Community Health Sciences
Bold Idea Student Poster Competition Proceedings

Community Health Science Bold Idea Student Poster Competition at the Manitoba Student Health Research Forum and Canadian Student Health Research Day

June 11-13, 2018
It is with great pleasure that we present our second Community Health Sciences (CHS) Bold Idea Student Poster Competition Award Proceedings from the 2018 Manitoba Student Health Research Forum.

In this second year, we challenged our students to tell us about their bold research ideas, approaches and findings. Eleven CHS students participated and showcased their research for the benefit of individual, family, community, population and public health at the CHS Bold Idea Student Poster Competition. In total, fifteen CHS students participated in the Manitoba Health Student Research Forum. Three of our students (two PhD and 1 Masters) received Manitoba competition awards and 1 Master's student received an honorable mention. One of our Manitoba Student Health Research Forum Award Recipient was then advanced to compete in the Canadian Student Health Research Poster Competition sponsored by the Canadian Institutes of Health Research. We are very delighted to announce that she received the Canadian Institutes of Health Research Gold Medal and the Lindau Award to attend the Lindau Nobel Laureate Meeting in 2021.

Congratulations to all our CHS Bold Idea students for taking that bold step to showcase their research and for carving out a place for Community Health Sciences in health research. To make this event a success, we are thankful for our many CHS faculty mentors and volunteer judges who reciprocally shared their bold ideas with students on how to take research to the next bold step. We are also very appreciative of CHS staff that helped organize this event. As well, we were incredibly honoured to work with the organizers of the Manitoba Student Health Research Forum who supported this initiative and accommodated the CHS Bold Idea Student Poster Competition. With many thanks to all, we look forward to the 2019 Community Health Sciences Bold Idea Student Competition at the next Manitoba Student Health Research Forum.

Dr. Brenda Elias  Dr. Robert Tate
Our Bold Community Health Sciences Faculty Judges

Left to Right: Mahmoud Torabi, Leigh-Anne Shafer, Kerstin Rogers, Colleen Metge, Maya Jeyaraman, and Catherine Charette

Our “Making It Happen” Community Health Sciences Support Staff

CHS Finance
Left to Right: Amanda Rowan-Krivda and Princess Fernandez

CHS Graduate Program
Theresa Kennedy

CHS Office of the Department Head
Shannon Turczak
Our Community Health Sciences Bold Idea Student Award Recipients

QUALITY INDICATORS FOR INTEGRATED CARE DELIVERY: DEVELOPMENT AND FEASIBILITY
Cara Brown
Community Health Sciences
PhD Program
CHS PhD 1st Place Award
CHS Most Bold Presentation

Background: Health care transitions are problematic, especially for older adults with complex care needs; current challenges include client safety and satisfaction, and optimal use of health care resources. Integrated care approaches should promote smoother transitions while maximizing health resource use, but evidence of the extent of integrated care occurring in day-to-day care delivery is lacking. This study explores the feasibility of using developing quality indicators from patient chart data to determine the extent and variation of integrated care delivery for care transitions between the hospital and the community.

Theory and Methods: Indicators were developed using integrated care frameworks, and literature using systematic methods to establish the elements of integrated care. Using data extracted from 214 hospital medical records of hospitalized older adults, we calculated missing values, inter-rater reliability, and proportions for each indicator. Relationships between the indicators and personal characteristics (sex, living alone, preadmission and in-hospital function), were determined with chi square analysis. Indicator proportions forward sub-samples were calculated to determine micro-system effects.

Results: Twenty-eight indicators were developed that represented four themes of: 1) community-hospital coordination, 2) multidisciplinary care for individualized care, 3) within-hospital coordination and continuity, and 4) patient and family involvement. Of these, 21 were acceptable for further analysis. Proportions for the quality indicators ranged from 0.5% to 84.1%. There were statistically significant differences between twelve indicators and personal characteristics. For seven indicators, the difference in proportions between the wards exceeded 50%.

Discussion: There were challenges in applying the indicators to a partially fragmented health system, and in maintaining the focus of measurement at an individual rather than micro-system or system level. Despite these challenges, we were able to glean information on individual-level coordination of care that can be used for care quality improvement. Further, the strong conceptual base of integrated care in the literature allowed for the development of 28 indicators that can be adopted and adapted by researchers and policy-makers in other settings.

Conclusion: This study adds to the literature by providing a framework and recommendations for examining individual-level differences in the provision of care.
A SCOPING REVIEW ON REFUGEE WOMEN'S MENTAL HEALTH IN CANADA: POLICY AND HEALTH OUTCOMES

Sanjida Newaz
Community Health Sciences
MSc Program
CHS Best Conceptually Framed Poster Award

The UN Refugee Council reports that 65.6 million people were forcibly displaced in 2016. The civil war in Syria, break of peace in South Sudan, and communal violence against Rohingya in Myanmar have contributed to the current refugee crisis. Canada has a long history of accepting refugees and is the second largest resettlement country in the world. Approximately 700,000 refugees have resettled in Canada since 1980, with 2016 being a record year of welcoming 46,700 refugees.

While refugees arrive to safety and protection in Canada, language, socio-economic barriers, and cultural differences contribute to struggles. Refugees have higher risk of developing mental illness like anxiety, depression and Post-Traumatic-Stress-Disorder as they flee from violence. Moreover, with the increasing duration of residency their health may further decline. The effects of war, family separation, displacement and long travel may pose more stresses on women, particularly when overlapping with pregnancy, childbirth, and caring for children. Adjusting to new life in Canada also becomes challenging for refugee women who have been separated from their spouse and need to take on new roles such as decision making, economic responsibilities, and accessing services. Providing health care to this vulnerable group requires significant effort from Canada while the country is facing economic downturn due to recent drop in commodity prices.

The objective of this study is to conduct a scoping review of mental healthcare need, availability of support, and barriers in accessing health services among recently arrived and resettled refugee women in Canada. Selection criteria will be limited to studies published within the last 10 years in a Canadian context, publications in English, focused on refugee women and mental healthcare. Search will include published articles in various databases, grey literature in search engines, as well as Canadian federal and provincial healthcare policy documents. Findings from the literature will be presented based on the refugee women’s experience in accessing mental healthcare services. A review of the current mental healthcare service approaches and government policies will inform a more culturally appropriate ‘stepped care service’ model for refugee women. Recommendations to improve access and coordination of services will also be provided.
**DETERMINANTS OF MENTAL HEALTH CARE UTILIZATION AMONG ADULTS WITH POST-TRAUMATIC STRESS DISORDER: AN ANALYSIS OF SURVEY DATA**

Isabel Garces-Davila  
Community Health Sciences  
PhD Program  
CHS PhD 2nd Place Poster Award

**Introduction:** It is not well understood what factors are related to use of professional mental health care services among those with PTSD. The objective of this study was to identify social determinants of access to professional mental health services (i.e., types of professionals consulted and hours of consultation) among adults with a diagnosis of PTSD. This study examined the contribution of social indicators (e.g., stress, perceived need for care, education, income, social support) to explain access to mental health services.

**Methods:** This cross-sectional study used data from the public files of the Canadian Community Health Survey-Mental Health (CCHS-MH, 2012). This study focused on respondents aged 20 to 64 years (N=16,972). The analyses were weighted to ensure representation of the Canadian population in this age group. Logistic regressions stratified by sex were conducted to explore determinants related to professional mental health care utilization (i.e., consulted/did not consult services, types of services and hours of consultation) among adults with and without a diagnosis of PTSD.

**Results:** The results indicated that PTSD was associated with service utilization among females OR=1.30, 95% CI [1.25, 1.67]. High income (e.g., $100,000 + per year) was related to mental healthcare utilization (e.g., psychiatrist) among females OR=1.04, 95% CI [1.02, 1.12]; but not among males OR=.94, 95% CI [.84, 1.04]. In addition, the odds of consulting services were higher for females who perceived a need for care than for males OR=4.69, 95% CI [4.23, 5.19]. Being employed was found to be associated to increased odds of consulting services for males OR=1.36, 95% CI [1.06, 1.58].

**Conclusion:** Applying knowledge from individual and community-level factors on use of mental health services can provide the theoretical basis for understanding and improving interventions that will inform policies and programs destined to better serve the needs of adults with PTSD. In addition, this study adds to the scholarly literature on determinants of professional mental health services utilization among those with mental illness.
DISCORDANCE BETWEEN SYMPTOMS AND INFLAMMATION ACROSS 6 MONTHS, IN THE MANITOBA LIVING WITH IBD STUDY
Kelcie Witges
Community Health Sciences
MSc Program
CHS Best Masters 2nd Place Poster Award

Background: Individuals with active IBD symptoms within the previous 2 years were recruited for the Manitoba Living with IBD study, from GI clinics in Manitoba. Using fecal calprotectin (FCAL) to assess intestinal inflammation, and biweekly online symptom surveys, we quantified discordance between IBD symptoms and intestinal inflammation at baseline and changes over the next 26 weeks.

Methods: Symptom activity at baseline and at 26 weeks was determined by the IBD Symptom Inventory (IBDSI), with active symptoms defined as a score >24 in Crohn’s disease (CD) or >17 in ulcerative colitis (UC). The IBDSI is a validated symptom measure developed by our group. Active inflammation was defined as a FCAL > 250 µg/g.

Results: Of 145 participants, 66.2% had CD; the mean age was 42.9 years and 30.3% were male. Combined baseline symptom activity and inflammation are reported in Table 1. Of persons reporting active symptoms with no inflammation at baseline, 42.9% continued to report active symptoms with no inflammation at week 26; excluding those persons with an incomplete dataset at either baseline or week 26, this was 10.1% of the original population. Of persons reporting inactive symptoms with active inflammation at baseline, 80.6% continued to report inactive symptoms at week 26. Of those persons who reported inactive symptoms with inflammation (mean FCAL 788.3 (SD: 592.1), 36% with FCAL>500) at baseline, who continued to report inactive symptoms at week 26, only 36.4% still had inflammation at week 26. Of the 63.6% of those reporting inactive symptoms at baseline who transitioned from inflamed to not inflamed at week 26, none had received any new/additional treatment for their IBD over the 26 weeks.

Conclusion: 10% of persons with IBD have persistent or recurrent symptoms over 26 weeks without evidence of inflammation. This may reflect the burden of functional GI syndromes in persons with IBD, although in CD, especially, some persons may have symptoms from strictures or past bowel resections and not have active inflammation. This calls for more research to understand symptoms experienced in persons with IBD in the absence of clear inflammation. Of persons with inactive symptoms and inflammation at baseline, nearly two thirds have no evidence of inflammation 26 weeks later, in spite of not receiving any new treatment. Hence a single elevated FCAL should be followed up rather than triggering a change in therapy.
IMPROVING ACCURACY OF DISEASE PREVALENCE ESTIMATES BY COMBINING INFORMATION FROM ADMINISTRATIVE HEALTH RECORDS AND ELECTRONIC MEDICAL RECORDS

Saeed Al-Azazi
Community Health Sciences
MSc Program
CHS Best Results-Based Poster Award
CHS Best Quantitative Poster Award

Introduction: Administrative health records (AHRs) and electronic medical records (EMRs) are the two main sources of population-based data for chronic disease surveillance in Canada. Misclassification errors exist in both databases, which can bias estimates of disease prevalence and incidence. Previous research suggests combining information from databases, building on their respective strengths to ascertain disease cases; no single, optimal data-combining method exists.

Objective: The objective was to evaluate the bias and precision of rule-based and probabilistic-based methods to combine error-prone sources using computer simulation.

Methods: Four data-combining methods were compared for two error-prone databases: (a) rule-based ‘OR’ method, (b) rule-based ‘AND’ method, (c) rule-based sensitivity-specificity adjusted (RSSA) method and (c) probabilistic-based sensitivity-specificity adjusted (PSSA) method. The simulation parameters were: true prevalence in the population ($\text{prev}_T = \{20\%, \ 10\%\}$), error-prone database prevalence ($\text{prev}_{Y_1}$, $\text{prev}_{Y_2} = \{5\% \text{ to } 18\%\}$), correlation between databases ($\rho_{Y_1Y_2} = 0.65, 0.85$), number of covariates for PSSA method ($N_X = 8, 16$) and average correlation amongst covariates ($\rho_X = 0.00, 0.20, 0.50$). Relative bias and mean squared error (MSE) were estimated for 500 replications of each combination of conditions.

Results: Our simulation results demonstrated that: (a) when $\text{prev}_T = 20\%$, the average relative bias across all the conditions for the ‘OR’, ‘AND’, RSSA and PSSA methods were $10.4\%$, $57.5\%$, $10.3\%$, and $33.6\%$, and the MSE were $0.0548$, $0.2934$, $0.0482$, $0.1920$, respectively; (b) when $\text{prev}_T = 10\%$, the average relative bias across all the conditions in the same order were $6.7\%$, $38.6\%$, $11.9\%$, and $94.6\%$, and the MSE were $0.0064$, $0.0389$, $0.0115$, $0.1305$; (c) when $\rho_{Y_1Y_2} = 0.85$, the average relative bias were $7.5\%$, $58.0\%$, $18.1\%$, and $58.6\%$, and the MSE were $0.0628$, $0.4537$, $0.1503$, $0.5525$; (d) when $\rho_{Y_1Y_2} = 0.65$, the average relative bias in the same order were $14.8\%$, $69.1\%$, $13.5\%$, and $129.5\%$, and the MSE were $0.1066$, $0.5375$, $0.1182$, $1.1522$.

Conclusion: The ‘OR’ and ‘AND’ methods are influenced by correlation amongst the databases, while the RSSA method is dependent on the availability of accurate sensitivity and specificity estimates from prior validation studies. The PSSA method is recommended when true prevalence is high and average correlations amongst covariates is low.
While recent research indicates that there is no direct correlation between sex work and STIs, mitigating factors put certain sex workers at increased risks of contracting STIs (Spittal, 2003). A recent review of over 800 studies and reports highlights that the widespread abuse of sex workers' human rights is perpetrated by both state and non-state actors, directly and indirectly increases HIV susceptibility and undermines effective HIV prevention and interventions (Decker et al., 2014). In Canada, where the sex trade is now partly criminalized, people selling sex have few legal protections and this can act as a barrier to safer sex practices and access to health and social services (Shannon, 2010). In Winnipeg, Treaty One Territory, there is considerable focus in the local research, literature and services provision on the important topics of "survival sex", street-based sex work, and sexual exploitation of youth, but few programs are offered to adult (cis and trans) women voluntarily involved in the sex trade, and little is known about their experiences and needs. How do they define their needs in terms of health and social services? What shapes their vulnerabilities to violence, social isolation and poor health outcomes?

Based on 40 in-depth interviews with sex workers, 12 interviews with service providers, and over 2 years of participant observation, I offer insights on the individual, socio-cultural and structural factors that influence Winnipeg-based sex workers' health seeking behaviours, access to and experiences with local social and health services. My interlocutors came from all fields of the sex trade and could not have been more diverse in their experiences and backgrounds. At the intersection of whorephobia, discrimination against drug users, racism, queerphobia and transphobia, many struggled to find non-judgmental support for the health and social issues they encountered. As a shocking amount of my interlocutors told me when I asked what they would like health care providers to know, they wished above all for their humanity to be recognized.
MATERNAL OUTCOMES AFTER HAVING A CHILD PLACED IN CARE

Elizabeth Wall-Wieler
Community Health Sciences
Phd Program
CHS PhD 3rd Place Poster Award

Objective: Although many children are placed in care of child protection services each year, very little is known about how having a child placed in care affects the health and well-being of biological mothers. This study aims to address this gap in knowledge.

Methods: The linkable administrative data housed at the Manitoba Centre for Health Policy were used to create several cohorts of mothers whose children were born in Manitoba, Canada, which were identified through child protection case files. Maternal health and social outcomes in the years before and after having a child taken into care were compared using generalized estimating equations. Poisson regression models were used to obtain relative rates of mental health-related outcomes for mothers whose children were taken into care and mothers whose children died. Incidence rate ratios of suicide attempts and completions were obtained using fixed-effects Poisson regression models. Finally, Cox proportional hazard regression models were used to determine rates of avoidable and unavoidable mortality among mothers whose children were taken into care.

Results: Mothers whose children were taken into care have significantly increased rates of anxiety, substance use, physician visits, hospitalizations, prescriptions, and income assistance use in the years after their children were taken into care compared with mothers who were not separated from their children. Mothers whose children were taken into care had significantly greater rates of depression, anxiety, substance use, physician visits for mental illness, hospitalizations for mental illness, and psychotropic medication use in the years after custody loss compared with mothers who experienced the death of a child. Rates of suicide attempts, death by suicide, avoidable mortality and unavoidable mortality were also greater among mothers whose child was taken into care.

Conclusion: Mothers whose children are taken into care often face many challenges in the years leading up to custody loss; the loss of custody often creates new challenges or exacerbates existing challenges. To address these outcomes, more preventative services should be implemented to keep families together and more supports should be in place to ensure timely family reunification.
HIV CARE AND SUPPORT SERVICES FOR NEWCOMERS AND THE TREATMENT OUTCOMES OF NEWCOMERS LIVING WITH HIV IN MANITOBA

Charity Maritim
Community Health Sciences
MSc Program
CHS Best Proposal Poster Award
CHS Best Mixed Methods Award

Despite the overrepresentation of immigrants and refugees (newcomers) in the HIV epidemic in Canada, there is limited research on their HIV care needs and whether they achieve the full benefits of antiretroviral treatment. Using clinical health data from a cohort of people living with HIV who receive care with the Manitoba HIV program, this research project will address this knowledge gap by describing the epidemiology, clinical characteristics and treatment outcomes of newcomers living with HIV in comparison to Canadian-born persons living with HIV in Manitoba. Additionally, in an effort to better understand what services are provided to newcomers living with HIV, an environmental scan will be conducted to identify existing prevention, testing, treatment and support services available across the province. The scan will be able to outline existing gaps in the provision of HIV prevention and treatment services for newcomers. This work will provide the groundwork for future program analyses to identify service priorities for newcomers living with HIV and the community organisations, healthcare providers and policy makers in the province that provide care and support for this population.
WHITE BLOOD CELL COUNT TRAJECTORY AND MORTALITY IN SEPTIC SHOCK: A RETROSPECTIVE COHORT STUDY

Emily Rimmer
Community Health Sciences
MSc Program
CHS Best Masters 1st Place Poster Award

Background: Septic shock is among the most common causes of admission to medical intensive care units and is associated with mortality of 20-40%. The white blood cell count (WBC) at time of admission correlates with prognosis in septic shock. I hypothesize that the trajectory of WBC over time will contribute additional prognostic value and can identify different clinical groups so that targeted treatment strategies can be developed and delivered.

Methods: In this retrospective cohort study of adult patients with septic shock admitted to an ICU at Health Sciences Centre and St. Boniface Hospital in Winnipeg, Canada between 2006-2014, I used trajectory analysis to analyze the trend of WBC over the first 7 days of ICU admission and group patients according to similar trajectories. The Bayesian Information Criterion (BIC) and clinical validity were used to select the optimal trajectory model. I developed a multinomial logistic regression model to evaluate the association of patient and illness factors with WBC trajectories. I constructed a multivariable Cox proportional hazard models adjusted for age, Acute Physiology and Chronic Health Evaluation (APACHE) II score, comorbidities, infection type and antibiotics to evaluate the association of WBC trajectory on 30-day mortality.

Results: The final study cohort comprised 917 patients. The favored model identified 7 distinct trajectories of WBC (Figure 1). I identified no baseline characteristics associated with WBC trajectory. The unadjusted 30-day mortality of the entire cohort was 26.3%, and ranged from 23.1% in group 4 to 63% in group 5 (the group with a rising WBC trajectory). In a multivariable Cox proportional hazard model, group 5 was independently associated with an increase hazard of death (Hazard Ratio 3.48, 95% CI 1.92, 6.35, p<0.0001).

Conclusion: There are discreet and heterogeneous groups of patients with septic shock that can be identified using the WBC trajectory. The identification of distinct clinical groups is an important step in understanding disease biology and host genotypes in septic shock. Further studies are required to fully describe the clinical characteristics and prognosis associated with distinct WBC trajectories and whether this can provide information to inform level of care decisions and anticipated response to treatments.
Background: RAAS inhibitors are considered first line therapy in patients with diabetic kidney disease as they offer cardiovascular and renal protection beyond their effects on blood pressure control. In addition, these medications are indicated in most patients with heart failure and diabetes, as they have been associated with reduced morbidity and mortality in multiple randomized controlled trials and meta-analyses. However, treatment with RAAS inhibitors can also lead to adverse events. In particular, treatment is associated with an increased risk of hyperkalemia that ranges from mild to life-threatening. Hyperkalemia defined as potassium levels of 5.0 mmol/l or higher can be lethal. Therapy with RAAS inhibitors causes 10 to 38% of iatrogenic hyperkalemia and as a result, physicians and patients discontinue RAAS inhibitors or continue their use but at suboptimal doses. This is an important therapeutic barrier, considering the benefits of RAAS inhibitor therapy in high-risk populations. To date, however, no research has examined the effects of continuation of RAAS inhibitors on patients after an episode of hyperkalemia.

Aims: 1. To describe the prevalence of treatment with RAAS inhibitors among high-risk populations (i.e., hypertension, diabetes, heart failure and CKD); 2. To determine the incidence and risk factors of hyperkalemia among prevalent RAAS inhibitor users; 3. To describe the drug-treatment patterns associated with continuation and discontinuation of RAAS inhibitors after an episode of hyperkalemia; 4. To determine the risk of cardiovascular events, all cause hospitalizations, and mortality in patients that continue to use RAAS inhibitors after an episode of hyperkalemia compared with those who discontinue the medication.

Methods: We will conduct a retrospective cohort study to examine the burden of hyperkalemia and its effects on continuation of RAAS inhibitors. The study will use administrative databases housed at the Manitoba Centre for Health Policy.

Significance: This study will inform physicians, patients, and policy makers on treatment decisions regarding the risks and benefits of continuation of RAAS inhibitors after an episode of hyperkalemia. Given the high prevalence of these chronic conditions, and widespread RAAS inhibitor use, our findings can have a major impact on this important clinical decision.
Celebrating CHS Bold Idea Student Winners at the Manitoba Health Student Research Forum

Elizabeth Wall-Wieler, CHS PhD Program, Health Sciences Graduate Student Association Award

Darrien Morton, CHS MSc Program, Manitoba Medical Service Foundation Award (Masters Poster)

Claudyne Chevrier, CHS PhD Program, Dean of Medicine Award

Mohammad Nazmus Sakib, CHS MSc Program, Dean of Medicine Award

Charity Maritim, CHS MSc Program, Manitoba Student Health Research Forum Honorable Mention

Canadian Student Health Research Day Award Recipient

Elizabeth Wall-Weiler
CHS PhD Program
Canadian Institute of Health Research Gold Medal
Lindau Award for the Lindau Nobel Laureate Meeting (2021)

E. L. Drewry Memorial Award for Overall Research Excellence

Elizabeth Wall-Weiler
CHS PhD Program
Children’s Hospital Research Institute of Manitoba, Pediatrics and Children Health Award

Elizabeth Wall-Weiler
CHS PhD Program

Health Sciences Graduate Student’s Association Mentorship Award

Dr. Lisa Lix, CHS Faculty

Dr. Lix was nominated by her students (2nd left to right) Stephanie Monkman, Allison Feely, Dr. Aynslie Hinds, and Olawale Ayilara who received the award on her behalf from Allison Balasko, Health Sciences Graduate Student’s Association, Vice-President External (far left).
Ken Hughes Young Investigator Award for Medical Research

Dr. Lyle McKinnon (Left), CHS Faculty (Part-Time), receiving the Ken Hughes Young Investigator Award for Medical Research from Dr. Terry Klassen, University of Manitoba, College of Medicine.