healthcare that were reflected in the indicators.

Conclusion: Our study identified important themes that emerged during a consensus panel discussion for the refinement of the person-centred quality indicators. These findings will inform further refinement of the indicators for implementation in clinical care and policy making, and lead to improvements in the provision of person-centred care.

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Title: Patient Characteristics and Clinical Care Resource Needs of Non-Metro Calgary Paediatric Inpatients at the Alberta Children's Hospital

Authors: Dr. J. A. Michelle Bailey, MSc., MD, FRCP(C); Sumedh Bele, PhD Candidate ; *Alam Randhawa, Health Sciences Undergraduate Student

Background: In 2011, the Alberta Children's Hospital (ACH) had a paediatric bed occupancy of 95.1% while the regional sites such as Medicine Hat reported an occupancy of only 57% (Alberta Health Services). This difference in paediatric bed usage emphasizes that the overcapacity issue faced by tertiary paediatric sites such as the ACH, can be rectified by increasing regional bed usage for non-metro patients belonging to those regional sites. It is believed that a Telehealth system implemented in consultation rounds can be utilized to increase regional bed usage as well as increase quality and continuity of care received by patients transferred to regional sites.

Objective: In order to implement a Telehealth system, the needs of non-metro inpatients will need to be assessed. This project aims to identify patient characteristics and clinical care resources for non-metro Calgary paediatric inpatients at the Alberta Children's Hospital. In addition, the project will identify attending physicians' perceived barriers to transfer of the non-metro patients from the ACH to a regional centre. The findings of this project will be used in part for a larger Telemedicine Rounding and Consultation model which will be piloted at the ACH and Medicine Hat Regional Hospital.

Methods: To identify these characteristics and clinical care resources, a chart audit that reviews both retrospective and prospective patient data will be carried out over the course of one year using a REDCAP database. Patient characteristics that will collected include age, postal code (in order to identify regional site belonging), acute and chronic diagnoses both upon admission and those resolved during hospitalization, unit of admission and technology requirements such as shunts and feeding tubes. Data on clinical care resources that will be collected include attending physician services, specialized testing/diagnostic imaging, procedures, allied health resources, and nurses resources beyond usual care. Based on the patient characteristics and clinical care resources collected, the patients will be categorized into medial complexity (low, medium and high complexity) based on diagnosis, technology and body systems involved during hospitalization.

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Title: Sticking to it: Adherence to Exercise Therapy Interventions in Children and Adolescents, a Scoping Review Proposal.

Authors: Christopher J. Holt*, PT, MScRS Student; Carly D. McKay, PhD, FHEA; Linda K. Truong, PT, PhD Student; Christina Y. Le, PT, PhD Student; Doug P. Gross, PT, PhD; Jackie L. Whittaker, PT, PhD

Background: 33% of Canadian youth suffer sport-related musculoskeletal injuries annually. These injuries are associated with alarming long-term consequences such as obesity and early-onset osteoarthritis. Exercise therapy is an effective intervention for musculoskeletal injuries and is crucial for mitigating these consequences and their associated societal burdens. Unfortunately, adherence to exercise therapy is commonly reported as low, impacting clinical efficacy. Despite a growing body of evidence addressing adherence to exercise therapy in adults, there are a paucity of studies investigating youth, with the few existing studies spanning a wide breadth of medical conditions, interventions, and outcomes. This scoping review will explore the concept of youth exercise therapy adherence across medical conditions to inform future research aimed at improving exercise therapy adherence following youth musculoskeletal injury.

Objectives: The primary objective is to identify and consolidate facilitators and barriers of youth exercise therapy adherence and how they vary across conditions. Secondary objectives include summarizing the association between youth exercise therapy adherence and clinical outcomes, and strategies for improving adherence.

Methods: The revised Arksey and O'Malley framework will be employed. Medline, CINAHL, Scopus, SPORTDiscus, PEDro, and Proquest will be searched using keywords and medical sub-headings. Studies selected will include: English language, original data (including grey literature), exercise therapy intervention, outcome or construct of adherence, and youth (age 5-19 years) concepts. Titles, abstracts, and full manuscripts will be reviewed by two independent raters and assessed for methodological quality (Downs and Black checklist). Rater reliability will be assessed a priori. Data collection will evolve based on records retrieved. Extracted data will be summarized using original quantitative and thematic analysis.

Expected Results: Based on previous reviews, we expect to identify approximately 50-75 records for inclusion. We will report information on sample characteristics, adherence facilitators and barriers, adherence estimates, adherence measurement tools, interventions to impact adherence, and clinical outcomes.

Proposed Impact: This review will provide a critical foundation for future research aimed at improving adherence to exercise therapy in youth following musculoskeletal injury. By informing these next steps, this information will assist in mitigating the long-term consequences of these injuries and their associated burdens.

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Title: Prospective Evaluation of the ThyroSPECTM Mutation Panel for the Diagnosis of Consecutive Indeterminate Thyroid Fine Needle Aspiration Cytologies in Calgary

Authors: Paul Stewardson, Master of Medical Science*, Markus Eszlinger, PhD, Sana Ghaznavi, MD, Chris Symonds, MD, Douglas J. Demetrick, PhD, Moosa Khalil, MD, Ralf Paschke, MD, PhD.

Pre-surgical molecular diagnosis of cytologically indeterminate thyroid nodules can reduce unnecessary diagnostic surgeries of benign nodules. We previously demonstrated the applicability of MALDI-TOF mass spectrometry mutation detection to routine air-dried fine needle aspirate (FNA) smears to provide diagnostic information for clinical decision making. The panel was extended to interrogate 81 point mutations and 15 gene rearrangements to assess malignancy. This ThyroSPECTM panel was applied to residual material from 54 prospectively collected indeterminate liquid FNACs with available histology in the AHS healthcare region of Calgary/Southern Alberta with centralized thyroid nodule FNA cytology (1700/year) for a population of more than 1.5 million.

ThyroSPECTM detected 22 point mutations and 1 gene rearrangement. This provided a sensitivity of 47% and a specificity of 86% over all indeterminate categories. A subset of the cohort includes 28 Bethesda III FNACs, in which the sensitivity and specificity are 53% and 92% respectively. This test performance is in the range of the ThyroSeqTM test which is based on targeted next generation sequencing. According to the 26% rate of malignancy identified in a retrospective review of the Calgary setting, this would result in an NPV of 85% and a PPV of 69%.

The FNAs analyzed were collected prospectively and consecutively over the past two years and represent the first patients who underwent diagnostic surgery within the larger Calgary cohort. Therefore, these specimens are enriched for malignancy, as demonstrated by the 55% prevalence of malignancy in the analyzed set of 28 Bethesda III samples. These preliminary data are limited by low sample number and limited follow up. Therefore, continuation of the study over a longer period is required.

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Title: Spatiotemporal dynamics of mural cell Ca2+ and tissue oxygenation in awake, behaving mice

Authors: *Govind Peringod, BASc Engineering Science, MSc Neuroscience candidate (UCalgary); Linhui Yu, BEng, MSc Electrical Engineering, PhD Electrical Engineering candidate (UCalgary); Kartikeya Murari, PhD, Assistant Professor (UCalgary); Grant R Gordon, PhD, Associate Professor (UCalgary)

Background: Arteriole smooth muscle cells and contractile pericytes on pre-capillaries (mural cells, collectively) respond to neural signals with changes in Ca2+ to regulate cerebral blood flow control. However, little is known about the spatial dynamics of mural cell Ca2+ across the neocortex, or how faithfully tissue oxygenation tracks mural cell Ca2+ in vivo in conscious animals.

Objective: We sought to characterize spatial dynamics of mural cell Ca2+ across the neocortex in active, behaving mice, as well as the temporal correlation between mural cell Ca2+ and tissue oxygenation in the neocortex.

Methods: We developed a widefield imaging system that permits measurement of mural cell Ca2+ and blood volume (HbT) through intact bone across the entire top of the cerebral cortex in awake mice exposed to whisker stimulation or startle. We used Cre-Lox knock-in mice (PDGFRβ -Cre x LSL-GCaMP6s), to examine 'mesoscale' mural cell Ca2+ signals.

Results: In the resting state, we observed these signals spread from region-to-region across the neocortex in wave-like patterns, similar to previously-reported neuronal Ca2+ signals. In the barrel region, whisker stimulation produced an unexpected initial increase in mural cell Ca2+ followed by an expected decrease. Furthermore, HbT exhibited a fast decrease followed by a sustained increase, which was consistent with the biphasic Ca2+ signal. Interestingly, motor cortices showed only decreased blood flow (i.e. increase in mural cell Ca2+ and decrease in HbT) to whisker stimulation. However, startle stimulation elicited a large bilateral reduction in Ca2+, reflecting widespread increases in blood flow.

Conclusions: Thus, our preliminary efforts highlight the use of PDGFRβ-GCaMP6s mice to study vascular network function through the skull in awake and active animals. This work was supported by the Canadian Institutes of Health Research and approved by the University's Animal Care Committee (#AC15-0133).

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Title: Describing the Daily Activities of the Connect 2 Care Team: An Ethnographic Observation

Authors: Celise Ritter-Rattray BA*, Alicia Polachek MA, Jenny Kelly MA, Gabriel Fabreau MD MPH, Kerry McBrien MD MPH

Background: Socially vulnerable individuals often experience poor health outcomes such as difficult infections, complications of chronic disease, and early mortality. The health needs of socially vulnerable populations in Canada are complex, and they often face sociocultural barriers within the health care system. Therefore, the implementation of coordinated care programs may be advantageous in improving health outcomes as well as reducing acute care utilization and costs. One such program is Connect 2 Care (C2C), which is a mobile outreach program that provides advocacy, support, and transitional case management to socially vulnerable individuals in Calgary, Alberta.

Objectives: To document the daily activities, challenges, and underlying processes of the C2C team to understand how the team functions.

Methods: To date, eight ethnographic observations have been completed with C2C team members in varying roles. Another eight observations will provide additional data to achieve theoretical saturation. To ensure variability in the data, observations occurred in different settings and at different times of the day and week. Each observation lasted for approximately 3 to 4 hours, after which detailed field notes were written. Field notes were then analyzed using inductive thematic analysis by three authors.

Results: Preliminary analysis identified a series of themes that addressed the multiple and varied activities of the C2C team. For example, current emergent themes include rapport and positive relationships between C2C team members and clients, collaboration with other agencies and C2C team members, and accommodating for client needs. We anticipate more themes may be revealed and current themes will be refined during the final analysis, as observations are ongoing.

Conclusion: Findings from this study will help inform and refine the C2C program by documenting how the C2C works to achieve its goals. The results of this project may also assist with the implementation of efficient coordinated care programs in other sociocultural contexts and jurisdictions.

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Title: Knowledge, Perceptions, and Barriers to Accessing Sexual Reproductive Health Services among Adolescents & Youth in Shinyanga Rural District, Tanzania

Authors: Elizabeth O, Dayo, BHSc *; Nkukurah Samamba, MD; Sophia Muhali, MD; Anthony Kapesa, ESM/MPH; Elias C., Nyanza, ESM/MPH/PhD

Background: In mainland Tanzania, adolescents constitute 32% of the entire population - majority of these young people lack access to Sexual Reproductive Health (SRH) services. The objective of this study was to determine the knowledge, perceptions, and barriers to accessing SRH services among young peoples in Shinyanga rural district.

Methods: Two surveys using semi-structured questionnaires were conducted among randomly selected in-school adolescents and youth (10-22 years) from 4 administrative wards of rural Shinyanga. SPSS- 17 was used to record and analyze data collected from the structured questionnaires and to yield descriptive statistics.

Results: A total of 400 students were involved in Survey 1 and 676 students participated in Survey 2. The majority of Survey 1 respondents (65.5%; 262/400) reported to have heard about SRH services as a general term, but only 30.3 % (121/400) were knowledgeable about services offered at these health facilities. A minority of youth from Survey 1 had ever attended or utilized SRH services (23%; 93/400)- and of this population, males (26.2%; 53/202) were reported to visit SRHS more frequently than female adolescents (20.2%; 40/198). A minority of the respondents from Survey 1 (23%; 92/400) reported that they had previously received SRH education at their school. Most of these participants (59%; 236/400) suggested that health workers should serve as sources of sexuality education, while only few (1.5%; 6/400) preferred to have their parents educate them on SRH. The majority of Survey 2 respondents reported a need for SRH services but claimed to have no access to these services (42.3%; 333/676). The main barriers to accessing SRH services were identified as lack of youth-friendly health facilities (9.5%; 64/676), limited knowledge of how to access SRH services (11.8%; 80/676), lack of awareness of SRH services (14.9%; 101/676), age restrictions (18.6%; 126/676), and geographical obstacles (23.7%; 160/676).

Conclusion: Young peoples in Shinyanga rural district have limited knowledge of SRH services and poor sexual health literacy. The respondents imparted a preference for healthcare providers to provide SRH information and resources. The barriers to adolescents and youth's access to SRH services in rural Tanzania include health system, environmental, and individual factors.

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Title: Prenatal Anxiety and Children's Behavioral Problems: The Moderating Roles of Maternal-Child Attachment and Child's Sex. Study Protocol.

Authors: Elena Ali,RN, MN, Doctoral Candidate*; Dr. Nicole Letourneau, RN, PhD; Dr. Karen Benzies,RN, PhD, Dr. Gerry Giesbrecht, PhD

Background: Prenatal anxiety (PA) is associated with children's behavioural problems. Animal research suggest that PA affects the fetal brain via prenatal programming that underlies offspring's problematic behavioural responses to stressful situations. PA is highly predictive of postnatal anxiety, which can influence quality of maternal-child attachment and further raise the risk for children's behavioural problems. More insight is needed on whether attachment security may moderate the association between PA and children's behavioural problems. Child sex needs to be considered, as sex differences have been found in studies on prenatal programming of behaviour problems.

Methods: In a secondary data analysis of a sub-sample of 203 maternal-child dyads enrolled in the Alberta Pregnancy Outcomes and Nutrition study (APrON), the moderating roles of attachment security and child's sex in the association between PA and children's behavioral problems will be investigated. The following hypotheses will be tested: increase in PA will be associated with increase in child's behavioural problems; influence of PA on child's behavioural problems will be less when maternal-child attachment is secure; association between PA, attachment security, and behaviour outcomes will be stronger for boys than girls. PROCESS ordinary least squares regression-based macro will be used to test the hypotheses.

Conclusions: More research on the effects of PA and children's behavioural problems in relation to the attachment security is needed. If secure maternal-infant attachment moderates the association between PA and children's behavioural problems, prevention activities can be targeted at reduction of anxiety symptoms during pregnancy and at improving maternal-child attachment security.

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Title: Developing an Innovative Approach to Enhance Wellness Among Nursing Students

Authors: Sylwia Ciezar Andersen, RN, B.Sc.B., B.Sc.N.*; Dr. Linda Duffett-Leger

Background. With the looming nursing shortage, it is imperative that we keep our nurses healthy members of the workforce. Nurses report high levels of stress and back injuries as the main reasons for leaving nursing. A culture of self-care must be promoted among nurses, starting early in their careers; nursing students can be taught to focus on physical and mental self-care through yoga. Yoga has been associated with improved mental and physical health in a variety of populations. Existing evidence of the feasibility and effectiveness of a yoga intervention for nursing students is sparse and of weak methodological quality.

Design. A participatory design approach will be used to involve nursing students in the design of a yoga intervention to promote physical and mental well-being. There will be 3 phases of the study, including: (1) focus groups; design sessions; (3) randomized controlled trial will test the effectiveness of the eight-week yoga intervention. In phase 3, a randomized controlled trial will assess intervention effectiveness through a series of subjective and objective pre/post measures; Perceived Stress Scale (PSS-10), hair cortisol, salivary alpha-amylase, core strength, and proprioception.

Analysis. In Stages 1 and 2, data will be qualitatively analyzed for common themes using NVivo 11. In Stage 3, descriptive statistics and baseline comparisons data will be analyzed using analysis of covariance to test for between group and within group changes, while controlling for covariates.

Timeline and Budget. The proposed study is expected to take place between January 2019 and January 2022.

Ethical Implications. Ethical approval will be sought from CHREB prior to study commencement, and standards of ethical research including beneficence, respect for human dignity, and justice will be adhered to.

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Title: HIV and STI Testing Barriers and Preferences among Alberta GBTQ Men: a Representative Strategy via Community-Based Research

Author: Michael Taylor*, Brook Biggin, Derek Fehr

Background: The province of Alberta is developing a new STBBI (Sexually Transmitted and Bloodborne Infections) Strategy, led by Alberta Health Services (AHS) with the participation of a broad range of community stakeholders. In order to more effectively address the specific health determinants, needs, and outcomes of gay, bisexual, trans, and queer (GBTQ) men, AHS has engaged the Edmonton Men's Health Collective (EMHC) to provide expertise, and to conduct community consultation.

Methodology: An online survey of GBTQ men (n=368) in Alberta, Canada was conducted in February of 2017 using social media as the primary means of promotion. Frequencies were calculated using SAS programming. Survey topics included: sexual health knowledge and education, condom usage, substance use, injection drug use, partner notification, HIV and STI testing and treatment, post-exposure prophylaxis (PEP), and HIV care. Responses from females (cisgender and transgender, n=5) were excluded.

Results: 45.4% (n=167) indicated 'testing hours' as the most important factor relative to STI and HIV testing access, with 'inconvenient testing hours' being selected most as a barrier to accessing both STI testing (55.4%, n=204) and HIV testing (52.4%, n=193); 'weekday evenings' (79.3%, n=292) and 'weekend afternoons' (74.2%, n=273) were most preferred to access testing. 83.4% (n=307) expressed likelihood to access rapid HIV testing if made available; 79.3% (n=292%) also selected standard HIV and STI testing. If made available, STI clinics (90.2%, n=332) and LGBTQ specialized clinics (85.3%, n=314) were most frequently chosen to access testing. Among those who have a family doctor (n=224), 81.7% (n=183) indicated that they had come out to their provider.

Conclusions: Alberta's current HIV and STI testing framework is not responsive to the preferences and primary barriers experienced by GBTQ men; continued consultation and collaboration with the community must persist in order to address gaps in care and improve access to HIV and STI testing.

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Title: Brain Mechanisms of Associative Memory Deficits in Parkinson's Disease without Dementia

Authors: Alrazi Tazrina*, Auclair-Ouellet, Kibreab, Hanganu, Kathol, Provost, Sarna, Hammer, Derwent, Ramezani, Cheetham, Martino, Furtado, Monchi

Background: The early presence of memory deficits in PD might be a predictor of dementia. Yet, the neural origins of memory, and particularly associative memory deficits in PD are not well known. Associative memory is a form of episodic long-term memory that is highly resource-demanding compared to single item memory.

Objective: Characterization of neural mechanisms of associative memory deficits in Parkinson's disease (PD) without dementia (PD-non-Dementia).

Methods: 23 healthy controls (HC), 29 PD-non-Dementia were studied (all ≥60 years). Cognitive status was determined by a comprehensive neuropsychological assessment, and both normal and mild cognitive impairment patients consisted of PD-non-Dementia. Two encoding and two retrieval sessions of a face-scene pair associative memory test were performed in a 3 T MRI scanner, while BOLD (blood oxygen level dependent) fMRI (functional magnetic resonance imaging) T2* weighted images of the brain were acquired. Only correct retrieval answers were analyzed by FSL 5.0 using general linear model, z=2.3 threshold was applied, and $p \leq 0.05$ was considered significant. Three trial types familiar pair (hit), rearranged familiar pair (familiar lure), and never seen pair (control lure) were contrasted for characterizing neuronal mechanism between these two groups.

Results: Reduced activation of regular retrieval network (inferior frontal gyrus, precentral gyrus, post central gyrus, inferior parietal lobule) was observed in PD-non-Dementia compared to HC while correctly rejecting familiar lure over control lure. PD-non-Dementia showed reduced activation compared to HC in primary motor and sensory regions while correctly rejecting familiar lure over hit. PD-non-Dementia showed reduced activation compared to HC in inferior frontal gyrus and post central gyrus while correctly confirming hit over control lure.

Conclusions: Overall, reduced activation of default regions for associative memory (inferior frontal gyrus, precentral gyrus, post central gyrus, inferior parietal lobule) was observed in PD-non-Dementia for familiar pair (hit) and familiar lure over control lure, with more regions affected for familiar lure. Never seen pair (control lure) is just rejection, whereas rearranged familiar pair (familiar lure) is a more taxing associative memory for neuronal networks in PD compared to familiar pair.

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Title: Alberta

Authors: Michael Taylor*, W. Donald Buie, Todd McMullen

Background: A multi-disciplinary clinical pathway with discipline-specific goals was created. Following baseline data collection, stakeholders from radiology, oncology, surgery, and pathology were engaged to standardize care and inform reporting schemas. Education days with international experts were held to reinforce best practice, and synoptic reporting templates were developed.

Methodology: Quality indicators determining best practice adherence and oncologic outcomes were collated and reported. Pathology reports were used as quality assurance for surgical technique and MRI-staging. The appropriate use of neoadjuvant therapy was correlated with collaborative staging. These measures were then used to provide ongoing individualized audit/feedback reports to practitioners through a secure web-based portal; reports contain individual physician data and aggregate provincial data for each indicator to inform and improve practice.

Results: Compared to baseline (2010-2013), by 2015 there was a 14% increase in the use of preoperative staging MRI, provincially. Reporting also improved for essential elements on rectal staging MRI, including distance to mesorectal fascia (22 to 81%), extramural venous invasion (17 to 70%), relation to anal sphincter (29 to 78%), and relation to peritoneal reflection (6 to 64%). Surgical technique improved with 91% of rectal specimens graded as ‘complete’ or ‘near-complete’ and a margin positivity of 7% on pathology. Nearly all (94%) pathology reports were completed synoptically, with 90% reporting all mandatory data elements.

Conclusion: Implementation of a clinical pathway for rectal cancer has improved uptake of best practice across the clinical continuum; this sustainable multifaceted approach includes education, engagement, feedback reporting, and is easily adaptable to other tumour groups.

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Title: Exploring a Coastal Slum Communities' Access to Health Care in Odisha, India

Authors: *Emily, White BHSc, Health and Society, concentration in Psychology

Background: The burden of disease is disproportionately high amongst slum dwellers as a result of poor quality housing, overcrowding, and inadequate waste disposal. Infectious diseases, such as tuberculosis, cholera and diarrhoeal diseases are spread easily in slum populations with poor water sanitation. There are several challenges that coastal slum dwellers experience when accessing health care, such as the inability to afford high quality care and commuting long distances. Furthermore, barriers to health care exacerbate health inequalities and negatively impact the lives of slum dwellers by worsening health outcomes.

Objectives:

1) To determine the unique barriers that small, coastal slum communities' experience when accessing health care.

2) To engage with community members to understand the local knowledge and perspective on health and health care.

Methods: Data collection occurred through four focus group interviews, approximately 1-hour in length, in a slum community in Gopalpur, Odisha (N=1886). Participants were recruited through snowball and convenience sampling. Approximately 10-15 slum dwellers were present during each focus group.

Results: The main challenges that slum community members experience when accessing health care are: (1) low performing health care workers, (2) lack of essential medicines in public health care dispensaries, (3) unaffordable private health care and (4) lack of emergency services. The combination of these factors results in the majority of community members seeking health care in a neighbouring city. The interview discussions also revealed that many community members have reoccurring health issues because they are not informed by health care professionals on why they incurred a given health problem. Similarly, several participants said that diseases spread quickly around households due to overcrowding and their lack of awareness on how diseases transmit.

Conclusion: Slum dwellers experience unique barriers when accessing health care due to their physical and social conditions. As a result, negative health outcomes place a huge burden on slum populations as diseases and illnesses are harder to prevent and treat. The identification of barriers to health care will help inform relevant stakeholders on how to improve the quality, accessibility and effectiveness of Odisha's public health care system.

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Title: The role of Muslim religious leaders in promoting cancer screening among female Muslim South Asian immigrants

Authors:
Ayisha Khalid*; Mahzabin Ferdous, MBBS; Saad Alvi; Nahid Rumana, MBBS, MS, PhD; Tanvir Chowdhury Turin, MBBS, MS, PhD

Background: Cancer is the leading cause of morbidity and mortality in Canada. Cancer screening involves the use of simple tests across a population to identify warning signs before any symptoms appear, and can prevent up to 90% of cases. Yet immigrants, who make up one-fifth of Canada's population, remain half as likely to be screened compared to non-immigrants. Furthermore, among immigrant groups, Muslim South Asian women have the lowest rates of cancer screening. Religion and culture are recognized as barriers to screening for this population. Despite Muslim religious leaders being key influencers for congregants, there exists a gap in exploring strategies that involve their help to improve screening rates.

Objective: The purpose of this study is to explore the role Muslim religious leaders can play in promoting cancer screening among female Muslim South Asian immigrants.

Methods: Semi-structured interviews will be conducted with eligible Muslim religious leaders.

The participants will be contacted through Muslim organizations in Calgary. Questions will assess religious leaders' knowledge, attitudes, and practices regarding cancer, cancer screening, and religio-cultural barriers to screening. This qualitative data will be analyzed using thematic analysis.

Results: Although this study is in progress, we anticipate the interviews will inform us of Muslim religious leaders' knowledge and attitudes about cancer, cancer screening, and religio-cultural barriers to screening. These results will allow us to assess how Muslim religious leaders currently influence healthcare practices, like cancer screening, and initiate discussion on their potential role to help improve screening rates by overcoming religio-cultural barriers. This study will also be an engagement exercise between religious leaders and health research academics to accomplish a meaningful engagement strategy. Having the religious leaders as partners will be very important for health promotion.

Conclusions: This study will supplement an area of limited research for a vulnerable population in Canada. Currently, Muslim immigrant South Asian women have lower cancer screening rates than other groups, which means they are not taking full advantage of the Canadian healthcare system. We will identify Muslim religious leaders' role in addressing religious and cultural differences that can be barriers to preventative healthcare for female Muslim South Asian immigrants.

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Title: Opinion Mining Through Online Crowd-Sourcing On Barriers to Primary Healthcare Access Faced by Bangladeshi-Canadian Immigrants

Authors: Sarika Haque*; Mahzabin Ferdous, MBBS; Ruksana Rashid, MBBS; Mohammad Lasker, MBBS; Nafiza Rahman, MSc; Tanmoy Newaz; Mohammad Chowdhury, MSc; Fahmida Yeasmin, MSc; Nahid Rumana, MBBS, MS, PhD; Tanvir Chowdhury Turin, MBBS, MS, PhD

Background: More than one in five people in Canada are immigrants. However, their health related issues occasionally differ from long-term residents because of differing socio-demographic factors. Immigrants have higher odds of reporting difficulty accessing healthcare services in Canada. A number of issues, including cultural and language differences, can contribute to underutilization or poor access of health services. The impacts of these issues pose barriers between immigrants and the healthcare system. Since community-based primary care is a gateway to the healthcare system, it is crucial to understand the barriers immigrant communities face in accessing primary care, in order to work towards solutions.

Objective: The purpose of this study is to gather opinions of Bangladeshi-Canadian immigrants regarding the healthcare barriers they face, as part of a community-engaged approach towards identifying research priorities.

Methods: Opinion mining will be conducted through crowd-sourcing. Crowd-sourcing is an emerging information obtaining method that has the potential to gather opinions using online/social media platforms. An online survey has been created through Qualtrics, regarding the various barriers to primary healthcare access that were identified from the past environmental scan conducted by the Immigrant and Refugee Interest Group of the Cumming School of Medicine. We intend to post the link to the survey on countrywide social media pages of Bangladeshi-Canadian organizations, in order to receive feedback from our target audience. Email invitations will also be sent to the Bangladeshi-Canadian organizations and community members will be requested to further disseminate the survey invitation through their channels.

Results: While this study is a work in progress, we anticipate that results of this survey will give us insight on the barriers to primary healthcare access nationwide Bangladeshi-Canadian immigrants feel most affected by.

Conclusions: With further understanding of healthcare barriers, we anticipate that this research will serve as a gateway to explore methods of mitigating barriers to primary healthcare access amongst various immigrant groups in Canada. The results will derive community identified priorities which will be instrumental in building a program of research which is community informed. We intend for this study to supplement additional research in the area of immigrant and refugee health.

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Title: A Comparative Study to Analyze RNA-sequencing Data

Authors: Tahsin Ferdous; Dr. Mohammad Ohid Ullah

Background: RNA sequencing is becoming an influential process for transcriptome analyses by achieving an increasing popularity over conventional microarrays that will ultimately make microarrays extinct for gene expression analyses. Advancement in the next generation sequencing technology, RNA-sequencing (RNA-seq) is now making it possible to run tens of samples in a profitable way. Various methods have been established by the time and improved regularly to analyze RNA-seq data. It is very important to employ suitable method for identifying differentially expressed genes to avoid erroneous results. A destructive result can be occurred in the end of an analysis only due to a single error. So it is essential to monitor the performance of statistical methods. For this reason we decided to make a comparative study between the two most widely used packages of R software to analyze RNA-seq data.

Objectives: The main purpose of this study was to be introduced with the arena of RNA sequencing analysis and compare the two most extensively used R packages in RNA-seq.

Methods: The data used in this study is a matrix of counts obtained for three thousand small RNA loci from a set of Arabidopsis grafting experiments. We used two statistical software packages edgeR and DESeq to evaluate their capability of identifying differentially expressed genes.

Results: In this study, we performed a comparison of the two methods by using simple algorithm. We chose genes as differentially expressed from each of the method on the basis of adjusted p-value with a threshold of 0.05 (correcting false discovery rate). We observed that edgeR provided more significantly differentially expressed genes than DESeq.

Conclusion: Altogether, we conclude that edgeR is comparatively better than DESeq for differential expression analysis at the expense of probably bringing more false positives.

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Title: Developing a survey to understand reasons for partial routine immunization in children aged 0-24 months

Authors: Tejeswin Sharma, BHSc, MPH (c); Sofiya Manji, BSc, MPH; Vineet Saini, DVM, PhD

Background: Successful implementation of vaccine programs has resulted in significantly reducing the social and economic burden of infectious diseases such as smallpox, measles, and polio. Despite their success, immunization rates have been dropping and this has led to the reemergence of some vaccine-preventable diseases. While previous studies have provided an insight into the reasons for complete refusal of vaccines, the information specific to partial immunization is limited. We define partial immunization as the selective refusal of specific vaccines and/or missing of one or more doses of a multi-dose vaccine by 24 months of age

Objective: Identify barriers to complete vaccination and develop a survey to understand reasons for partial immunization by 24 months of age

Methods: A narrative review was conducted to identify studies that provided information regarding under-immunization or selective refusal of vaccines. A systematic approach was used for the review and a search strategy was developed. Relevant papers were selected using a pre-determined inclusion/exclusion criteria.

Results: The search strategy resulted in a total of 116 research articles. Sixty articles were excluded on the basis of title and abstract screening, and 22 were excluded following the full text review. Themes identified in the included papers (n=34) were split between selective or incomplete vaccinations, and further divided into demographic information, ‘knowledge, attitudes, and beliefs (KABs)’ about vaccination, and system barriers. We noted key associations between incomplete vaccinations and system barriers like administrative problems, access to clinics, and lack of reminders or awareness. Contrarily, KABs about side effects, and lack of necessity of vaccines were more common amongst selective refusals. We identified some gaps in information, e.g. limited information regarding differences between selective and incomplete immunization or the association between the two was unavailable.

Conclusions: Partial vaccination is an important public health concern but, unlike complete refusal of the vaccines, we do not fully understand why parents refuse certain vaccines or fail to complete the series of a vaccine. The results of our literature review informed the creation of the survey that can address the gaps in the literature and provide a better understanding of reasons for partial vaccinations.

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Title: Development of KidsPRO, An Electronic Tool for Integration of Patient-reported Outcomes in Pediatric Asthma Care: Project Protocol

Authors: Sumedh Bele* MBBS, MPH; David Johnson MD; Maria Santana MPharm, MRPharmS, PhD

Background: Integration of Patient-reported Outcomes (PROs) measures in routine clinical care includes patient perspectives in decision making about their own care, and it has shown to improve patient outcomes and reduce healthcare utilization.

The overall objective of this project is to integrate PROs in routine clinical care of children with asthma. Asthma is the most common chronic disease among children. To facilitate this integration, the KidsPRO system will be used. KidsPRO is an innovative healthcare information solution. Specific objectives include: 1) systematic review of PROs use in paediatric care; 2) working with patients and family caregiver to explore the acceptability of the study; 3) examine feasibility on the KidsPRO implementation.

Methods: The first step of this multi-phase study, a systematic review is underway to consolidate evidence for the use of PROs for chronic diseases among pediatric population. The measurement properties of the PROs identified in the systematic review will be assessed using the EMPRO (Evaluating Measures of Patient-Reported Outcomes) tool. Simultaneously, a group of patient-partners is being established to co-design KidsPRO. Four focus groups will be conducted with pediatric patients attending asthma out-patient clinic and their caregivers, to elicit symptoms and other factors that impact patients' lives. Evidence-informed PRO measures will be mapped and ranked based on the top 10 priority themes that emerge from focus groups and ranking exercise. During the second phase, KidsPRO and two training modules will be developed in collaboration with patient-partner groups, healthcare providers and our research team members, by our business partner (Cambian Inc.). Finally, The Theoretical Domain Framework (TDF) guided qualitative descriptive design will be employed to identify stakeholder's perceived barriers and enablers to the implementation of proposed KidsPRO platform. Feasibility of using KidsPRO will be assessed during a pilot study, assessing barriers and facilitators to implementation. The study includes 100 patients, that will be recruited from the out-patient asthma clinics at the Alberta Children Hospital.

Discussion: This is the first study in Canada to inform PRO integration in pediatric asthma care. Our findings will shed light on how the integrating PROs enhance the quality of care for pediatric asthmatic patients.

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Title: A Systematic Review of the Quality of Life for Families Supporting a Child Consuming the Ketogenic Diet for Seizure Reduction

Authors: Keira Poelzer RN BN, Philip Woods* RN BN, Mia Maris Ortiz RN BN, Ryan Bang RN BN, Cynthia Mannion RN PhD, Twyla Ens RN MN

Background: The Ketogenic Diet (KD) is a non-pharmacological treatment approach to reducing intractable epilepsy with moderate to high success in pediatric patients. It is initiated in hospital and continued at home post discharge. Parents must strictly enforce the KD for the child to ensure the ratio of high fat to low carbohydrate/protein required to maintain metabolic ketosis. Little is known about the quality of life (QoL) for families maintaining this diet. We conducted a systematic review to examine the QoL for families with a child using the KD for reduction of epileptic seizures.

Methods: A systematic review of the literature was conducted from 2007-2014 using key terms and combinations of: 'epilepsy', 'ketogenic diet', 'children', 'family, and 'quality of life'. We accessed PubMed (n=218), CINAHL (n=352), Medline (n=33) and PsycINFO (n=25). After removing duplicates (n=30) we screened (n=598) by title and abstract and found (n=30) article abstracts relevant to our research query. Articles outside the year range (n=8) were excluded along with full-text articles lacking relevance (n=4). Therefore, full text articles (n=18) were included in our systematic review.

Results: QoL was seldom reported. Recurring themes included the effectiveness of the KD as a treatment for uncontrolled refractory seizures, nutrition, child growth and development, and psychosocial impact. Micronutrient deficiencies accompanied the KD, and children failed to reach growth standards for their age. Catch up growth occurred after termination of the diet. The dominant psychological factors included improved sleep quality and increased cognitive functioning which continued post KD treatment. None of the studies indicated any specific counselling offered to families on expected outcomes. Non-adherence and drop-out rates were frequent but not well documented.

Conclusion: The KD decreases seizures and offers positive psychosocial outcomes that support the feasibility of using it as a first or second line treatment for pediatric epilepsy. The effect of the KD on QoL is unknown but reduction in seizure activity addresses a primary parental concern.

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Title: Mental Health Care for Pediatric Presentations to Emergency Departments: A scoping review

Authors: Gaya Narendran, Savithiri Ratnapalan

Background: Mental health diagnoses in children have been steadily increasing. Approximately 13% to 20% of children suffer from a mental illness every year, and there is an overall prevalence of approximately 10%. Consequently, there is an increase in pediatric mental health (PMH) presentations in the urgent care settings in North America as hospital emergency departments (ED) are increasingly becoming the first point of contact for PMH concerns. However, it has also been reported that EDs are ill-equipped to meet this demand. Thus, it is imperative to investigate the nature of the obstacles and opportunities for effective care of these children in the hospital ED.

Objectives: To review recent literature to identify the barriers to providing optimal care of pediatric mental health patients presented to an ED.

Methods: Literature published since 2007 that appraised ED treatment of PMH patients from January 2007 to March 2017 was evaluated.

Results: Of the nine studies included, five studies reported on length of stay (LOS), two reported on laboratory investigations, two evaluated the effects of a program targeting increased psychiatric resources in the ED, one evaluated rates of psychiatric interventions, one examined the attitudes of ED staff, two assessed geographical distribution and three examined rates of admission. Our observations of the data suggest that this population faces definable barriers to receiving optimal care when presenting to the ED. Most significant among these is the extended LOS that is a consequence of ineffectual laboratory studies and delay in the transfer of care. However, it was also found that the addition of psychiatry and mental health resources as part of the ED care reduces the duration of the stay. Review of the literature also indicates that a lesser proportion of children labelled as suicidal received psychiatric intervention in the ED compared to those without a suicidal diagnosis, suggesting a critical barrier in the care of this population.

Conclusions: The evaluation of the recent literature identifies distinct barriers to providing optimal care of children who present with a mental health concern to an emergency care centre. The timely inclusion of mental health or psychiatric care providers, may in part, lessen this impact.

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Title: Cost analysis of a coordinated care intervention for vulnerable populations with complex needs.

Authors: Grace Kennedy*, BHSc student; Vishva Danthurebandara PhD; Alicia Polachek, MA; Jacob Bailey, BHSc; Gabriel Fabreau, MD MPH; Paul Ronksley, PhD; Tyler Williamson, PhD; Kerry McBrien, MD MPH.

Background: Individuals experiencing homelessness frequently have poorer health outcomes, higher acute care utilization, and more barriers to accessing primary care and social services relative to the general population. Connect to Care (C2C) is a multidisciplinary team of nurses and health navigators who bridge hospital and community care to help patients access, navigate, and coordinate health care services. Previous research on case management strategies targeted at frequent users of healthcare services shows that these approaches can help patients access appropriate care, potentially reducing acute care utilization and healthcare costs.

Objective: To evaluate the impact of the C2C program on acute care utilization and healthcare costs.

Methods: A cost analysis will determine the change in cost associated with patients' acute care utilization 1 year before and after enrolling in C2C. Data were drawn from patient administrative health records of vulnerably housed C2C clients with >3 emergency visits or >2 hospital admissions in the previous year. Estimates of healthcare and operational costs will be assigned to the data and analyzed for changes. Overall and categorical average cost per patient will then be calculated. Net cost savings of the C2C program will be evaluated by comparing operational costs to healthcare costs before and after program entry.

Results: Of 355 referred patients to date, 73% are male with an average age of 46. Before program entry, 70% were unhoused, 69% did not have a primary care provider, and 58% had no medical insurance. After working with C2C 42% of these clients became housed, 42% were connected with primary care providers, and 54% obtained medication coverage. Administrative records for C2C patients will be used for the ongoing cost analysis. We hypothesize that the reduction in costs from decreased acute care utilization will be greater than the operational costs of the program, yielding net savings.

Conclusions: C2C's efforts in coordinating health and social services for its patients is expected to translate into economic benefit. We believe that the cost analysis will confirm the anticipated costs savings and assist in policy decisions regarding the future directions of this or other similar interventions.

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Title: Perspectives of Primary Care Providers on Caring for Youth with Chronic Health Conditions Transitioning into Adult Care: Preliminary Findings

Authors: Jessica Li*; Kyleigh Schraeder, PhD, R. Psych; Kerry McBrien, MD, MPH; Xing Sun, BSc; Susan Samuel, MD, MSc; Gina Dimitropoulos, PhD

Background: Most youth with chronic physical and/or mental health conditions must undergo the complex process of transitioning from pediatric to adult care. Barriers to transition can lead to uncoordinated care, poor health outcomes, or frequent emergency room visits. Primary health care providers, such as family physicians and social workers, can potentially improve the transition process for youth. This is because these providers typically care for patients from childhood to adulthood. Existing research has yet to highlight the role of primary health care providers in caring for transition-age youth. Current transition interventions have also not focused on primary health care. In Alberta, Primary Care Networks (PCNs), or groups of multidisciplinary primary health care providers, may be ideal settings for managing youth with chronic conditions and should be examined.

Objective: The qualitative project will gain perspectives, from family physicians and multidisciplinary primary care providers, regarding potential barriers and facilitators to primary health care engagement during the transition to adult care for youth with chronic conditions.

Methods: About 20 primary care providers, with direct experience caring for youth with chronic conditions, are being recruited from PCNs throughout Calgary to participate in 30-minute semi-structured interviews in-person or over the phone. Providers will be asked about their experiences caring for youth with chronic needs throughout the transition process. We will also inquire about how care is different for this population compared to an older population, and any additional resources providers need to support these youth in a primary care setting. Interviews will be transcribed verbatim. We will utilize thematic analysis, with NVivo software, to elicit main and sub-themes.

Results: 6 participants have been recruited thus far to be interviewed, and transcription and thematic coding are underway. Recruitment and interviews will continue throughout July and August. Preliminary results are expected in August 2018 and will be presented at the conference.

Conclusions: Within Alberta's PCNs and other health systems, findings will contribute to the development of primary health care engagement guidelines that optimize the transition process for youth and their families.

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Title: Active Transportation to School among Children - Driver and Pedestrian Behaviour

Authors: Jeff Mclean, Tate Hubka, Alison Macpherson, Andrew Howard, Pamela Fuselli, Gavin McCormack, Marie-Soleil Cloutier, Meghan Winters, Linda Rothman, Brent Hagel

Background: Using active transportation to school, such as walking and bicycling, is an important source of physical activity for children. Active transportation can promote a healthier, safer community through reduced emissions and safer roads due to decreased traffic, and may help develop student competencies and strengthen community. Despite the benefits, in the past 50 years the proportion of students using active transportation to school has been steadily decreasing. Decreases in children and parent's perceived safety may result from risky driver and pedestrian behaviours such as u-turns or jaywalking during school drop-off times.

Objectives: To explore the relationship between dangerous driver and pedestrian behaviours and elementary school active transportation.

Methods: Using a cross-sectional approach, regular program elementary schools in Calgary were selected for observation between May and June 2018. Schools with specialized curricula such as French immersion were excluded. Trained observers counted students arriving to school by various transportation modes once at each school. These included walking, cycling, riding scooters, or arriving by car. Students arriving by school bus were excluded. The observation period began 20 minutes before scheduled entry time and ended five minutes after. During observational counts, any dangerous pedestrian and driver behaviours were also recorded.

Results: A total of 125 schools were observed. Preliminary results suggest schools with a higher proportion of students using AT had fewer dangerous driving behaviours. On average, 60% of children arrive by active transportation with the majority (56%) of children walking. Increased dangerous driver and pedestrian behaviours such as u-turning and double parking occurred at schools that had relatively higher student enrollment. Schools with adult and child crossing guards present were less likely to have dangerous driver and pedestrian behaviours. Additionally, schools with nearby alternative parking lots had fewer dangerous pedestrian behaviours.

Conclusions: The proportion of children using active transportation to school may influence the presence of dangerous driver behaviour.

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Title: The Association Between the Built Environment and Child Active Transportation to School in Calgary

Authors: Lea Caplan*;Tate Hubka;Alison Macpherson; Andrew Howard; Pamela Fuselli; Gavin McCormack; Alberto Nettel-Aguirre; Marie-Soleil Cloutier; Meghan Winters; Linda Rothman; Brent Hagel

Background: Only 10% of Canadian children are achieving the required amount of daily physical activity recommended by the Government of Canada (2013). Children can increase their exercise intake by using active transportation methods such as walking or bicycling. As children use active transportation to commute to school, they interact with the built environment, or human-made infrastructure, such as roads, sidewalks, and traffic calming devices. However, children still face many hazards when commuting to school, such as the absence of safe sidewalks and crosswalks.

Objective: The purpose of this study is to determine the relationship between child active transportation, and the characteristics of the built environment surrounding elementary schools in Calgary.

Methods: This cross-sectional study was conducted between May 1st and June 28th, 2018. We observed child active transportation at Calgary elementary schools during the morning commute to school. Each school was observed once. Trained observers counted the number of children using various modes of transportation in the 20 minutes before, and five minutes after morning entry bell time. Observers audited the built environment features at the school, and on the street in front of the school. Data regarding sidewalks, roads, parking lots, signage, and school bicycle racks was collected. Data will be analyzed using descriptive statistics.

Results: In total, 125 schools were observed. Preliminary analyses indicate that 55% of observed students were driven to school, 34% walked, 9% cycled, and 2% scootered. Mountable curb and bike rack presence in front of the school seem to suggest higher counts of bicycling to school.

Conclusions: Preliminary analyses may imply that there is a relationship between built environment infrastructure and active transportation proportions in children commuting to elementary school in Calgary. This research may inform the modification of the built environment, and promote active transportation in children commuting to school.

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Title: Protocol for the EMPOWERED Study: Evaluating a Mindfulness-based Program for Optimizing Weight-loss and Reducing Eating Disorder Symptoms

Authors: Ashley N. Felske*, Tamara M. Williamson, BSc., Kirsti I. Toivonen, MSc., Joshua A. Rash, PhD., Jo Ann Telfer, PhD., & Tavis S. Campbell, PhD.

Background: Obesity is a growing public health crisis affecting 1-in-3 Albertans. Bariatric (weight-loss) surgery is the most effective treatment for obesity and associated comorbidities (e.g., diabetes), yet 1-in-5 patients fail to reach target weight-goals. Eating disorder (ED) symptoms (binge-eating [BE], emotional-eating [EE], grazing, and addictive-like eating) are prevalent among bariatric surgery patients, and may predict suboptimal post-surgery outcomes (decreased weight-loss, psychological distress). Interventions for ED symptoms typically consist of cognitive-behavioral and mindfulness-based approaches, and reduce BE and EE. However, few studies have described and examined the impact of interventions for ED symptoms among surgical patients. Further, there is a need for research examining the impact of these interventions on motivational variables (i.e., mindful eating, eating self-efficacy, and emotion regulation [ER]) known to influence eating behavior.

Objective: 1) To evaluate the impact of a mindfulness-based intervention (MBI) on mindful eating, eating self-efficacy and ER; and 2) to explore whether improved mindfulness, self-efficacy, and ER translates to improvements in ED symptoms among bariatric surgery candidates. This observational study aims to provide proof-of-concept data in support of a subsequent RCT examining MBI-efficacy relative to waitlisted controls.

Methods: Pre-surgical adults (>18 years) with obesity and ED symptoms referred to the MBI will be recruited from a local specialty clinic. The MBI is delivered prior to surgery and consists of four 2-hour group-based classes providing evidence-based cognitive, behavioral, and mindfulness techniques to reduce ED symptomatology. Patients will be administered validated questionnaires measuring motivational variables (mindful eating, eating self-efficacy, and ER), ED symptoms (BE, EE, addictive-like eating, and grazing), and relevant covariates (e.g., BMI, depression) at baseline (pre-MBI; T1), post-MBI (T2) and 12-weeks later (T3).

Results: It is hypothesized that: 1) mindful eating, eating self-efficacy and ER will improve from pre- to post-MBI, and improvements will be maintained at 12-weeks, and; 2) increases in mindfulness, eating self-efficacy and emotion regulation will be associated with decreased ED symptoms.

Conclusions: The results of this study will inform future efforts to optimize interventions for patients with ED symptoms seeking bariatric surgery. Improving eating behaviors prior to surgery will promote better post-surgery outcomes, including improved weight-loss and quality-of-life for patients.

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Title: Mapping the Unique Social Determinants of Health in Canadian Immigrants: A Systemic Review

Authors: Iffat Naeem, BSc; Tanvir Chowdhury Turin, MBBS, MSc, PhD

Background: Canada is becoming an increasingly multicultural society, welcoming 250 000 immigrants each year, contributing to 20% of the population. Immigrant status and ethnicity are important determinants that operate alongside other social determinants of health (SDOH) and contribute to disparities in unmet needs, health care access, and vulnerability to illness. SDOH include macrosocial factors, such as wealth distribution, education, and employment opportunities within a given area. Microsocial factors include an individual's social status and interactions between their home and neighborhood environments.

Objectives: The purpose of this paper is to map the SODH in Immigrant population using the research that has been conducted so far among the immigrant populations in Canada.

Methods: We conducted a systemic review to find papers assessing SDOH in immigrant Canadians, as compared to native born, within the previous 5 years. Our search strategy identified 578 articles, of which 57 were included in the final analysis.

Results: Immigrants in Canada face a unique set of SDOH that determine various health outcomes, including self-rated health, barriers to healthcare use, child and maternal health outcomes, incidence and prevalence of disease, health risk factors, and mortality. Income and education, as social determinants, were the most widely studied and interacted in unique ways with immigrant status to cause health disparities. Further, social support proved to be important in Canadian immigrants, especially for child and maternal health outcomes. Barriers to healthcare access, specifically inequitable provider care is an important determinant, especially in screening services. The review also points to the lack of integration of immigrant perception of health.

Conclusion: This review provides evidence for unique interactions of SDOH in immigrant populations. Studies show that income and education, as social determinants, operate differently in conjunction with immigrant status, and further research is needed to understand their intersectional affects. Social support and barriers in accessing health care in immigrants is an important intervention area to ensure equitable healthcare in Canada.

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Title: Facility-reported maternal care-seeking in a rural Tanzanian district pre/post introduction of volunteer community health workers

Authors: Anna Widomska*, BHSc, University of Calgary; Dismas Matovelo, MD, CUHAS-Bugando Tanzania; Girles Shabani, CUHAS Tanzania; Alberto Nettel-Aguirre, University of Calgary; Jenn Brenner, MD, University of Calgary

Background: Tanzania's Lake Zone has very high rates of maternal and newborn mortality. Increasing Antenatal Care (ANC) attendance, health facility deliveries, and postnatal care (PNC) can help improve maternal and newborn health outcomes. Implementation of the Mama na Mtoto Maternal Newborn and Child Health (MNCH) project involved district-wide training of high-density (1 per hamlet) volunteer MNCH-focused Community Health Workers (CHWs) in Misungwi district in late 2017. Anecdotal field reports suggest increased care-seeking since CHW initiation.

Objective: To assess trends in facility-based ANC, delivery, and PNC pre and post CHW intervention in Misungwi district.

Methods: A retrospective review of facility-based ANC, delivery, and PNC according to Health Management Information System (HMIS) records was conducted one-year post initiation of training. Each district health facility who supervised CHWs (n=47) was visited by a trained research assistant who reviewed relevant HMIS registers, recording reported ANC, delivery, and PNC visits. An excel database was developed de novo to compile district data. Analysis will assess frequency of visits pre and post training of the CHW group assigned to each facility accounting for staggered introduction of CHW training. Combined data will look for emerging pre/post CHW temporal trends.

Results: HMIS data collection is underway; analysis will occur in late July 2018. Tables will demonstrate pre/post data and graphs will be used to illustrate pre/post CHW training trends.

Conclusions: This study helps the intervention team, district, and national level policymakers to better understand if and how chosen MNCH care-seeking indicators are changing over time post CHW introduction. These results will be important for interpretation and attribution of future district coverage survey care-seeking data (compared with other district-wide initiatives such as results-based financing, which has occurred over a similar general timeframe).

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Title: Achieving optimal astrocyte gene transfection using in-utero electroporation

Authors: Santhosh, Nathan*; Adam, Institoris, MD, PhD; Jessica, Rosin, PhD; Deborah, Kurrasch, PhD; Grant, Gordon, PhD

Background: Astrocytes are the most abundant cell type in the central nervous system, responsible for the metabolic support of neurons, regulation of neuronal communication, removal of waste products, local brain blood flow control and several neurological diseases. Astrocyte gene manipulation can allow for targeted studies of astrocyte function. Several physiological functions in activated astrocytes are linked to the elevation of intracellular Ca2+ concentration.

Previously, we aimed to induce the expression of a genetically encoded fluorescent Ca2+ indicator (GCaMP6) to detect astrocyte activity by iontoporating a DNA plasmid construct containing an astrocyte-specific gene promoter gfaABC1D in the somatosensory cortex of P1 mice. Our approach yielded GCaMP6 expression in astrocyte progenitor cells and very sparsely in astrocytes. Here, using in-utero electroporation (IUE) on E13 to E17 embryonic mice, we aim to achieve widespread transfection of cortical astrocytes using the PiggyBac (PB) transposon system to express astrocyte-specific GCaMP6. We hypothesize, that plasmid IUE with the PB transposon system would transfect not only progenitor cells, but all derived daughter astrocytes, making this a useful tool to achieve a high rate of GCaMP6 expression. The IUE method would be validated by the electroporation of a plasmid containing a general gene promoter CAG targeting all cell types in the brain. After the birth and maturation of the electroporated mice, we will evaluate CAG-driven general or gfaABC1D-driven astrocytic GCaMP6 expression using two-photon fluorescent microscopy on fixed brain slices. If our method proves successful, the versatility of the PB transposon system to insert and remove genes of any size, footprint-free, over a large population of cells could allow us to design novel experimental paradigms to study astrocyte function in health and disease.

Objectives: The objective of this experiment is to achieve widespread cortical somatosensory astrocyte transfection using IUE in embryonic mice pups via the PB transposon system.

Methods: The methods used involve performing IUE using the PB transposon system to achieve widespread expression of GCaMP6 from astrocytes.

Results: This project is a work in progress. Results will be available at a later date.

Conclusion: The conclusion will be available at a later date once results are obtained.

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Title: Cannabis use in pediatric cancer patients: What are they reading? A review of the online literature

Authors: Matthew, Yeung*, BHSc; Lucie, Lafay-Cousin, M.D.; Fiona, Schulte, Ph.D

Background: Canada will soon be the first G7 country to legalize marijuana. In light of accessibility and legal changes, healthcare professionals must understand information informing cannabis use. Information is particularly important for pediatric cancer patients and survivors, who, due to age, may have unique reactions to cannabis. One key source of information is online literature. We aim to be the first to evaluate online content regarding cannabis for pediatric cancer patients. Improving physician understanding of patient literature will improve physician-patient relationships.

Objective: What is the reliability and content of online literature about cannabis for pediatric cancer?

Methods: As few literature reviews on unverified online information exist, no standard protocols have been established. A reliability scale was adapted from the Milstein Undergraduate Library, and searches were conducted with specific terms in Google, Yahoo and DuckDuckGo search engines. Searches were done “incognito” to avoid tracking of searches and result alteration. Searches included all online articles publicly available post-2007. Reliability was scaled from 5-30 based on author, publisher, accuracy, time, bibliography, and sponsorship. Thematic analysis is also in-progress using code-clustering.

Results:53 articles were included in the interrater review, and 52 articles were included in thematic analysis. Most authors published acceptably accurate articles, pertinent to today, but lacked medical credentials. Publishers also lacked reliability and bibliographies were inconsistent in quality. Sponsorship conflict was low. The article (news, academic, etc.) and author (journalist, physician, etc.) type were both found to be significant in determining reliability. When one-way ANOVA tests were conducted, $p=0.001$ and $F=4.690$ for article type, and $p=0.016$ and $F=2.815$ for author type. Only 3 articles were coded as anti-cannabis use, yet reliability scoring was found to substantially improve as opinion of cannabis declined ($r=0.649$, $p=0.000$).

Conclusion: Article reliability varied, with both low, middle, and high-quality articles present, though few articles contained specific scientific explanations. Bias was also apparent in searches conducted, with few articles being anti-cannabis. Based on preliminary thematic analysis, many articles focus on how cannabis alleviates chemotherapy and associated pharmaceutical side-effects. There also appears to be focus on potential anti-tumor properties of cannabis, and a lack of discussion surrounding risks.

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Title: The effect of an oral FAAH inhibitor on anxiety-like behaviour in a rat model of colitis

Authors: Vincent Chiang*; Haley Vecchiarelli BA., MSc.; Matthew Hill PhD.

Background: Anxiety are the physiological and behavioral responses towards potentially threatening events. When anxiety becomes pathological when it occurs at frequency and severity that interferes with people's wellbeing, this is the hallmark of anxiety disorders. Colitis is the inflammation of the colon and is a major characteristic of inflammatory bowel diseases. Incidence of both colitis and anxiety disorders are increasing. In addition, anxiety and colitis are highly comorbid. This comorbidity could be due to changes in the endocannabinoid system since it can modulate both the immune and the nervous systems. Fatty acid amide hydrolase (FAAH) is an enzyme that degrades the endocannabinoid ligand anandamide. Our lab has shown that intracerebral infusions of a FAAH inhibitor can improve anxiety symptoms in animals with colitis.

Objective: To test the systemic effects of the FAAH inhibitor, through an oral route, at modulating the immune and anxiety responses within a colitis rat model.

Methods: Colitis was induced in adult male Sprague-Daley rats through an intracolonic administration of 2,4,6,-trinitrobenzenesulfonic acid (TNBS). The FAAH inhibitor (PF-044557845; 1 mg/kg) was mixed in peanut butter vehicle and formed into pellets. Animals were pre-fed with vehicle for 3 days, then colitis was induced. Animals were then handled and given FAAH inhibitor or vehicle daily for 7 days and then subjected to an elevated-plus maze to test anxiety-like behaviour. The colon was macroscopically scored for damage and a section removed for myeloperoxidase testing. The medial prefrontal cortex and amygdala were removed to test for FAAH inhibition.

Results: TNBS had significant effects on body weight and tissue damage scores but there were no attenuating effects from FAAH inhibition. However, there was a trending increase time in open arms and reduction in stretch attend postures with FAAH inhibition, indicating a reduction in anxiety-like behaviours.

Conclusions: FAAH inhibition has the potential to be anxiolytic as shown by a trending increase in open arm time and a significant reduction in stretch attend postures which suggest that FAAH inhibition is reducing risk assessment behaviors. Current work is investigating whether higher doses of the FAAH inhibitor will reduce both inflammation and anxiety.

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Title: Quantification of the motor learning patterns of stroke survivors and healthy age-matched adults

Authors: Justin Tan*; Sean P. Dukelow, Associate Professor, Physical Medicine and Rehabilitation, Department of Clinical Neurosciences, Cumming School of Medicine, Hotchkiss Brain Institute; Tyler Cluff, Assistant professor, Faculty of Kinesiology, Hotchkiss Brain Institute

Background: More than 400,000 Canadians are living with impairments caused by stroke. Many of these individuals participate in rehabilitation to relearn basic motor skills. The basic premise of rehabilitation is that recovery is at least partly mediated by motor (re-)learning. However, many motor learning principles that are applied in clinical settings are based on studies in healthy adults. It is unclear how stroke impacts basic mechanisms that support motor learning. Here we examine how stroke survivors learn to interact with novel force environments during upper limb reaching movements by comparing their learning patterns with healthy age-matched individuals.

Objective: Our aim is to quantify motor learning impairments that stroke patients display during upper limb reaching movements.

Methods: Experiments were performed with a KINARM exoskeleton robot. In Experiment 1, 24 healthy elderly participants (61.21±1.85 years) performed 50 reaching movements between two targets located near the midline of their body. We then introduced novel forces that were perpendicular to the direction of movement that caused systematic movement errors. Participants had to learn to counter the forces to make accurate movements. After participants completed 200 movements, we removed the forces unexpectedly to quantify how participants de-adapted their movements. Participants performed the task twice, once in the presence of velocity-dependent forces and once in the presence of position-dependent forces. In Experiment 2, 12 stroke patients (58.50±2.58 years) performed reaching movements while interacting with the position-dependent forces from Experiment 1.

Results: In Experiment 1, we found healthy individuals displayed similar learning patterns when countering the position and velocity-dependent forces. In Experiment 2, we found stroke patients and healthy individuals encountered similar forces, thus enabling a direct comparison of their learning patterns. Nevertheless, there was a significant reduction in both the overall amount of learning ($p < 0.05$) and rate of learning ($p < 0.05$) in stroke participants compared to healthy adults.

Conclusion: Preliminary findings suggest that stroke patients are impaired in motor learning as evidenced by a reduction in the rate and amount they learned within the same number of reaching movements as healthy individuals.

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Title: Volunteerism for Visible Minority Newcomer Reintegration in Canada: Social Capital Perspective

Authors: Jacky Ka Kei, Liu, Master of Social Work student

Background: In 2015, Canada had the highest percentage of newcomers to their total population, compared to other G8 countries. However, many of newcomers have also faced layers of challenges from employment, health, to access to social services. Previous studies have shown that through community engagement activities such as volunteerism, racialized newcomers would benefit from it with an increase in their employment, sense of belonging, as well as their health statuses.

Objective: Using the social capital theory, this study hopes to see how volunteerism serves as an effective means to facilitate newcomers' reintegration by directly and indirectly improving their employment, sense of belonging, as well as their overall health.

Methods: As the research aims to answer the extent which volunteerism is beneficial to the reintegration of visible minority newcomers in Canada, in terms of their sense of belonging, employment, and health, a quantitative cross-sectional study will be conducted. A dataset with over 3000 participants from Statistics Canada was extracted and analyzed.

Results: Through a mediation model, it was found that volunteerism has a significant positive effect on both newcomers' physical and mental health, and it was mediated by both their employment and sense of belonging.

Conclusions: This study aims to provide a concrete and thorough quantitative investigation on the effectiveness of volunteerism of visible minority newcomer reintegration across Canada in various aspects, namely sense of belonging, employment, and health. Implications for social work practices would lean towards the implementation of voluntary community services by newcomers, as a tool to build their social capital, so as to facilitate the process of reintegration, promote healthy norm of behaviours, and increase community access to services. Related programs and training would be required by social workers and community practitioners in the newcomer serving sector.

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Title: Characterizing Heterogeneity in Clinical Profiles of Adult Epilepsy Patients: An Unsupervised Machine Learning Analysis

Authors: Lifu Zhang; Anita Brobbey; Samuel Wiebe; Colin Josephson; Tolulope Sajobi 2,3

Background: Epilepsy is a chronic neurological condition that affect about 0.4% of the Canadian population. Individuals with epilepsy have varying clinical characteristics which in turns influences their disease trajectories and health outcomes

Objective: This study aims to identify and characterize clusters of epilepsy patients based on their demographic and clinical characteristics in a population of individuals with adult epilepsy.

Methods: Data are from the Calgary Epilepsy Program (CEP), a population-based longitudinal registry of adult epilepsy outpatients treated at the Foothills Medical Center of the University of Calgary. Hierarchical and k-means clustering methods were used identify clusters of epilepsy patients based on patients' demographic and clinical information, including age, sex, seizure frequency, number of anti-epileptic drugs. Gap statistic was used to identify the optimal number of clusters. Chi square test and analysis of variance were used to describe the characteristics of the identified clusters.

Results: Of the 1909 patients included in this analysis, 983(51.5%) are men, 1848(96.8%) are on polytherapy medications, while 122(6.4%) had history of epilepsy surgery. The average age of the participants is 37. 7 years(SD=17.5). Gap statistic based on hierarchical cluster analysis revealed 4 distinct subgroups of individuals in our study cohort. [Other results to be added later].

Conclusion: The characterization of heterogeneity among epilepsy patients holds the promise of designed tailored treatments for subgroups of patients who would benefit most, thereby enhancing precision medicine initiatives in epilepsy.

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Title: A computerized decision support system tool for provider support in diagnosis of pulmonary embolisms.

Authors: Connie Yang*, BMSc; Sydney Haubrich, BSc; Wrechelle Ocampo, MBT; Julie Babione, PhD; Ghazwan Altabbaa, MD; William Ghali, MD.

Background: Diagnostic errors generated from cognitive bias and probability assumptions account for a significant number of adverse events and improper resource utilization in healthcare settings. Due to its non-specific clinical presentation, diagnosis of a pulmonary embolism (PE) is a major challenge. Despite validated diagnostic PE workflows based on pre-test probability assessments, D-dimer blood testing, and imaging scans, suboptimal approaches are frequently taken. To assist healthcare providers with diagnostic test decisions and reduce incidence of errors in practice, a supportive, web-based computerized decision support system (CDSS) tool was designed.

Objectives: The objectives of this project are threefold: 1) to investigate impact of the CDSS in a clinical setting on adherence to evidence-based practice for PE diagnoses, 2) impact of the CDSS on patient-related adverse outcomes following PE diagnosis, and 3) to determine effectiveness and understand how the CDSS influences provider decision-making.

Methods: A mixed-methods study using an observational pre-post design is underway. Pre-study data on currently-used diagnostic pathways, clinical decision-making steps, and patient diagnoses and outcomes, was obtained from two inpatient General Internal Medicine (GIM) medical teaching hospitals to establish pre-intervention baseline adherence. The tool was then deployed for pilot testing prior to the six-month intervention period. Relevant quantitative data will be collected and analyzed from chart reviews, the electronic medical record system, and administrative databases; whereas, qualitative data will be obtained through interviews with providers during the post-intervention period. A third site without access to the tool will serve as a control group, with data collection spanning both pre- and post-intervention periods.

Results: The study is expected to yield results on provider adherence to established PE diagnostic pathways, in addition to the impact of the CDSS on system utilization and quality of patient care.

Conclusions: The CDSS tool aims to optimize flow of data, information, and knowledge to support timely diagnostic decision-making. Findings from this ongoing study will provide further information on the applicability, utility, and influence of CDSSs in clinical contexts.

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Title: Fatigue in Walking for Youth with Spastic Cerebral Palsy

Authors: Kate Nuique*, Gregor Kuntze PhD, Elizabeth G. Condliffe PhD MD, Shane Esau MKin, Leticia Janzen MSc, Laura Brunton PhD PT, Carolyn Emery PhD PT

Background: Cerebral palsy (CP) is the most common cause of physical disability in youth. Many youth with CP are impacted by fatigue during daily activities, such as walking (gait). Important consequences of fatigue include altered movement kinematics and muscle activation. Currently, there is a knowledge gap on the interaction amongst these variables with fatigue during gait for youth with CP.

Objective: Identify changes in gait kinematics and muscle activation that may indicate fatigue for youth with CP compared with age and sex matched typically developing (TD) youth.

Methods: Sixty participants (30 CP, 30 TD) performed a six-minute walk test (6MWT) on a treadmill. Participants walked at a speed that allowed them to walk as far as possible over six minutes. Gait and muscle activation data were collected using a 12-camera reflective marker system (Motion Analysis, USA) and surface electromyography (Biovision, Germany). Data were compared at minute one and minute six of the 6MWT using Visual 3D (C-Motion Inc., USA) and Matlab (MathWorks, USA) to identify changes indicative of fatigue. Kinematic outcomes were step length, cadence, and step width. Muscle activation outcomes included signal amplitude (time domain) and intensity (Wavelet Transform). Statistical analysis was conducted in STATA using matched pairs analysis of changes in outcomes over time (alpha 0.05).

Results: While this project is currently ongoing, anticipated results include gait changes consistent with greater fatigue in the youth with CP. Kinematic results indicating fatigue are smaller step lengths, increased cadence, and widening step width. Electromyography results indicating fatigue are increased muscle activation amplitudes and intensities, which indicates greater muscle recruitment.

Conclusions: This study will provide insight about fatigue during gait in youth with CP by demonstrating changes in gait kinematics and muscle activation over six minutes. The information gathered has the potential to inform rehabilitation interventions and self-management strategies offered to youth with CP with the goal of reducing the impact of fatigue in their daily lives.

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Title: Generating a functional pathway index to quantify corticospinal representations in people with cerebral palsy

Authors: Mica R. Pabia*, Ephrem Zewdie PhD, Liu Shi Gan PhD, Hsing-Ching Kuo MSc PhD, Adam Kirton MSc MD, Elizabeth G. Condliffe PhD MD

Background: Cerebral palsy (CP), caused by a disturbance to the brain in early development, is the most common motor disability in childhood. Neurologically intact populations have contralateral motor pathways between the motor cortex and extremities. However, individuals with CP may also have ipsilateral connections or a combination of both motor pathways. Such pathway organization has been associated with motor function and disability. However, the inability to measure the balance between these pathways in individuals has limited progress.

Objective: This ongoing study aims to create the Functional Pathway Index (FPI) to assess the relationship between motor function and the type and strength of motor pathways in children with CP.

Methods: Participants with CP will be recruited. Transcranial magnetic stimulation (TMS) will be used to map the location and strength of the motor pathway(s) from both hemispheres to their more affected hand. The amplitude of the muscle responses in the hand, called motor evoked potentials (MEPs), will be used to assess the strength of the pathways. The FPI will be created from these results as a weighted average of the pathway strength from the contralateral and ipsilateral pathways. The Melbourne Assessment of Unilateral Hand Function 2, the Assisting Hand Assessment (AHA) and the Box and Block Test will be used to evaluate clinical motor function. Associations between motor function and the FPI will be explored.

Results: An association is expected to be found between the FPI and motor function assessments. Strong, contralateral pathways are expected to be associated with the high levels of function while weak, ipsilateral pathways are expected to be associated with the greatest functional limitations.

Conclusion: The FPI, accounting for both strength and location of the pathway, will be associated with motor function in people with CP. A possible application of the FPI is predicting which treatments certain individuals will respond best to based on their pathways. Thus, the knowledge gained from this study may lead to developing personalized treatment.

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Title: Beyond Academics: Developing Social Emotional Competencies in Non-Traditional Learning Environments

Authors: Elizabeth Bolzon* M.Ed. Interdisciplinary studies, University of Calgary

Background: The topic of mental health as a public health problem is a serious concern, especially amongst youth. As form of prevention, fostering resiliency skills and coping mechanisms through positive social and emotional development can provide children and youth with the ability to cope with difficult situations and stressors, while instilling them with the necessary skills needed to deal with, and move on from those incidents. These skills are actively engaged when learning through play in a social environment such as recreational programming.

Objectives: This study will seek to play an avid role in identifying the strengths and weaknesses of instructing social emotional learning (SEL). The results will be used to make improvements to the instruction of SEL skills in recreational programming in order to better foster resiliency.

Methods: A quantitative approach using a survey method is used to collect data from adult participants acting in an instructional role within a recreational based environment. The use of a likert scale identifies the level of satisfaction being perceived by instructors on their abilities to successfully integrate SEL into their programming. A clear conceptualization of the inquiry, as well as the anticipated methodologies will be described in detail.

Results: The study will present concrete evidence that supports the need to expand SEL instruction beyond the classroom, so that life skills, or rather social and emotional skills, become a priority in the education of children and youth. The results will highlight a need to improve the emotional intelligence of children and youth in order to instill stronger resiliency skills as well as coping mechanisms needed to overcome mental stressors.

Conclusions: Just as physical fitness keeps our bodies healthy and strong, mental fitness promotes positive social emotional growth within society. Finding solutions to better target, promote and successfully instruct social emotional competencies in children and youth can thus encourage healthier and more productive members of a transforming community. This inquiry acts as one step of a larger research proposal for the future collection of data from child participants.

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Title: The temporal association between the built environment and walking: A longitudinal residential relocation study

Authors: Chelsea Christie, MA, BA(Hons)*; Christine Friedenreich, PhD, MSc, BSc (Hons); Jennifer Vena, PhD, BSc (Hons); Gavin McCormack, PhD, MSc, BSc

Background: Low population physical activity rates remains a significant public health concern. Cross-sectional evidence suggests that neighbourhood built characteristics, including pedestrian connectivity, land use mix, residential density, and overall walkability are associated with transportation and recreational walking. The rigour of evidence from cross-sectional studies, however, is limited due to the inability to assess temporality and the potential influence of residential self-selection (individuals choosing to reside in a neighborhood matched to their physical activity preferences). One type of natural experiment, a residential relocation study, addresses these limitations by monitoring people's physical activity before and after they relocate to a different neighbourhood.

Objectives: To examine the extent to which changes in neighbourhood built characteristics, due to residential relocation, impact walking undertaken for different purposes.

Methods: The study uses data from the Alberta's Tomorrow Project (ATP), a province-wide, longitudinal study. Our sample includes all participants who completed surveys at two timepoints. Questionnaire items captured physical activity (including walking), sociodemographic, and health characteristics. Using existing spatial data, we are using geographical information systems (GIS) to estimate environmental variables including residential density and street/pedestrian connectivity for each participant's neighbourhood. These environmental variables will be combined to create a "walkability index" in order to classify the walkability of all the neighbourhoods included in the study. The walkability scores will be used with participation relocation information to group participants into four groups (i.e., increased walkability, decreased walkability, no change in walkability, or no relocation). Models will examine changes in walking in relation to changes in built environment variables following relocation, adjusting for covariates.

Expected Results: We anticipate the following two results: 1) Transportation and recreational walking will increase among those who relocated to a more walkable neighbourhood and will be significantly different compared with those who relocated to a neighbourhood of similar walkability and non-movers; 2) Transportation and recreational walking will decrease among those who relocated to less walkable neighbourhoods compared to people with no changes in neighborhood walkability.

Conclusions: A better understanding of the relationship between neighbourhood built characteristics and physical activity is crucial for developing evidence-based urban planning policy that can positively impact population health.

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Title: Induction of Commensal-Specific CD4+ T Cell Responses by Escherichia Coli Outer Membrane Vesicles

Authors: Noah Cooke* (pending: BHSc), Regula Burkhard (PhD), Markus Geuking (PhD)

Background: The intestinal microbiota is comprised of the commensal bacteria, viruses, and fungi that colonize the gastrointestinal tract. A peaceful co-existence with our microbiota requires a balanced and finetuned immune-microbiota crosstalk, wherein CD4+ T cells are important players. However, the requirements for CD4+ T cell antigen-specificity in this crosstalk remain elusive. In patients with inflammatory bowel diseases (IBD), immune-microbiota homeostasis is perturbed resulting in inflammation, and the CD4+ T cell compartment is hyper-reactive, targeting the microbiota. Outer membrane vesicles (OMVs) produced by gram-negative bacteria have been shown to modulate immune responses to the microbiota.

Objective: I aim to determine the capacity of commensal Escherichia Coli OMVs to induce regulatory or pro-inflammatory T-cells in an antigen specific manner. Methods: I am using a genetically modified E. coli ompC_gp61 strain in combination with T-cell receptor (TCR) transgenic SMARTA T cells specific for the gp61 epitope. The ompC-gp61 strain expresses the defined T cell epitope gp61 on the outer membrane porin C (ompC), which is present in OMVs. I will isolate OMVs from wild type and ompC_gp61 E. Coli via ultracentrifugation. Dendritic cells (DCs) will then be incubated with either intact wild type or ompC_gp61 E. coli, or the corresponding OMVs, to allow for antigen processing and presentation. As a positive control, DC will be pulsed with the gp61 peptide alone. The DCs are then co-cultured with navïe, carboxyfluorescein succinimidyl ester (CFSE) labeled, gp61-specific SMARTA T cells. T cell proliferation will be assessed by flow cytometry measuring CFSE dilution. T cell differentiation will be assessed by intracellular staining for lineage specific transcription factors and cytokines followed by flow cytometry.

Results: I have successfully established an ovalbumin peptide specific CFSE T cell proliferation assay as positive control, and am optimizing the OMV isolation protocol and yield. As a next step, I will perform the DC-navïe T cell co-culture experiments.

Conclusion: These experiments will determine the capacity of OMVs to induce antigen-specific CD4+ T cells in vitro. The results will provide insight into how novel IBD treatments, potentially using OMVs, might reprogram T-cell responses from a hyper-reactive to a more regulatory phenotype.

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Title: Mass gathering health needs and priorities of Rohingya refugees in camps in Bangladesh: perspectives of health care providers.

Authors: Saad Alvi* (Undergraduate student) Tanvir Turin Chowdhury (MBBS, MSc, PhD.)

Background: During the recent years, a number of conflicts have brought indescribable tragedy and misery to millions across the globe. Those displaced often end up in impromptu camps' with precarious health and wellness conditions leading to a nightmare scenario for density-dependent health issues. Starting from mid-2017, Bangladesh received a surge of ethnic Rohingya from neighbouring Myanmar, fleeing widespread violence and persecution, with an estimated 690,000 refugees in camps along the border as of April 2018. Due to the sudden-onset nature of the problem, health service provisions need to be created for emergency support. Moreover, providing healthcare to refugees in camps comes with its own unique challenges due to dense gathering settlements, lack of steady flow of resources, pathogenic environments, high risk for injury, and social chaos. Apart from the conventional refugee support services like the UN agencies and local governments, a substantial number of local and global volunteer teams initiate health care services in the refugee camps during the crisis. It's important to understand the challenges these teams face while serving the in the refugee camps.

Objective: The objective of this study is to identify challenges faced by volunteer medical workers, either independent or from smaller scale or local organizations, while providing health care towards the Rohyingya refugees in camps along the Myanmar-Bangladesh border.

Methods: A Cross-sectional survey with a semi-structured questionnaire will be conducted with volunteer medical workers who are working in the refugee camps as either independent or with smaller scale organizations. These will be conducted in the refugee camps at Cox Bazaar in southern Bangladesh.

Results: Although this study is currently in progress, we anticipate the survey will give us insight into the identify needs, challenges and potential solutions to providing efficient health care to the Rohyinga refugees from the perspectives of volunteer medical workers.

Conclusion: Overall, our aim of this proposed study is to understand the challenges faced by smaller magnitude volunteer teams and organizations while providing health service to the refugee population actively in the camps.

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Title: A targeted literature review of evaluation frameworks for community-based health care programs

Authors: Connie Yang BMSc; Sydney Haubrich BSc; Natalie Ludlow PhD; Jill De Grood MA, PMP; Deirdre McCaughey PhD, MBA; William Ghali MD, MPH, FRCP(C).

Background. Fragmentation across health, social, and other community services are major challenges for health care systems. Well-connected community-based health care (CBHC) may improve efficiency and effectiveness of current care models, and better address patient, family, and provider experiences, health outcomes, and cost and resource utilization. To measure progress of CBHC programs towards these desired outcomes, robust evaluation frameworks are important tools.

Objective. A targeted literature review was conducted to identify existing system and program-specific evaluation frameworks used by other health systems and organizations to critically appraise current approaches to evaluation that may be valid for community-based health care.

Methods. A targeted search strategy was developed to search PubMed, MEDLINE (OVID), EMBASE, Scopus (Elsevier), CINAHL, PsycINFO, Cochrane Database of Systematic Reviews, and Proquest Entrepreneurship for CBHC evaluation frameworks. The search yielded 2633 articles. A full-text review (n= 57) is currently underway following the completion of a title and abstract screen to narrow the scope. Additional 'snowballing' methods based on sentinel papers from peer-reviewed and grey literature sources will also be used.

Results. Evaluation frameworks found in the literature tend to assess performance of comprehensive primary health care models, at both program and system levels. Moreover, frameworks commonly present outcomes and outputs associated with facets of the Quadruple Aim, but do not generally specify indicators for measurement. Other key elements of evaluation are expected to be identified.

Conclusions. Preliminary analysis suggests that there are a number of applicable frameworks for evaluating the performance of CBHC programs. The ongoing literature review will provide further information about structure, process, outcomes, and measures used by existing evaluation frameworks to understand the effectiveness of CBHC for improving delivery of comprehensive health services within the health system.

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Title: Cost-effectiveness of screening refugees for schistosomiasis

Authors: John Webb, MD; Eldon Spackman, PhD; Gabriel Fabreau, MD MPH; Stephen Vaughn, MD; Kerry McBrien, MD MPH.

Background: Between 12% and 73% of refugees from endemic countries are infected with schistosomiasis when they arrive in Canada, and many will have no symptoms. They are at risk for complications that may develop decades after their arrival. Watchful waiting for symptoms has been standard practice, but in 2011 the Canadian Committee for Immigrant and Refugee Health recommended screening and treatment instead. The cost-effectiveness of screening has never been studied, nor has that of presumptive treatment, or treatment of all individuals without prior testing. This approach is recommended by the United States Centers for Disease Control.

Objective: To find the most cost-effective approach to management of schistosomiasis complications that may develop in asymptomatic refugees coming to Canada.

Methods: We used a decision-tree model to examine the cost-effectiveness of three screening strategies: watchful waiting; screening and treatment; and presumptive treatment. We modeled a hypothetical cohort of asymptomatic refugees arriving in Calgary from endemic countries. We obtained model data from the literature and clinical records. We predicted deaths and chronic complications caused by schistosomiasis, as well as costs, quality-adjusted life-years, incremental cost-effectiveness ratios and net monetary benefit.

Results: Screening and treatment dominated watchful waiting, because it prevented illness and reduced health care costs by more than its cost of implementation. However, presumptive treatment also dominated screening and treatment, because it was more effective and cost less to implement. Therefore, screening and treatment was excluded by extended dominance.

Conclusions: Presumptive schistosomiasis treatment for refugees arriving from endemic countries can prevent chronic complications and reduce long-term costs to the health care system. Both presumptive treatment and screening are cost-effective, relative to watchful waiting, but presumptive treatment is more cost-effective.

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Title: Patient-reported outcome measures (PROMs) in paediatric chronic care: a systematic review

Authors: *Ashton, Chugh, BA/BA

Background: Patient-reported outcome (PROs) are clinical instruments used to measure the outcome of treatments, of which the patients or caregivers directly report themselves. PROs help to collect information from patients and caregivers about their symptoms, treatment effects, and their experiences with the care that they receive. For adult care, the use of PROs in routine clinical care has shed robust evidence on the benefits to individual patients and the healthcare system, however, the evidence is scarce in pediatric chronic care. To remedy this gap in the research literature, this review seeks to consolidate the evidence for the use of PROs in chronic pediatric care through systematic review of past research on this topic. A list of successfully developed and implemented PROs will be created. The quality of the PROs identified will be assessed as a basis for recommendations about their use in clinical and research settings.

Objectives:

1. To consolidate evidence for the use of PROs in chronic pediatric care through systematic review of past research on this topic. A list of successfully developed and implemented PROs will be created.

2. To evaluate the measurement properties of the PROs identified as a basis for recommendations about their use in clinical and research settings.

Methods: A comprehensive search of the published literature will be conducted to identify PROs previously published, implemented, or evaluated in pediatric settings that are either generic or specific to the chronic conditions under study (asthma, chronic kidney disease and cancer survivors). Relevant studies will be identified through searching electronic databases of published literature including MEDLINE, EMBASE, PsycINFO, CINAHL, and Web of Science for relevant studies. Additional references will be identified by searching the references cited in the included studies. The measurement properties of the PROs identified in the systemic review will be assessed using the EMPRO tool.

Results: Based on a preliminary search of the literature, there are several potential generic pediatric PRO measures such as the Pediatric Quality of Life Inventory (PedsQol).

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Title: Improve Communication During Transfers From ICU: Stepped-Wedge Trial to Evaluate the Effectiveness of an Electronic Medical Transfer Tool

Authors: Liam Whalen-Browne* (BSc); Rebecca Brundin-Mather (MASc); Devika Kashyap (BA); Khara Sauro (PhD); Andrea Soo (PhD); Tom Stelfox (MD, PhD)

Background: Transitions of care are vulnerable periods in healthcare delivery that can expose patients to preventable errors and adverse events due to incomplete or delayed communication between healthcare providers. Transitions between intensive care units (ICUs) and medical or surgical hospital units are particularly high-risk. Dictation methods used to prepare transfer documents often fail to consistently produce complete, clear and timely summaries. Implementation of an electronic transfer-of-care document to standardize communication during ICU transfers may improve the quality of information exchanged between ICU and medical teams on the units.

Objective: The objective of this study is to implement and evaluate a new electronic ICU transfer-of-care document in the primary clinical information system used by four adult medical-surgical ICUs in Calgary, Alberta. We hypothesize the tool will increase patient safety during the transition from ICU to unit in two ways: (1) improve the completeness and timeliness of clinical documentation, and; (2) reduce the incidence of associated adverse patient clinical events after transfer.

Methods: The study team will utilize a randomized, stepped-wedge clinical trial design in which ICUs will continue dictation practices for a baseline control period. Each ICU will then be allocated randomly to cross over as an intervention site at regular intervals, where users will have access to both the electronic ICU transfer-of-care tool and dictation to create transfer-of-care documents. A multifaceted knowledge translation (KT) strategy designed to overcome barriers and leverage facilitators of adoption of the tool will be tailored to each ICU. The KT strategy will encompass education, point-of-care support, audits and feedback

Results: A successful pilot test in one ICU confirmed the tool was ready for full implementation to all adult medical-surgical ICUs. Initial results from the pilot showed a significant increase in completeness and timeliness of the document.

Conclusions: Results from this study will contribute to our understanding of how electronic transfer-of-care tools can be used to create complete and timely clinical transfer documentation; and manners in which such documentation can improve communication between healthcare providers, leading to fewer adverse clinical events after transfer, and an overall increase in patient safety during transition from in ICU.

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Title: Do you see what I hear? Calcium imaging of mouse cortex following traumatic noise exposure: Implications for tinnitus

Authors: Breanne Beatty*, Navvab Afrashteh; MSc, Michael Kyweriga; PhD, Majid H. Mohajerani; PhD

Background: Tinnitus is a perceptual disorder noted by phantom auditory hallucinations, such as a buzzing or ringing sensation in the ears. It is commonly caused by exposure to traumatic noise. Currently, treatment is mainly focused on treating other underlying illnesses, such as ear infections, or utilizing coping strategies. These coping strategies vary in degree of efficacy with the most successful being masking sounds, massage, and antidepressants. While many treatments and coping strategies may work for some people, there is a need for greater understanding of this disorder to find more appropriate targeted treatments. Many questions surrounding tinnitus remain unanswered, including the relationship between the traumatic auditory exposure and the underlying neural mechanisms of tinnitus.

Objective: The objective of this work is to study the long-term effects of traumatic noise within the parietal and temporal cortices, in an effort to better understand the cortical changes that give rise to the phantom percept. Imaging of these brain regions will be conducted before, and at various points during and after exposure to the traumatic tone.

Methods: Two viewing windows were surgically implanted over the parietal and temporal cortices of GCaMP6 mice. These mice have a calcium indicator enabling mesoscopic imaging of cortical activity. The mice in this study will be awake, head-fixed, and the two windows will be imaged simultaneously with a dual camera system. Using this technique we will record both spontaneous activity, and neuronal responses to auditory stimuli. This will occur before as a baseline and at various time points following exposure to the traumatic noise.

Results: We will compare pre- and post- trauma tone recordings of the mice. For spontaneous activity recordings we will study changes in the functional connectivity maps, in the frequency of occurrence of spontaneous events, and in the general level of spontaneous activity. The auditory stimuli response recordings will be compared to look for observable changes in response maps, such as tonotopic maps.

Conclusions: By conducting this longitudinal study we plan to identify tinnitus-associated regions in the mouse brain by comparing their responses before and after exposure to a tinnitus causing tone.

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Title: To Agree or Not To Agree: That is the Consensus Methods Question

Authors: Kelly J Mrklas, BSc, BSc, MSc, PhD Candidate*

Background: While the initial historical development of Delphi is well documented, the subsequent evolution of Delphi over the past 70 years is less clear. The status of the Delphi as a research method remains controversial, and its validity often challenged. Although its adoption, modification, and multi-sectoral application has been ubiquitous over time, this evolution was not accompanied by ongoing methodological testing. As a result, Delphi methods, while popular and flexible, remain in a developmental state, with questionable methodological rigour.

Objectives: To critically examine key conceptual, paradigmatic, methodological and reporting challenges associated with Delphi and to assess how these factors influence the validity of the Delphi method and ensuing implications for quality and reporting of Delphi studies.

Methods: Key citations arising from a focused literature review were examined and conceptual, methodological, paradigmatic, and reporting challenges extracted and synthesized.

Results: Delphi was developed in the 1940s and has since evolved into a broad, variable set of types and subtypes. Unfortunately, the method and its modifications are often poorly described and reported with respect to key aspects such as methodological steps, conceptual underpinnings, philosophical paradigm, structural features and their definitions (e.g., rounds, experts, consensus), as well as key aspects of the method and/or modifications thereof. While the method is often used and as a flexible, paradigmatic 'hybrid' research approach, Delphi studies are infrequently subjected to both positivist and interpretivist quality criteria. Further methodological testing of the Delphi, along with strong quality and reporting criteria as well as a priori protocol disclosure are required precursors to accelerate the methodological maturity of the Delphi method.

Conclusions: Focused literature review of conceptual, paradigmatic, methodological and reporting challenges provide an opportunity to better understand, describe and address concerns about the validity of the Delphi method. A priori protocol development and the establishment of quality and reporting criteria are important next steps in ensuring the methodological rigour of Delphi methods and/or its modifications.

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Title: The History of Integrated Knowledge Translation: Reformulation and Evolution of the Philosophy of Linkage and Exchange

Authors: Kelly J Mrklas, BSc, BSc, MSc, PhD Candidate

Background: Integrated knowledge translation is a recently emerging concept. Coined in the mid 2000s by Graham et al, it describes research conduct involving the active collaborative of researchers and knowledge users across the entire research process to increase uptake and use. While it bears strong similarity to other approaches (e.g., engaged scholarship, Mode 2, knowledge co-production, participatory research), its historical origins, integration into national funding guidance, core position within the Knowledge to Action framework (K2A), and context may provide important insights into the nature of its current state.

Objectives: To critically review linkage and exchange and integrated knowledge translation documents and understand their characteristics (e.g., historical origins, epistemological, methodological, measurement, impact contribution/attribution characteristics) and the developmental implications these facets may have had on current conceptualizations.

Methods: A focused search for studies pertaining to the concept of linkage and exchange and integrated knowledge translation was undertaken to create an historical timeline, establish source documents, clarify how and when concepts emerged, and how they were subsequently applied and changed over time. Findings were summarized and tabulated to create a comprehensive current state.

Results: The historical timeline and adoption of integrated KT within national health research funding agency guidance influenced its conceptual evolution. IKT was broader in scope and involved more than a 'philosophy of linkage and exchange'. IKT became a refined, emerging practice involving very specific end across the entire research process (e.g., improvement of health outcomes, healthcare services, products and system). IKT involved diverse knowledge users, filling a gap produced by funding mandate. Evaluative efforts and comparative work with other similar paradigms (ES, Mode 2, co-production, and PR) further evolved and delineated IKT as a key research approach and a concept whose evidence base remains emergent.
Conclusions

As participatory research methods gain popularity, understanding IKT, and the conditions under which conditions it works best, is essential. An in-depth appraisal of historical and conceptual origins, application context and ultimate ends, demonstrate why IKT is a novel concept, connected to, but distinct from linkage-exchange philosophy.

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Title: Evaluating the effect of an educational video on rates of risky behaviour and injury in school ski and snowboard programs

Authors: Sheharzad Mahmood*, BHSc student; Tatum Mitra, BKin, BSc, MSc; Maya Djerboua, MSc; Alberto Nettel-Aguirre, PhD, PStat; Kelly Russell, PhD; Jeff Caird, PhD; Carolyn Emery, PhD; Brent Hagel, PhD

Background: Skiing and snowboarding are popular activities among Canadian youth, but they can lead to injury. Currently, limited evidence exists to support the use of preventive interventions such as educational videos to reduce risky behaviour and injuries on the ski hill; therefore, continuous efforts to reduce the burden of ski and snowboard-related injury in youth is necessary.

Objective: The primary objective was to determine if, in children and adolescents, rates of risky behaviour and rates of injury seen at the ski hill were lower for those exposed to an educational injury prevention video.

Methods: This blinded cluster randomized controlled trial investigated students (ages 6-15) from 18 Calgary schools enrolled in school-sanctioned ski and snowboard programs. Consenting schools were block randomized to intervention or control groups. The control group followed standard preparation including watching an orientation video. The intervention group followed a similar procedure, but instead viewed the intervention video focused on injury prevention that was informed by focus group findings, expert opinion, and current evidence. The Risky Behaviour and Actions Assessment Tool was used by blinded research assistants to observe and record the risky behaviours of participants at an Alberta ski hill. 407 observations were used to estimate the rate of risky behaviour and Accident Report Forms were used to evaluate the rate of injury.

Results: The rate of risky behaviour observed on the ski hill was 23.31/100 person-runs in the control group and 22.95/100 person-runs in the intervention group. The most commonly observed risky behaviours in both groups were skiing too close to other skiers/snowboarders and near collision with an object/person. The crude injury rate was 3.5/1000 person-outings in the control group and 9.4/1000 person-outings in the intervention group.

Conclusions: The control and intervention groups showed similar rates of risky behaviour and also demonstrated similar risky behaviours. However, the crude injury rate for the intervention group was higher than the control group. Ongoing analyses are being done considering covariates and circumstances/mechanisms of injury in both groups to understand these differences.

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Title: Estimating the prevalence of coenurosis in slab-slaughtered goats and sheep in Shinyanga, Tanzania and identifying behavioral risk factors

Authors: Logan, Haynes, BHSc student*; Erika, Brandson, BSc, DVM student; Karin, Orsel, DVM, PhD; Frank,van der Meer, DVM, PhD

Background: Rural agropastoralists in the Shinyanga region of northern Tanzania often keep dogs for protection. In these communities, both owned and feral dogs tend to be free-roaming, allowing them to interact with livestock. This can pose significant health risks to sheep and goats, as dogs serve as a reservoir for transmissible diseases such as tapeworm infections. One such infection is coenurosis, a concern raised by the local community during consultations with our group last year. As coenurosis is untreatable in sheep and goats, control strategies must focus on the canine hosts who gets infected via infected meat. It is critical to limit the losses through coenurosis in rural Tanzania, as the early deaths of livestock has negative implications on both household finances and food security.

Objectives: This project sought to i) obtain preliminary estimates of coenurosis prevalence in goats and sheep slaughtered at local markets, and ii) identify practices that may be facilitating transmission.

Methods: Brains from slaughtered sheep and goats (n=81) were obtained from three market slaughter slabs in the Shinyanga region and inspected for the presence of coenurosis cysts. Local slaughter practices were also assessed through observations made during these market visits. To further assess disease awareness and behavioral risk factors, a household questionnaire was conducted with dog-owning livestock keepers (n=10), and semi-structured interviews were conducted with the district veterinary officer and livestock field officers.

Results: Of the 81 sheep and goat heads inspected, 8 (9.88%) were found to contain coenurosis cysts. Dogs were seen roaming at all three slaughter slabs and some were scavenging animal remains. Most households were aware of coenurosis, but livestock field officers had little knowledge about the disease. Many livestock keepers reported to feed sheep or goat meat to their dogs.

Conclusions: Coenurosis is relatively common in slab-slaughtered sheep and goats in Shinyanga, although our sample prevalence is likely an underestimate due to market restrictions on the sale of diseased animals. This suggests deworming campaigns focussed on dogs can have positive effects. As we identified local practices that facilitate transmission between dogs and small ruminants, educational interventions may also improve disease control.

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Title: A systematic review on the relationship between built environment and sleep

Authors: Ryan Lukic, BHSc*; Chelsea Christie, MSc; Dana Olstad, PhD; Gavin McCormack, PhD

Background: The built environment (BE) is associated with multiple health outcomes and behaviours. Evidence on the relationship between the BE and physical activity and diet is well established, however findings on the BE's impact on sleep have not been synthesized. Evidence suggests there may be a link between destinations, light and noise pollution, and urbanicity and sleep duration and quality. Given sleep duration and quality are associated with multiple morbidities, synthesizing what is currently known about the impact of BE on this key health behaviour is necessary to inform further research and potential policy in the future.

Objective: The objective of this review is to systematically synthesize the current state of knowledge on associations between the BE characteristics and sleep duration and quality in adult populations.

Methods: This review will follow the PRISMA Guidelines for systematic reviews. Two reviewers will screen abstracts retrieved from six research databases, in duplicate. The readers will undertake full text review of relevant abstracts and then extract relevant data in duplicate for synthesis. Currently, studies will be included if they focus on sleep duration or quality either self-reported or objectively measured in adults. Studies must test quantitative associations between an objective or perceived BE measure and sleep duration or quality.

Results: This research is in progress. The systematic review protocol and preliminary findings will be presented.

Conclusions: We anticipate few studies will have investigated associations between BE characteristics such as neighbourhood walkability, street connectivity and destination density in relation to sleep outcomes. Traffic noise, light pollution, and noise pollution, we anticipate, will be the most common exposures, tested for associations with sleep duration or quality, in the literature and likely will make up the majority of synthesized literature.

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Title: Living with Colorectal Cancer: Patient and Caregiver Experiences and Perceptions of Palliative Care

Authors: Syeda Farwa Naqvi ; Sadia Ahmed Bhsc ;Maria Santana MPharm, MRPharmS, PhD

Background: The delivery of palliative care services varies in different places, proving difficult for standardization of quality care. For cancer patients, palliative care may be used concurrently with cancer-focused treatments like chemotherapy, soon after the diagnosis of advanced cancer. A Knowledge to Action initiative called Palliative Care Early and Systematic (PaCES) has identified gaps in providing early and systematic palliative care to advanced colorectal cancer (aCRC) patients. To address these gaps, a comprehensive care pathway delivering early, systematic palliative care to aCRC patients in Alberta will be developed as a new standard of care.

Objective: To understand the perceptions of advanced colorectal cancer patients and their caregivers on palliative care, advanced care planning, and understand their experiences accessing healthcare services in Alberta.

Methods: We will be conducting semi-structured one-on-one phone interviews with 10 patients and 10 caregivers from Calgary and Edmonton. The interviews will be transcribed verbatim and then thematically analyzed using the qualitative software Nvivo.

Preliminary Results: A total of 7 patients and 3 caregivers were interviewed so far over the phone (7 from Calgary, and 3 from Edmonton). Three interviews have been transcribed, with the following barriers to quality care identified: 1) misconceptions regarding palliative care; 2)lack of communication; 3) poor integration of care.

Future Directions: The interviews with patients and caregivers will inform the development of a care pathway for early, systematic palliative care. The development of a pathway will ensure the delivery of quality, patient-centered care.

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Title: Exploratory Study of the Road to Mental Readiness Program within Emergency Medical Services Personnel in Alberta Health Services

Authors: Jabin Binnendyk*, Jamie Prowse-Turner PhD & Scott Oddie PhD.

Background: Recently, education and research regarding mental wellness has brought Occupational Stress Injuries faced by Emergency Medical Services (EMS) personnel to the forefront. With EMS personnel being chronically exposed to operational stressors, this population is placed in considerable risk of diminished mental health, decreased resilience, and stigma. Prevention programs such as Road to Mental Readiness (R2MR) have been implemented to assist in combating these areas of concern. The R2MR program aims to improve short-term occupational performance and long-term mental health for EMS personnel through raising resiliency, stigma reduction by improving knowledge and help-seeking behaviours, and providing practical tools to mitigate stress.

Objective: With programs like R2MR being utilized to curtail the effects of operational stressors experienced by EMS personnel, it is important to empirically support these goals and objectives. The current study looked at whether R2MR retention was correlated with better mental health, improved coping, higher resiliency, reduced stigma, and increased help-seeking behaviours.

Methods: Alberta wide recruitment of EMS personnel in Alberta Health Services was conducted and requested to participate on an online survey. A correlational design was utilized along with group comparisons through the use of t-tests and ANOVAs.

Results: In the current study, it was found that retention of the R2MR program was related with better measures of mental health, including depression, anxiety, and post-traumatic stress. Furthermore, links to higher resilience and help-seeking behaviours were found in relation with R2MR retention scores. Secondary findings indicated that higher levels of certification were significantly correlated with superior levels of coping self-efficacy. As well, it was found that there are a large number of individuals undiagnosed with a previous mental health disorder who reported moderate to extremely severe levels of depression, anxiety, and post-traumatic stress symptomology.

Conclusion: These findings indicate that retention of the R2MR program is related to increased mental health, resilience, and help-seeking behaviours, though causal links should be further explored.