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Retrospective Analysis of Maternal, Obstetric and Neonatal Risk Factors for Readmission for Hyperbilirubinemia of Neonates undergoing Universal Screening

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ABSTRACT

Background: Readmission to hospital for neonatal jaundice occurs following up to 2% of births. Universal bilirubin screening, risk factor identification, and early post-discharge follow up visits are strategies that have been employed to prevent readmissions. There have been high numbers of newborns readmitted to hospital for jaundice in the Saskatoon Health Region over the last several years despite utilization of aforementioned strategies.

Research Question: The primary objective of our study was to identify specific maternal, obstetric and neonatal risk factors for readmission for hyperbilirubinemia. The secondary objective was to review compliance with screening protocols for hyperbilirubinemia.

Methods/Methodology: This was a case-control study including 85 newborns readmitted to hospital for hyperbilirubinemia requiring treatment and 85 random controls from October 1, 2017 – September 30, 2018. Stepwise modeling was used to determine odds ratios for readmission.

A Certificate of Approval was obtained from the University of Saskatchewan's Biomedical Research Ethics Board.

Results: In the final multivariable regression model, odds of readmission were decreased ($p < 0.05$) for newborns delivered via intra-partum cesarean section [OR 0.25, 95% CI 0.069 – 0.92] and forceps assisted delivery [OR 0.067, 95% CI 0.005 – 0.880]. Odds of readmission were increased when there was prolonged ROM (>18 hours) [OR 30.17, 95% CI 1.85 – 490], maternal obesity (BMI > 30) [OR 3.94, 95% CI 1.32 – 11.74], and gestational age < 38 weeks [OR 9.77, 95% CI 3.12 – 30]. Bilirubin screening protocols were adhered to consistently. Seven newborns in the readmission group were treated with sub threshold phototherapy.

Discussion: Easily identifiable risk factors for readmission for jaundice were found. There was no effect of feeding type, weight loss, or length of initial hospital stay. Differences in bilirubin screening practices did not contribute. Differences in phototherapy use may have contributed to increased readmissions.

Conclusions: Maternal, obstetric and newborn risk factors can help predict readmission for hyperbilirubinemia. Sub threshold phototherapy use may contribute substantially to

readmissions; future research might address.

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A Retrospective Cost-Benefit Analysis of Mifepristone in the First Year at the Regina General Hospital

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ABSTRACT

Background: In July 2017, Mifegymiso became available for medical abortion at the Regina General Hospital (RGH). A financial barrier existed as Mifegymiso was only covered for women with drug plans. In March 2018, it was added to the hospital formulary, making it available free of charge to all women, with the medication cost shifting to the Health Authority.

Research Questions:

1. Was there an increase in medical abortion rates following the introduction of Mifegymiso in July 2017?
2. What were the potential cost benefits of using Mifegymiso rather than the surgical alternative?
3. Did abortion type differ for women residing in Regina from those who were required to travel?

Methods: A retrospective chart review was conducted of all 306 medical abortion patients from the RGH Women's Health Centre in Regina, Saskatchewan, Canada between July 1, 2017 and June 30, 2018. Information about surgical abortions during that time, as well as, medical and surgical abortions during the preceding year, were obtained from an administrative database.

A Certificate of Approval was received from the Saskatchewan Health Authority Research Ethics Board and Operational Approval from the Saskatchewan Health Authority.

Results: The proportion of medical abortions increased from 15.4% in 2016-17 to 28.7% in 2017-18 following introduction of Mifegymiso ($\chi^2_1=54.629$, $p<0.001$). Based on the calculated cost of a surgical abortion (\$644.78) vs. a medical abortion (\$372.48), there was a total cost savings of \$25,323.90 by providing Mifegymiso medical abortions beyond 7w0d. Women from Regina were significantly more likely ($\chi^2_1=29.406$, $p<0.001$) to receive a medical abortion (34.9%) than women from outside Regina (19.6%).

Conclusions: Medical abortion rates increased significantly with the introduction of Mifegymiso. A total of \$273.33 is saved for every medical abortion performed rather than the surgical alternative. This data is being used to advocate for universal coverage of Mifegymiso in Saskatchewan. Women from Regina or other urban centres were more likely to receive medical abortion than those living outside of Regina or in rural areas.

Recommendations: Given the lower medical abortion rates for women outside the city, further efforts to increase access to Mifegymiso for women outside Regina should be pilot tested. These

efforts could include telemedicine or capacity building for rural/regional family physicians and nurse practitioners to prescribe Mifegymiso.

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What is the Best Time of Day for Induction of Labour to Anticipate a Delivery during Regular Working Hours?

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ABSTRACT

Background: The current standard of practice for inducing women due to post-dates at the Cypress Regional Hospital in Swift Current is to start induction at 08:00. This start time has been set arbitrarily. Anecdotally, it was noticed that a large number of inductions went on to deliveries that occurred in the late hours of the night. During this time of the evening there are fewer staff on the maternity ward; additionally, the OR staff and physicians are not routinely in hospital.

Research Question(s): What is the best time of day for induction of labour to anticipate a delivery during regular working hours with optimal staffing resources?

The aim of this study was to determine more favourable induction start times so as to have deliveries occur during regular daytime hours. This change would benefit patients in that more staff would be working in the hospital during deliveries, resulting in safer patient outcomes.

Methods/Methodology: We conducted a retrospective chart review of women induced for labour for post-dates (>40 weeks gestation) in the past 2 years (N=105) from Cypress Regional Hospital in Swift Current. The patients were divided into primiparous (n=53) or multiparous (n=52) women.

An Exemption was obtained from the University of Saskatchewan's Biomedical Research Ethics Board.

Results: There were statistically significant differences in median minutes from induction of labour to delivery, depending upon the method of induction and parity, Kruskal-Wallis $H_5=25.058$, $p<.001$. Post-hoc analyses revealed differences between primiparous and multiparous for Cervadil and misoprostol.

Discussion/Conclusions: This study concluded that current induction scheduling practices could be changed to better optimize staffing hours during expected delivery times. If optimal staffing hours are between 8:00 am to 4:00 pm, an ideal delivery time would be established at 12:00 noon to give the largest window of time to capture the greatest percentage deliveries during optimal staffing hours.

Recommendations: When inducing a primipara using Cervidil or Prostin Gel, our data suggested an ideal induction start time of 10:00 hours. When inducing a multipara using Cervidil, aiming for a start induction time of 19:00 hours would be advised. For Prostin Gel, a

suggested start time of 24:00 the same day. Misoprostol induction start time should be altered to be 04:00 hours.

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Rural Obstetrical Care: Examining the Process of Selecting a Delivery Location in a Remote Northern Saskatchewan Community - Exploring Decisions about Delivery Location with Women Living in La Ronge, SK

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ABSTRACT

Background: The SOGC and the Canadian Midwifery Association advocate that rural obstetrical care should be locally supported. Unfortunately, many women living in rural and remote areas face barriers to accessing obstetric care. As rural obstetrical services are declining, more women are delivering in urban centers away from the supports of their home community. By exploring local patient opinions regarding delivery locations, we can better understand the values of rural women and perceived barriers to local delivery in La Ronge, Saskatchewan.

Research Question: What are the perspectives and preferences of pregnant women receiving prenatal care at the La Ronge Health Clinic regarding delivery location?

Methods/Methodology: Participants were pregnant women who attended the La Ronge Medical Clinic for prenatal care. Semi structured interviews were conducted in-person at the La Ronge Medical Clinic by the Resident Investigators in a private setting following their participants prenatal visit. The interviews were audio-recorded, transcribed and thematically analyzed.

A Certificate of Approval was obtained from the University of Saskatchewan's Behavioural Research Ethics Board.

Findings: The participants largely felt they maintained their autonomy in selecting their preferred delivery location, while seeking input from their prenatal care providers and their families. The factors that played a significant role in influencing the decision regarding the delivery location included access to medical services, proximity to home community, perceptions of medical care providers, and some unique features of local hospitals.

Discussion: Recently SOGC updated its position statement on the provision of optimal maternity care in Canada. Particular significance was given to the understanding of risks and benefits of delivery in both rural and urban centers by pregnant women and their providers, and the importance of informed consent and decision autonomy. By having a better sense of which factors women consider when deciding on delivery location, we can provide a more informed approach to prenatal consultations.

Conclusions: Many factors influence a woman's preference regarding delivery location. These preferences should be factored into local obstetrical policies and physician counseling practices. We hope that our project will help guide more informed discussions about rural obstetrical care

that is safe, while also meeting the needs and preferences of local women in rural northern Saskatchewan.

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Emergency Department Overcrowding: Worsened by Barriers to Seeking Primary Care or by Limited Knowledge of Acute Care Presentations?

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ABSTRACT

Background: At the Battlefords Union Hospital (BUH), there is a perception that emergency services are overburdened by patients who could access effective care in primary care clinics. The authors wished to examine the reasons behind care utilization behavior for patients presenting to the emergency department (ED).

Research Question: What are the actual or perceived barriers, if any, that may worsen overcrowding at the BUH, for those patients presenting non-urgently?

Methods/Methodology: A survey was presented to the patients in the waiting room of the BUH ED. Questions included attempts at making an appointment with a family physician (FP), success in doing so, and the motivators/barriers to presenting to the ED versus primary care clinics or walk-in clinic. Content analysis was used to identify themes emerging from patients' responses.

An Exemption was obtained from the University of Saskatchewan's Biomedical Research Ethics Board.

Results/Findings: Participants presented to the ED due to perceived limited access to primary care, perceived severity of symptoms/need for urgent care, perception of the ED as the best place to receive care, referral for testing/consult, worsening condition, unmet expectations, and limited access to primary care. Reasons to seek care from a FP included an established relationship, perception of symptom severity, perceived good access to care, avoid wait in ED, and seeking specific treatment.

Discussion: Participant perception of their access to care as well as their perception of their severity of illness are major causes of non-urgent presentation to the BUH ED. Those who chose to seek care from their FP did so primarily because of a pre-established trusting relationship. Participants who saw their family physician but presented to the ED mostly did so because they had been referred by their physician or because their condition had worsened.

Conclusions: Overcrowding in the BUH ED is worsened by both barriers to seeking primary care and by limited knowledge of acute care presentations. The authors identified major themes which may help guide further areas for quality improvement.

Recommendations: Future studies should look at patient awareness of walk-in clinic services. Education in regards to the appropriateness of referring patients to the ED, as well as education and knowledge translation activities in regards to informing patients when to return to care for specific conditions is warranted.

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Drip-and-Ship: Analysis of Acute Coronary Syndrome Thrombolysis Times in Prince Albert, Saskatchewan

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ABSTRACT

Background: Prompt reperfusion of infarcted tissue in ST-elevation myocardial infarction (STEMI) yields improved myocardial function and decreased arrhythmias, heart failure, and death. Door-to-needle (DTN) time is a quality indicator in STEMI management where primary percutaneous coronary intervention (PCI) is not available, such as the Victoria Hospital (VH) in Prince Albert, Saskatchewan. DTN time is measured from Emergency Department (ED) patient triage to administration of thrombolytic treatment. Canadian guidelines advocate a DTN time of less than 30 minutes.

Research Question(s): In STEMI cases between 2016 and 2019, did the VH meet DTN time targets? How did DTN times compare between sex, triage score, and arrival mode? Did the VH perform well in quality indicators of cardiac care such as standard investigations, documentation, and management? When did patients receive PCI after transfer? How many STEMI patients were alive 30 days post-event?

Methods/Methodology: This study involved retrospective chart review of 466 charts coded as ischemic heart disease. Three hundred and forty-eight charts met the inclusion criteria for cursory review. Sixty-eight cases of STEMI were reviewed using a developed Data Collection Tool.

An Exemption was obtained from the University of Saskatchewan's Biomedical Research Board and Operational Approval from the Saskatchewan Health Authority.

Results/Findings: Statistics were undertaken using SPSS (v.25). In cases of STEMI, the cases reviewed had: a mean age of 63.8 years; 35.3% were female; 38.2% arrived by ambulance; and, 62% (42/68) of the cases were given tenecteplase (TNK) for thrombolysis. Mean DTN time was 45 minutes. DTN time was unaffected by triage score, arrival mode, patient sex, and ECG access. It was affected by time to physician assessment ($p=0.018$) and the TNK decision maker. Specialist consultation was associated with prolonged DTN time ($p=0.012$). Ninety-seven percent had a PCI within 12 hours of TNK. Ninety-three percent were known to be alive at 30 days.

Discussion: In cases of STEMI, management quality was generally high while physician documentation was notably poor. DTN times were beyond targets, but better than DTN times observed in similar studies. DTN times were nearly on target when ED physicians did not consult a Specialist.

Conclusions/Recommendations: Improved cardiac care may result from reducing door-to-physician time in the ED, standardized checklists for documentation in cases of STEMI, and education sessions for physicians to improve frequency of TNK administration prior to consultation.

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Impact of Information about Walk-In Clinic Availability on Emergency Room Usage for Less Urgent and Non-Urgent Canadian Triage and Acuity Scale Scores

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ABSTRACT

Background: The volume of non-emergent visits is a major challenge facing Emergency Departments (EDs). These low acuity visits contribute to overcrowding, longer wait times, and cost the system more money.

There is a lack of Canadian research into whether availability and awareness of walk-in clinics have an impact on ED utilization.

Research Questions:

1. Does making information about walk-in clinic availability accessible to patients presenting at the ED reduce the overall volume of CTAS 4 and 5 patients seeking care from the ED at the Dr. F. H. Wigmore Regional Hospital in Moose Jaw, SK?
2. Did the change in the proportion of patients using the ED who could otherwise have attended a walk-in clinic, and who had registered postal codes within the city limits of Moose Jaw, SK differ from the change in proportion for those from outside of the city?

Methods/Methodology: This was a quantitative study comparing two retrospective cohorts. CTAS scores and demographic data from July 1- December 31, 2017 (n=11,337) was compared to data from the same timeframe in 2018 (n=10,745). Demographics of sex, partial postal code, chief complaint, time of presentation to ED, and age were collected. A “low acuity” visit was assigned a CTAS 4 or 5, occurred during walk-in clinic hours (0930-1900 hrs), and was not for medical imaging or specialist consult.

A Certificate of Approval was received from the Saskatchewan Health Authority’s Research Ethics Board.

Results/Findings: The proportion of low acuity presentations was 27% (n =3,064) in the last six months of 2017, compared to 25.6% (n = 2,753) the following year, marking a small but statistically difference of 1.4%, $\chi^2 = 5.615$, $p = .009$.

Discussion: Low acuity visits during the timeframes studied showed a mean reduction of 1.7 patients per day after the intervention. To rule out seasonal confounders, low acuity visits were plotted by month and demonstrated improvement for all months except December.

Conclusions: A small but statistically significant decrease in the number of non-emergent visits to the ED during walk-in clinic hours was seen after the study intervention.

Recommendations: The study intervention is low cost with little to no foreseeable risk, and could be considered by other hospitals/EDs in areas where walk-in clinics are underutilized.

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Management of Simple Cutaneous Abscesses in the RQHR Emergency Department Following a Quality Improvement Initiative

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ABSTRACT

Background: Choosing Wisely Canada (CWC) is a countrywide initiative that aims to promote appropriate use of tests and treatments by Canadian physicians. It recommends not prescribing antibiotics after incision and drainage (I&D) of simple cutaneous abscesses (SCA) unless extensive cellulitis exists. Current guidelines from the Infectious Diseases Society of America (IDSA) also recommend I&D as the sole treatment for SCA. A previous study by Kim Taylor *et al.* (2015) performed in the Regina Qu'Appelle Health Region (RQHR) emergency department (ED) showed a decrease in inappropriate antibiotic use in SCAs from 38.5% to 21.7% following their quality improvement initiative (QII). Despite the strong evidence and concrete guidelines discouraging the use of antibiotics for SCAs, it is still a re-occurring theme in the RQHR ED.

Research Question(s): Can the unnecessary use of antibiotics in SCAs at the Regina General Hospital (RGH) and the Pasqua Hospital (PH) after an incision and drainage be decreased using a quality improvement initiative designed to encourage physicians to follow CWC and IDSA guidelines for this indication?

Methodology: A retrospective chart review of all SCAs treated in the ED of the RGH and PH during a specific time frame was conducted to establish baseline compliance rates to guidelines (pre-intervention stage). A QII was then introduced and a summary of the current guidelines and pre-intervention data was presented at an ED departmental meeting. The pre- and post-intervention study data compliance rates were compared to see if the quality improvement initiative lead to an improvement in practitioner compliance to current guidelines of SCAs.

A Certificate of Approval was received from the Saskatchewan Health Authority's Research Ethics Board and Operational Approval from the Saskatchewan Health Authority.

Results/Discussion: The use of inappropriate antibiotics given after an incision and drainage of a SCA in the RQHR emergency department had decreased from 62.8% to 27.3% ($\chi^2_1 = 9.116$, $p = .003$) after the QII. In addition, a considerable number of physicians (55%) were prescribing antibiotics to more than half of their patients seen with SCA in the pre-intervention data, which was reduced to 42% in the post-intervention data.

Conclusions: This study has shown that a QII consisting of a physician education session is beneficial for adherence to current up to date guidelines for treatment of SCAs.

Recommendations: Further studies could include a larger post-intervention sample size, creating a SCA charting template for ED physicians to use to determine if antibiotics are indicated, as well as a patient brochure discussing antibiotic resistance that ED physicians can handout.

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A Retrospective Assessment of Trauma Patient Outcomes in Regina Following Implementation of a Formal Trauma Program

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ABSTRACT

Background: Trauma-related injury is a leading cause of death in Canada. Trauma patients often require prompt, well-coordinated multidisciplinary attention to provide the best chance for survival. The Regina Trauma Program was introduced in June 2017 on a trial basis at the Regina General Hospital (RGH). The purpose of this study was to assess the efficacy of the Regina Trauma Program in improving patient outcomes.

Research Questions: The following research questions were posed: (1) Did implementation of a formal trauma program pilot at RGH change patient mortality for Trauma Team Activation (TTA) levels 1 and 2 among adult trauma patients?, and (2) Was there a change in length of stay for TTA 1 and 2 patients admitted to hospital before and after implementation of the trauma program pilot?

Methods/Methodology: This was a retrospective database review of patients over the age of 18 in Regina, Saskatchewan, who presented to the Emergency Department for TTA level 1 or 2 trauma during periods before (December 2015 to May 2016, n=125) and after (December 2017 to May 2018, n=100) implementation of the pilot.

A Certificate of Approval was received from the Saskatchewan Health Authority's Research Ethics Board and Operational Approval from the Saskatchewan Health Authority.

Results/Findings: There was a non-significant increase in mortality from 12.9% to 16.2% after the trauma program was implemented, $\chi^2_1 = 0.476$, $p = 0.490$. There was a statistically significant decrease in length of stay, from 6 days (IQR = 3-16) to 4 days (IQR = 1-10) $U = 4785.00$, $P < 0.05$.

Discussion: Although LOS for TTA levels 1 and 2 decreased following introduction of the trauma program, this study saw no significant change in mortality. This may be due to increasing volume and acuity of trauma cases presenting to tertiary centres.

Conclusions: Due to a small sample size and the retrospective design of our study, we faced several limitations. Although no statistically significant change in mortality was demonstrated, our study did show a significant decrease in hospital LOS. Further, there were several patient factors that were not studied that could certainly impact patient mortality and LOS.

Recommendations: We recommend further analysis of this trauma program through multi-year, prospective cohort studies and looking at long-term determinants of trauma program effectiveness.

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The Experiences and Barriers to Accessing Harm Reduction Services and Opiate Replacement Therapy in a Regional Centre

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ABSTRACT

Background: Canada currently faces the highest rates of narcotic misuse that has ever been seen; the Government reported 2458 opioid related deaths in 2016 alone. Medical management of opioid addiction has demonstrated good results; however, success is multifactorial. Clarification in the literature is needed to identify barriers and factors that influence success of clients in harm reduction programs.

Research Question: What are the challenges clients face within a community harm reduction program and what are the strengths of this program?

Methods/Methodology: This qualitative research project engaged sixteen harm reduction clients that were invited to participate in a semi-structured interview to explore various perspectives on a harm reduction program. Informed consent was obtained prior to embarking on the interview which was recorded and transcribed. The transcripts were coded for thematic analysis and data were compiled from the interviews to identify overarching themes.

A Certificate of Approval was received from the University of Saskatchewan's Behavioural Research Ethics Board.

Findings/Discussion: The common themes identified by the participants included the: importance of support (by the program, their home community, and their family); challenges of accessibility to the program (number of providers and access to reliable transportation); impact of stigmatization (regarding addiction and also opiate substitution therapy, in the community and particularly amongst health care providers); and, the importance of education (for health care providers and the community).

Conclusions: The success of clients in a harm reduction program relies heavily on a strong program, ability to access and maintain contact with the program, support from the client's community, and commitment from the client.

Recommendations: Concerns raised by clients will be brought up to a Board of Directors that oversees the Harm Reduction Program in this regional centre. Further research could explore expanding Harm Reduction Programs into additional rural and remote communities, and how to reduce stigma among health care workers toward people with addictions.

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Health Demographics of the Refugee Population at Saskatoon's REACH Clinic

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ABSTRACT

Background: Compared to non-refugee populations, refugees are more susceptible to communicable disease, chronic diseases and mental health issues. Refugees have difficulty accessing care due to economic, cultural, and language barriers. There is limited data on their health demographics in Canada, and none at the local level in Saskatoon.

Research Question: What is the prevalence of infectious and chronic diseases in newly arrived adult refugee patients in Saskatoon?

Methods/Methodology: We performed a retrospective chart review of patients older than 18 who attended the Saskatoon REACH clinic between February 1st, 2017 and January 31st, 2019. Inclusion criteria required at least one clinic visit, and a recorded country of origin. Patient demographics, including age, sex, education, and country of origin were collected. Disease prevalence was assessed through laboratory investigations. Statistical analysis involved univariate descriptive study.

A Certificate of Approval was received from the University of Saskatchewan's Biomedical Ethics Board.

Results/Findings: The median age of patients was 35.1 years. The majority of refugees were from African countries or the Middle East, with Syria (25.4%), Eritrea (16.9%), and Sudan (15.0%) as the top three countries. The prevalence of HIV (2.3%), HepC (0.9%), Strongyloides (3.8%), and chronic HepB infection (5.5%) was low. *Schistosoma* (16.0%) and latent TB (27.2%) were more common. *Schistosoma* was only found in African refugees. The prevalence of elevated blood pressure, diabetes and anemia was 27.7%, 21.9% and 13.1% respectively. There was no unexpected variation in disease prevalence with education, smoking, or gender. Varicella, TB status, and Cervical Cancer screening results were unavailable in 48.3%, 36.2%, and 66.7% of patients respectively.

Discussion: Overall rates of disease prevalence were similar compared to a landmark study of refugees in Toronto from 2015. Certain disease categories had low rates of screening possibly due to either patients declining screening, poor EMR to EMR data translation tools, or human error.

Conclusions: Our study provides the first descriptive statistics on the health status of refugees in Saskatoon and highlights the need to increase screening rates for certain diseases.

Recommendations: Standardized screening requisitions should be implemented based on country of origin.

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The Prevalence of Testosterone Deficiency in Men with Mood Disorder

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ABSTRACT

Background: The prevalence of testosterone deficiency increases with age and is estimated at 3-5% of men between ages 60-79. Mood disorders such as depression and anxiety are extremely prevalent and have parallel symptomatology to testosterone deficiency, such as low mood, low libido, poor concentration and fatigue. The relationship between testosterone deficiency and mood disorders is currently not well understood.

Research Question: What is the prevalence of testosterone deficiency in men at West Winds Primary Health Centre (WWPHC) who are aged 45 or greater and have been diagnosed with a mood disorder?

Methods: This was a cross-sectional quantitative analysis of the prevalence of testosterone deficiency in men who met the following inclusion criteria: a patient of the primary care clinic, age 45 year or greater, and a current ICD-9 diagnosis of depression or anxiety. Study participants, selected by convenience sample, completed three questionnaires (GAD-7, PHQ-9, SHIM) and lab serology measuring total testosterone (TT), serum albumin (SA), Sex Hormone Binding Globulin (SHBG), and free androgen index (FAI). Study data was recorded and prevalence of testosterone deficiency was calculated using the "T calc" application as per British Society of Sexual Medicine Guidelines.

A Certificate of Approval was received the University of Saskatchewan's Biomedical Research Ethics Board.

Results: A total of 22 patients met criteria and completed the study during the six-month study. This study found 14 of the 22 participants (63.6%) met laboratory criteria (free testosterone < 0.225 nmol/L) for testosterone deficiency.

Discussion: This study suggests that the prevalence of testosterone deficiency among patients with mood disorder is significantly higher than the prevalence in the general population. This study was limited by the small sample size as well as the potential for confounding factors in reviewing the free testosterone.

Conclusions: At WWPHC 63.6% of men with mood disorder met current laboratory criteria for testosterone deficiency.

Recommendations: We recommend that physicians caring for men in this age group be familiar with the signs and symptoms of testosterone deficiency and consider laboratory testing where

appropriate, as this impacts treatment opportunities. Further studies with larger sample sizes are required to fully understand this relationship between mood disorder and testosterone deficiency.

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The Relationship between Patient Satisfaction and Number of Chief Concerns in a Primary Health Care Centre

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ABSTRACT

Background: Patient satisfaction is a key component of the patient-centered approach in family medicine. There has been no research specifically assessing whether the number of chief complaints a patient is allowed to present has an impact on their overall satisfaction. From a physician's perspective fewer chief complaints may allow more time to gather information and assess the problem, whereas multiple chief complaints can often cause the physician to rush and not accurately assess each problem as effectively.

Research Question: Is there an association between the number of patient-reported health issues (chief complaints) and patient satisfaction of care received during a visit?

Methods/Methodology: Questionnaires were provided to all patients at the North Battleford Medical Clinic between Jan-Feb 2019. Medical office assistants provided each patient with a questionnaire and a consent form detailing the purpose of the study. Following the visit, the physician would also document the number of chief complaints as well as their own satisfaction of the visit. The data was analyzed using SPSS software.

A Certificate of Approval was received from the University of Saskatchewan's Behavioural Research Ethics Board.

Results/Findings: Statistical significance was not found between number of patient-reported health issues and patient satisfaction. No evidence that older and younger people differ in satisfaction when presenting with the same number of concerns ($p = 0.95$). There was a statistically significant increase in dissatisfaction among physicians with higher numbers of concerns per visit ($p < 0.0001$).

Discussion: Physician satisfaction was grouped as satisfied or very satisfied versus neutral or dissatisfied. Patient satisfaction was grouped as very satisfied versus not very satisfied (i.e. satisfied, neutral or very dissatisfied). Although not statistically significant the odds that a physician was satisfied or very satisfied with the patient encounter was, on average, 43% lower if the patient was over age 65 compared to younger people ($p = 0.06$). Results suggests patients who had two complaints were 65% more likely to be very satisfied than patients who only had one complaint ($p = 0.08$).

Conclusions: No statistical significance between number of chief complaints and patient satisfaction. However, there was a statistically significant increase in dissatisfaction among physicians with higher numbers of concerns per visit ($p < 0.0001$).

Recommendation: Future studies may want to examine the relationship between physician satisfaction and patient age.

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Mental Health Telemetry in Primary Care Practice: How Do Physicians within Swift Current Utilize the PHQ-9?

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ABSTRACT

Background: The PHQ-9 is a nine-item validated tool to screen for depression over a two week period, with an additional global score for current mood. Research suggests that it is widely used to also aid in monitoring efficacy of treatment. A brief survey was designed to assess physician attitudes towards use of the PHQ-9 in their practice.

Research Question: How is the PHQ-9 utilized in clinical practice in Swift Current, SK?

Methods/Methodology: Surveys were completed by residents (n=7) and practicing family doctors (n=7) to ask about their familiarity with, and use of, the PHQ-9. Due to the small sample size, only descriptive statistics were used.

A Certificate of Approval was received from the Saskatchewan Health Authority's Research Ethics Board.

Results: All physicians surveyed were aware of the PHQ-9. More family physicians (71.4%) than residents (42.9%) reported using it for $\geq 50\%$ of their encounters with patients with depression; one did not use it at all. Most will use it to screen (71.4%), measure severity (71.4%), and monitor progress of disease (85.7%). Scores of 10-14 (35.7%) or 15-19 (64.3%) would prompt them to start medication. Most (64.3%) would escalate therapy with a score of 10-14 for patients with a moderate initial score (64.3%), while the same number would do so at 20-27 with a severe initial score. Responses varied as to whether a score of 5-9 (14.3%), 10-14 (28.6%), or 15-19 (57.1%) would warrant continuation of current management for severe initial cases.

Discussion: Overall, there was relatively good concordance in the use of the PHQ-9 to monitor therapy. There was variation over maintenance and escalation of therapy at scores reflecting severe depression, which may indicate an increased role for physician perceptions.

Conclusions: The sample is too small to make generalized conclusions. Awareness is widespread and use in the single clinic surveyed was high. In clinical practice, other variables will also play a part, such as the physician's actual perception of the patient, as well as patient preference, rather than an abstracted score.

Recommendations: This was a very short survey. Further questions could be added to provide a qualitative assessment, such as physician perceptions of barriers to use, and other factors in physician decision making.

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Footwear Removal: A Simple Solution for Improving Clinical Diabetic Foot Exams

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ABSTRACT

Background: Despite evidence that diabetic foot examinations (DFEs) are useful in the prediction and early detection of foot ulceration, they remain one of the most neglected aspects of clinical care. Pre-emptive footwear removal during diabetes chronic disease management (CDM) appointments is hypothesised to improve clinician DFE rates, but studies on the efficacy and feasibility of this intervention are lacking.

Research Question(s): Does preemptive footwear removal at diabetes CDM appointments effect DFE rates? What are patients' expectations regarding DFEs and are they comfortable with preemptive footwear removal?

Methods: Twenty-four adults presenting for diabetes CDM appointments at West Winds Primary Health Centre (WWPHC) from December 30, 2018 to April 30, 2018 were involved in this practice quality improvement (PQI) study. Participants were asked to remove their footwear before seeing the doctor. DFE completion rates within the study group were compared before and after the intervention. Participants also completed a standardized questionnaire to assess patient satisfaction with the intervention.

A Certificate of Approval was received from the University of Saskatchewan Behavioural Research Ethics Board.

Results: With preemptive footwear removal, all participants (12 of 24) due for a DFE received one during their study appointment. The study improved the percentage of participants meeting the minimum yearly DFE guideline from 54% to 100%.

Majority of patients were comfortable with preemptive footwear removal, with none rating "disagree" or "strongly disagree". However, only 70.8% of participants wanted a DFE, and only 58.3% felt they impacted care quality.

Discussion: Study results and feedback from healthcare providers (HCPs) corroborate that preemptive footwear removal improves DFE rates, by reducing the time barrier posed and serving as a visual cue to HCPs.

The participant survey results revealed a knowledge gap in the importance DFEs and their recommended frequency. However, the intervention also stimulated patient education on the importance of DFEs by HCPs among the participants.

Conclusions: Pre-emptive footwear removal is a simple and potentially effective measure to improve DFE rates, and it is a measure that patients are comfortable with.

Recommendations: The study should be continued on a larger scale in WWPHC, by introducing pre-emptive footwear removal as part of the clinic protocol for diabetic CDM appointments.

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Utility of Exercise Prescriptions at West Winds Primary Health Centre

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ABSTRACT

Background: There is a well-established link between exercise and health benefits, both in the management and prevention of chronic disease. Current research has also shown that regularly reviewing exercise with patients and the act of prescribing exercise improves patient adherence to exercise recommendations. However, the rates of physicians discussing, and/or prescribing exercise remains low at West Winds Primary Health Centre (WWPHC). The purpose of this project is to explore and identify barriers that physicians at WWPHC encounter when discussing and writing exercise prescriptions. The potential significance would be to increase the number of exercise prescriptions and counselling regarding exercise at WWPHC by physicians. With the hope of generalizing to other clinical sites.

Research Question(s): Will increasing the accessibility to physical activity discussion tools/exercise prescriptions in the electronic medical record, lead to more frequent discussion of physical activity with patients by physicians at West Winds Primary Health Centre?

Methods/Methodology: A before-and-after study design was used to assess the effectiveness of the proposed intervention. The study population was composed of current resident physicians and faculty physicians at WWPHC. Our primary outcome was the number of active exercise prescriptions in the EMR. The secondary outcome looked at the frequency physicians are reviewing/discussing exercise at chronic disease management and periodic health exam visits. The intervention was determined by a needs assessment, which was done through an online questionnaire ("surveyMonkey.com"). A post intervention survey was sent at the conclusion of the project. The questionnaires were sent to the study population via primary email contacts and participation was voluntary. Outcomes were assessed at one month and three months post-intervention.

A Certificate of Approval was received from the University of Saskatchewan's Behavioural Research Ethics Board.

Results/Findings:

The pre and post intervention surveys were sent to a total of 40 potential participants, with a total of 17 responses for the pre and 13 responses for the post survey. Pre-intervention, there was a total of 7 exercise prescriptions in the EMR. One-month post intervention, there was an additional 4 exercise prescriptions (total 11), and an additional 16 prescriptions (total 27) three months post intervention. Physical activity counselling at one-month post-intervention was 54 (44 general + 10 specific advice, 8 not discussed) and 3 months post-intervention was 90 (63 general + 27 specific advice, 18 not discussed). Seventy-one percent of participants were familiar

with exercise prescriptions, 41% reported using exercise prescriptions. Thirty-five percent of participants were aware that exercise prescriptions were in the EMR. Seventy-six percent of participants knew the current Canadian physical activity guidelines. Pre-intervention, physician comfort level was an averaged score of 8, which decreased to 6.7 out of 10 post-intervention. Pre-intervention, 0% reported discussing exercise less than 3 times, 18% 3-6 times, 47% 7-10 times and 35% more than 10 times in the last month. Compared to post-intervention, 46%, 23%, 23%, and 7% respectively. Pre-intervention, 24% physicians reported less than 3 patients, 12% reported 3-6 patients, 29% reported 7-10 patients, and 35% reported more than 10 patients asking about exercise in the past month. Compared to post-intervention, 69%, 15%, 8%, and 8% respectively. On the post-intervention survey, 67% of participants found exercise prescriptions useful when discussing exercises but only 31% reported using exercise prescriptions.

Discussion:

Overall, the intervention was perceived as being helpful, with the EPR tool being time effective, easy to use and understand. There is a positive relationship with use of exercise prescriptions and adherence to exercise. A key component in increasing adherence is regular follow up and review of physical activity recommendations. However, our data showed no one has ever reviewed an exercise prescription once it has been created. Unfortunately, our current study did not assess adherence rates to physical activity recommendations.

Conclusions:

Our intervention and implementation of the EPR tool in the EMR did result in an increased number of exercise prescriptions, which demonstrated sustained growth at 3 months post-intervention. Due to small sample size and the above-mentioned issues with data collection, we are unable to comment on the effects of the intervention on frequency of physical activity discussions with patients. Adherence to physical activity recommendation was not assessed, thus we are unable to comment on whether this increase in exercise prescriptions will translate into increased adherence.

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Family Physicians' Views and Attitudes about Sport and Exercise Medicine within the Saskatchewan Health Authority

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ABSTRACT

Background: Sport and exercise medicine (SEM) physicians within Saskatchewan believe they are being underutilized, with lower than expected referral rates. Previous literature has demonstrated a lack of confidence amongst general practitioners managing musculoskeletal (MSK) injuries. A lack of understanding of SEM physician roles and referral indications has also been shown.

Research Question(s):

1. What do family physicians in Saskatchewan understand to be the scope of practice of an SEM physician and what are their current views towards the utilization of the specialty?
2. Secondary research questions addressed comfort with SEM, referral patterns, and barriers to referral.

Methods/Methodology: A cross-sectional mixed-methods online survey was distributed provincially to family physicians by the Saskatchewan Medical Association. Chi-Squares and independent samples *t*-tests were conducted and open-ended responses were coded. Approval was obtained from the Saskatchewan Health Authority Research Ethics Board (REB-19-28).

Results/Findings: Urban physicians had a better understanding of the role ($M_{\text{urban}}=3.9$, $SD=0.7$; $M_{\text{rural}}=3.5$, $SD=1.0$, $t_{106.7}=2.594$, $P=.027$) and scope ($M_{\text{urban}}=3.8$, $SD=0.8$; $M_{\text{rural}}=3.4$, $SD=0.9$, $t_{97.6}=2.236$, $P=.011$) of SEM physicians. However, rural physicians were far more comfortable performing MSK injections ($M_{\text{urban}}=3.1$, $SD=1.2$; $M_{\text{rural}}=4.0$, $SD=0.8$, $t_{108.9}=-4.928$, $P<.001$). The main barrier perceived by urban physicians was waitlist times vs. distance as identified by rural physicians. Overall, attitudes towards SEM physicians were positive and the majority of physicians felt they were useful for their patients.

Discussion: Although urban physicians had a better understanding of the role and scope of SEM, responses indicated that all would benefit from further education. There is currently an inaccurate perception that waitlist times are long, which may be due to a lack of understanding of the SEM specialty and how to access care.

Conclusions: Current views of SEM physicians and the specialty of SEM within Saskatchewan are positive. A number of modifiable barriers to referral were identified, and distinct differences

were found between rural and urban physicians' knowledge and utilization of SEM. As this is the first study of its kind in Saskatchewan for SEM, there is now a platform for future research.

Recommendations: Developing a speciality directory listing practicing SEM physicians, and the services and waitlist times for each, would address many concerns.

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Interrogating the Clinical Gaze: An Auto-Ethnographic Exploration of Patient-Centred Care

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ABSTRACT

Background: The heart and soul of family medicine lies in the relationship between the physician and the patient. The backbone of this relationship is our capacity for communication. However, the simultaneous demand for rigorous documentation, increased efficiency, and stringent adherence to diagnostic algorithms and guidelines can often lead to a gap between our ideal of patient-centered empathetic communication, and the needs of being an expert clinician.

Research Question: Does the act of engaging in reflective practice bridge the divide between the ideal of “patient-centered care” and the pragmatic requirements of algorithm-mediated clinical practice?

Methods/Methodology: The methodology used in this project was auto-ethnography. Reflective practice was applied to various clinical encounters that I had over time and then expressed in vignettes using a combination of analytical and creative auto-ethnographic processes.

An Exemption was obtained from the University of Saskatchewan’s Behavioural Research Ethics Board.

Findings/Discussion: The analysis of the various self-reflections on patient encounters revealed a breadth of triumphs; opportunities for change; and, a glimpse into moments shared with patients that were sometimes successful and rewarding, and other times less so.

Processing clinical encounters through the lens of reflective practice, a thread of shared significance emerged, bringing together the ostensibly fragmented pieces of history, personal narratives, clinical data, and affect into a coherent, meaningful whole.

Conclusions: The very act of reflecting upon a patient encounter was conducive to revealing the subtext of meaning that characterized the relationship formed between physician and patient during the encounter. Within the context of that revealed connection of meaning, particularly in ongoing physician-patient relationships, the apparent gap between being patient-centered and clinically responsible became less intractable.

Recommendations: Medical students, residents, physicians, and others working in healthcare would benefit from engaging in a reflective practice as it allows each of us to find meaning in the often-chaotic world we inhabit.

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Ovarian Follicular Waves during the Menstrual Cycle: Applications for Primary Care

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ABSTRACT

Background: Waves of ovarian follicular development have been recently documented during the menstrual cycle. The clinical applications of follicle waves are not fully understood.

Research Question(s): We hypothesized that knowledge of follicular waves has clinical applications for optimizing hormonal contraception and infertility treatment while increasing our understanding of hormonal variation during the menopausal transition.

Methods/Methodology: Transvaginal ultrasonography was used every one-three days during the menstrual cycle in women of reproductive age (n=63), advanced reproductive age (n=30), and those randomized to receive one of the following oral contraceptives (OC): a) 30 mcg ethinyl estradiol/0.25 mg norgestimate (n=12), b) 30 mcg ethinyl estradiol/0.15 mg desogestrel (n=12), and c) 20 mcg ethinyl estradiol/0.10 mg levonorgestrel (n=12). In all 3 studies, serum concentrations of reproductive hormones were measured every 3-7 days. In a fourth study, ovaries were obtained from women undergoing ovariectomy and imaged using ultrasound biomicroscopy (n=11). In a similar study, human ovaries were evaluated using synchrotron imaging compared to ultrasonography and histology (n=4).

Results/Findings: Luteal phase dominant follicles grew to larger diameters and persisted for longer periods of time in women of advanced reproductive age versus reproductive age, in association with atypically high estradiol. Antral follicle development was documented in all women using OC. The incidence of follicle development was greater in women using low dose (n=23 follicles) versus conventional dose estradiol formulations (n=7-13 follicles). 86% of follicular development during OC use originated during the hormone free interval (HFI). Ultrasound biomicroscopy and synchrotron imaging provided greater resolution of ovarian microanatomy compared to conventional ultrasonography.

Conclusions: Variability in hormone production as women age can be attributed to changes in follicular dynamics. Knowledge that follicle development during OC use is initiated during the HFI has resulted in the reduction or removal of the HFI. Knowledge of follicular waves has resulted in the development of novel treatment protocols for women undergoing assisted reproduction. Finally, ultrasound biomicroscopy and synchrotron imaging provide potential for the future evaluation of female reproductive anatomy.

Recommendations: Research is required to elucidate the clinical implications of follicular waves on the development of vasomotor symptoms and cognitive changes during the menopausal transition.

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