"Something is wrong with your milk": A qualitative study of maternal dietary restriction and beliefs about infant colic

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ABSTRACT

Background: In spite of overwhelming evidence of the benefits of breastfeeding,¹‒⁶ only 37% of the world’s children are exclusively breastfed until the age of six months.⁷ Reasons for this include, difficulties with lactation, maternal illness, and return to work outside the home.⁷‒¹¹ Less well-studied are the private reasons, for example negative body image,¹¹ the tension of difficult work vs. ambiguous infant cues,¹² and lack of perceived support from family and friends.¹³ Mothers’ concerns about what to eat while breastfeeding is an emerging social determinant of breastfeeding.¹⁴

Research Question(s): What is the role of maternal diet in fuss-cry behavior? What are the patterns of food restriction(s) in breastfeeding women?

Methods/Methodology: Focus groups and one-on-one interviews with a semi structured interview guide, followed by content analysis. Women were recruited between October, 2014 and January, 2016 through posters placed at three maternity and breastfeeding clinics in Calgary, Alberta. A Certificate of Approval was sought and obtained from the Conjoint Health Research Ethics Board, University of Calgary.

Results/Findings: Participants believed that the infant cry-fuss behaviour was related to abdominal pain linked to feeding, and had eliminated items from their diet. Typical targets of elimination were caffeine, cruciferous vegetables, cabbage, garlic and onions, spicy foods, gluten and beans. Participants reported feeling appraised by society for their infant-feeding choices, and often judged. Many women reported feeling confused by conflicting sources on breastfeeding and preferred advice from trusted friends and family to that from health care providers or the Internet.

Discussion: In spite of scientific evidence to the contrary, the participants that were breastfeeding believed that the maternal diet influenced infant cry-fuss behaviour. An understandable desire for a calm baby, and to be favourably judged by friends and family, can drive breastfeeding women to restrict their diet, often to the point of hardship.

Conclusions: The maternal diet-infant colic paradigm is reductive, as it ignores breastfeeding as complex interplay of physiologic, evolutionary, economic, familial and social contexts. It is also potentially harmful if it leads to early breastfeeding cessation or inadequate micronutrient content in breast milk.
**Recommendation:** More work needs to be done on the social determinants of breastfeeding which includes ideas about the role of diet in infant behaviour.

**References:**


Breast-feeding outcomes post-frenotomy at a primary care clinic

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**ABSTRACT**

**Background:** Ankyloglossia is a common, congenital condition where the lingual frenulum restricts tongue movement. The condition may affect successful breastfeeding for the mother-infant dyad. Frenotomy is a procedure to mitigate this condition.

**Research Question(s):** Does frenotomy performed for ankyloglossia result in continued and exclusive breastfeeding up to and beyond six months of age?

**Methods/Methodology:** This is a retrospective observational study. The participants were identified from the electronic medical record (EMR) system for patients, using the billing codes to identify infants who had undergone a frenotomy procedure at the West Winds Primary Health Centre within the last 6 months. The inclusion criteria included: all mother-infant dyads who had undergone a frenotomy between February 01, 2010 and July 31, 2017 and were able and willing to give consent to participate in the survey. Of the sample of 75 mother-infant dyads who had a frenotomy performed, 33 met the inclusion criteria. Retrospective follow-up was done via a telephone survey. A structured questionnaire was used to assess breastfeeding, latching issues, and maternal nipple pain. This project was deemed Exempt by the University of Saskatchewan’s Behavioural Research Ethics Board.

**Results & Discussion:** Of the 75 mother-infant dyads identified, 33 (44%) of mothers agreed to participate in a telephone survey. The infants included were comprised of 18 males (54.5%) and 15 females (45.5%). Prior to frenotomy, all (33/33) presenting mother-infant dyads experienced some problems with latching, nipple pain or being unable to exclusively breastfeed. Of these, 51.5% (17/33) were exclusively breastfeeding; and, 48.5% (16/33) were supplementing with expressed milk or formula. Following the procedure, the median time to notice of improvement was 1 day. Post-frenotomy, 66.6% (22/33) of mothers were able to exclusively breastfeed for ≥ 6 months. In terms of symptom relief, 63.6% (21/33) noticed an improvement in nipple pain and 78.8% (26/33) noticed an improvement in latching. Those who breastfed exclusively prior to the tongue tie release experienced improvements sooner and were more likely to continue to breastfeed exclusively long term.

**Conclusions:** A positive relationship between frenotomy and exclusive breastfeeding up to and beyond 6 months was identified. This supports the research question and indicated that frenotomy is an effective treatment that should be taught by experienced clinicians to residents at West Winds Primary Health Centre.
References:
Building better brains with books: Promoting early literacy development through clinic-based interventions for primary care providers

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ABSTRACT

Background: Previous research suggests children's brain development profits more from reading aloud than any other type of adult-child interactions. Unfortunately, many are unaware that sharing books can nourish the growth of a child's brain. Luckily, studies reveal that parents/caregivers are more likely to read to their children if a trusted medical professional imparts this knowledge.

Research Question(s): (1) Is it possible to design a “tool kit” that health care professionals (HCP) would want to utilize during well-child/non-acute clinical encounters in order to help promote the important message of reading from birth throughout childhood? (2) What resources would render such a kit to be effective, readily accessible, simple to use, and inexpensive?

Methods/Methodology: Development of the literacy resource kit evolved under the advisement of two different panels: literacy experts and HCP. Data from the focus group discussion with the literacy panel was subsequently used to construct a tool kit, which was presented to the panel of HCP. Interviews were audiotaped, transcribed, and reviewed independently for content analyses.

Results/Findings: Both advisory panels felt that early literacy promotion in the clinical setting was essential due to a lack of awareness amongst HCP and parents/caregivers. However, reaching consensus on what to include in a standardized kit of resources was problematic as it was felt that a “one-size fits all” kit would not address the diverse needs of the families (literacy levels, access to books, priorities) and the providers (buy-in, resource preference, time constraints).

Discussion: Consistent with previous research, this study reaffirmed the notion that HCP serve as an ideal conduit for promoting early literacy. While no kit was generated from the present study, providers should be aware that taking time to acknowledge the issue of early literacy will likely have more influence on parents/caregivers than any resource.

Conclusions: These findings suggest that the very act of a HCP taking time to speak to parents/caregivers about the importance of book sharing with young children may serve as the catalyst to ignite the spark for early literacy. This simple intervention appears to be better than providing any resource, perhaps with the exception of gifting books.
References:
Rural obstetrical care: Examining the process of selecting delivery location in a remote northern Saskatchewan community - physician perspectives

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ABSTRACT

Background: Women living in rural and remote Canada face barriers to maternity care. Meanwhile, as rural obstetrical services/ delivery volume are declining in Canada, more women appear to be choosing to deliver in urban centers (obstetrical outflow). However, the SOGC advocates that rural obstetrical care should be supported and promoted. In one Northern Saskatchewan community numbers local births have been declining despite a growing population, with many women being referred to urban centers for delivery.

Research Question(s): What factors do individual physicians in a remote northern Saskatchewan community consider when advising patients on delivery location?

Methods/Methodology: Eleven individual semi-structured interviews were undertaken with 11 rural family physicians currently providing prenatal and obstetrical care (that work in the remote northern Saskatchewan community). Interview transcripts were coded for the purpose of thematic analysis.

Results/Findings: Patient choice was an important factor in the discussion about delivery location. La Ronge physicians emphasized the well-known advantages of social and family support when delivering closer to one’s home community. Patient factors including complications in pregnancy were used to guide assessment of low or high risk deliveries. Lack of cesarean capability raised concerns centered on the fear of potential poor maternal and fetal outcomes in the event that a cesarean was needed but delayed by transportation time. Practitioner comfort, nursing concerns, were also taken into account by physicians.

Discussion: Despite the position of the SOGC regarding the promotion of rural obstetrical care, even without local access to C-section, their guidance is currently limited. It remains ill-defined which factors are critical when deciding if rural delivery is appropriate for an individual woman, and how heavily these should each be weighed. Two strategies that have evolved to promote safe obstetrical care in one northern Saskatchewan community are 1) Select only ‘low risk’ obstetrical candidates for local delivery, and 2) Refer all nulliparous women to tertiary care.

Conclusions: In an effort to promote safe rural obstetrical care by referring more women than may be warranted, given the available evidence, rural physicians risk a continuing decline in numbers of local births and may expose patients to the negative psychosocial impacts of relocation for delivery.
References:


Incidence of interventions in labour with epidural analgesia in a Regional Hospital

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ABSTRACT

Background: Research shows epidural analgesia prolongs the second stage of labour, but there is conflicting evidence that this influences interventions during labour. Most research has been conducted in urban hospitals. In rural and regional Canada, obstetrical care is primarily provided by family physicians and the incidence of epidural analgesia and interventions in labour may differ.

Research Question(s): Is there a difference in the incidence of artificial rupture of membranes, augmentation, instrumental delivery and/or unplanned Caesarean section in women delivering in Moose Jaw who receive epidural analgesia as compared to those without? What is the prevalence of epidural analgesia in nulliparous and multiparous women attempting vaginal delivery in Moose Jaw during the study period?

Methods/Methodology: A retrospective chart review was conducted using birth records from patients delivering a live infant in Moose Jaw, Saskatchewan from July 1 to December 31, 2013 or January 1 to June 30, 2015 who met the study’s eligibility criteria (n=446).

Results/Findings: Primiparous women were more likely to receive epidural analgesia (54.2%) than multiparous women (28.6%), $\chi^2$1 df = 29.496; P < 0.001. Augmentation of labour occurred in 56.1% of deliveries with epidural analgesia and 19.4% of deliveries without, $\chi^2$1 df = 63.744; P < 0.001. The rate of vacuum-assisted delivery was higher with epidural analgesia (24.3%) than without (9.2%), $\chi^2$1 df = 18.964; P < 0.001. Differences in rates of forceps-assisted delivery (60.0% vs. 40.0%) and unplanned Caesarean section (37.0% vs. 63.0%) with and without epidural analgesia were not significant.

Discussion: Epidural analgesia rates in Moose Jaw were more similar to other rural locations than urban Saskatchewan locations. Obstetrical care providers could consider educating women about the relationship between epidural analgesia and augmentation and vacuum-associated delivery when obtaining informed consent for epidural analgesia.

Conclusions: Epidural analgesia was associated with an increased incidence of augmentation of labour and vacuum-assisted delivery, but there was no significant difference in the rate of forceps-assisted delivery or unplanned Caesarean section. Future research should focus on
outcomes in rural locations (population < 10,000), as obstetrical providers in these locations may be less comfortable doing vacuum-assisted deliveries.

References:


Evaluation of IUD insertion practices and procedure tolerance in Regina, SK

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**ABSTRACT**

**Background:** IUDs are the most effective form of reversible contraception. It is estimated that under 10% of North American women choose IUDs as their method of contraception. It is speculated that one of the reasons for this is the fear of pain at the time of IUD insertion. Finding an effective way to decrease the pain associated with IUD insertions may result in more women choosing this method of contraception, thereby decreasing the number of unintended pregnancies and their resulting consequences. Currently, there are no guidelines for analgesic recommendations with IUD insertion.

**Research Question(s):** Is the pain associated with intrauterine device insertion reduced by the use of intracervical lidocaine in women?

**Methods/Methodology:** This was a quantitative, prospective observational cohort study completed by administering a survey at two sites within Regina, Saskatchewan. The primary outcome was pain after tenaculum placement and overall pain, which were scored on a scale from zero to ten. Analysis was done using descriptive statistics, independent samples t-tests, Factorial Analysis of Variance (ANOVA), and multiple linear regressions.

**Results/Findings:** Intracervical lidocaine was associated with a statistically significant decrease in pain score with tenaculum placement, but not with overall procedural pain. Increased anticipatory pain was correlated with an increased pain rating for the overall procedure. All other variables assessed showed no significance in reported pain perception with tenaculum placement or overall procedure.

**Discussion:** Pain during IUD insertions is multifactorial. Lidocaine does not affect overall pain scores, but does decrease pain during tenaculum placement. The high anticipatory pain scores increasing overall procedural pain points to the possibility that psychological factors may play a significant role in overall procedural pain.

**Conclusions:** Intracervical lidocaine is beneficial in decreasing pain during tenaculum placement, but does not significantly decrease overall the pain associated with IUD insertion. High anticipated pre-insertion pain scores were associated with a significant increase in overall pain scores during IUD insertion.
**Recommendations:** The results from this study do not support a universal recommendation for intracervical lidocaine to reduce overall pain during IUD insertions. Further studies would be beneficial to evaluate other modifiable factors that may affect pain during IUD insertion.

**References:**
Reasons for non-compliance with
Post Vasectomy Semen Analysis in Saskatoon

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ABSTRACT

Background: Despite vasectomy being a safe and reliable form of permanent contraception, it requires a three month Post Vasectomy Semen Analysis (PVSA) in order to confirm sterility. Non-compliance rates with PVSA are known to be high based on previous studies. Few studies have examined patient reasoning for non-compliance and no studies have been focused on a Saskatchewan population.

Research Question(s): What are the non-compliance rates for three month PVSA in men who have undergone vasectomy in Saskatoon since 2009? What are the self-reported reasons for non-compliance at the three month PVSA?

Methods/Methodology: After a review of electronic medical records at two family medicine clinics, we identified patients who had undergone vasectomy since 2009. Upon review of their charts, we determined the number of patients that did not have a PVSA result on file. We contacted some of these men with a predetermined telephone script to discuss reasons for non-compliance.

Results/Findings: Combined non-compliance rates for the two clinics were high at 60.5%. Three major reasons for non-compliance were identified among the patient responses. These included patients feeling too busy to complete PVSA, patients feeling confident in the physician or procedure immediately after vasectomy, and feeling the PVSA process was too inconvenient.

Discussion: Our high non-compliance rates are consistent with other literature. However, this may also be affected by a percentage of patients who had completed their PVSA but were not included in our telephone sample. Rates may have differed between two clinics as the clinic with lower non-compliance rates acts as an academic practice with more time for appointments and less patients being referred from other physicians.

Conclusions: Non-compliance rates with PVSA in this study were high. We identified three major reasons for non-compliance which may help guide counselling opportunities in the future.

Recommendations: Future studies may benefit from sampling men who had completed their PVSA to determine their reasons behind completion. Studies in the future may also benefit from
comparing demographic data between compliant and non-compliant groups. Other studies could benefit from prospective use of counselling or reminder techniques.

References:
Family physician perceptions of barriers to provision of induced abortions in rural northern Saskatchewan

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ABSTRACT

Background: In Canada, a third of women access induced abortions during their lives. The SOGC and CMA state that abortion services should be available to all women in Canada. However, abortion services are increasingly inaccessible in rural Saskatchewan, and barriers to provision of abortion services in this region are unknown.

Research Question(s): What barriers do rural family physicians working in northern Saskatchewan perceive when trying to provide abortion services? With regard to those barriers, what do these physicians identify as potential solutions to increase accessibility to abortion services?

Methods/Methodology: This mixed methods study included a mailed-out questionnaire and one-on-one semi-structured interviews. A list of mailing addresses was obtained from the College of Physicians and Surgeons of Saskatchewan, and included 205 physicians. A cover letter and questionnaire were mailed to all family physicians in Saskatchewan working north of Saskatoon and outside of Prince Albert. Questionnaires assessed interest in providing abortion services and perceived barriers to doing so. The interviews utilized open-ended questions which build on the previously identified barriers and explored possible solutions. Interviews were audio-recorded and transcribed. Questionnaire data was analyzed using IBM SPSS v.24. Interview transcripts were reviewed and analyzed for recurrent themes and to provide context to the quantitative data.

Results/Findings: Of 205 questionnaires mailed, 42 responses were received and 13 volunteered to be interviewed. Four interviews were completed. 12% of the respondents provide medical abortions while 19% formerly provided medical abortions. 45% expressed interest in providing medical abortions and 17% were interested in providing surgical abortions. 48% reported a lack of support for physicians willing to provide abortions. Barriers included: conscientious objection (36%), inadequate training (36%), lack of support from colleagues (26%), and lack of community support (12%). Needed supports included: training in abortion provision (74% medical, 48% surgical), ultrasound availability (74%), counseling (67%), and supportive surgical backup (60%). One respondent suggested developing a clinical pathway “to access imaging, counseling, procedure, [and] consultation in one coordinated effort.” The interview responses identified further barriers unique to rural communities, including limited access to transportation, difficulty following up with patients, limited ultrasound and counseling access, and confidentiality concerns.
Discussion: Due to response bias, this study likely overestimates the proportion of physicians who provide referrals for abortions, as well as the proportion who are interested in providing abortion services themselves.

Conclusions: Patients in rural northern Saskatchewan are disadvantaged in accessing abortions. This is due to unique barriers: lack of confidentiality; difficulty following-up with patients; and limited access to ultrasound, transportation, surgical back-up, and counselling. To improve physicians’ ability to provide abortion services, further training in abortion provision, improved access to ultrasound and counselling services, and supportive local surgical backup are needed.

Recommendations: We recommend the development of a regional comprehensive sexual health centre or a clinical abortion pathway; improving physician training in abortion provision; and improving patients’ access to transportation.

References:

Evaluation of Wellness Wheel Clinics: A community partnered care model to improve access to care on-reserve

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ABSTRACT

Background: Consultations with Indigenous communities in Saskatchewan revealed residents on reserve have limited access to adequate healthcare services. Residents travel considerable distances to access care either in urban tertiary care centers or in small towns. A team of providers from the nearest urban tertiary care center, in collaboration with four Indigenous communities, developed a care model to address this gap in healthcare delivery. Outreach clinics referred to as Wellness Wheel (WW) clinics are being offered once a month at each of these four communities.

Research Question(s): How are community members accessing care currently and what are barriers to this care? What are the perspectives of the WW team and community representatives on clinic operations at one year after implementation?

Methods/Methodology: An anonymous patient survey regarding healthcare utilization was completed and analyzed with descriptive statistics. Individual interviews were carried out with fourteen WW providers and ten community representatives. The data were analyzed using thematic analysis.

Results/Findings: Written survey results identified travel, access to care, and time constraints, as challenges patients face in accessing healthcare. Many patients sought care at secondary and tertiary care centers prior to WW clinics. Six major themes were identified with thematic analysis: availability of care, barriers to care, logistical challenges, community engagement, strategies that worked and impact. Approval from community leadership, support from elders and community members, and collaboration with existing community healthcare staff were crucial for the initial establishment of the WW clinics. Logistical issues such as allocation of space, equipment, medical supplies, funding, staffing, medical records and appointment scheduling were identified during the early clinic implementation stage. These issues were resolved through community consultation and adoption of creative strategies. The WW team’s commitment to a collective goal of providing supportive patient-centered care was instrumental in the success of the clinics. Since implementation, access to family physicians, internal medicine specialists, and phlebotomy have increased considerably in these four communities.
Conclusions: Access to healthcare in Indigenous communities can be enhanced significantly by coordinating outreach clinics through existing community healthcare facilities and community partnerships.

Recommendations: Ongoing partnership with community members and local governance, increased frequency of clinics, and ongoing feedback will be crucial to successful WW clinics.

References:


Patient’s access to health care at the North Battleford Primary Healthcare Clinic: Is patient access limited more by patient preference for a specific provider or by the actual number of available appointments?

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ABSTRACT

Background: Access to Primary Healthcare clinics has been shown to be an indicator of good health outcomes in patients. Poor access is associated with more frequent ER visits and hospitalizations. North Battleford Primary Healthcare Clinic has perceived poor access by its patients. It is important to intervene if access at the clinic is poor, in order to ensure better access to care and improve healthcare outcomes for patients.

Research Questions: Is patient access to the Primary Healthcare Clinic in North Battleford poor? If so, is it limited to available appointments or patient preferences (including specific providers or dates)?

Methods/Methodology: Questionnaires were completed on two data collection days that documented information related to the appointment booking for patients at the North Battleford Primary Healthcare Clinic. Questions focused on preferred appointment date, provider preference, their actual appointment date and the provider they booked with.

Results/Findings: A total of n=163 patient questionnaires were analyzed. The total percentage of people who successfully booked an appointment was 98.7% (161/163). Of those, 88.3% (144/163) got their first choice provider, and 91.4% (149/163) got first their requested date. Average wait time if date requested was unavailable was 4.1 days.

Discussion: The proportion of patients who were able to schedule an appointment, see their first choice provider, and get the date of the appointment they requested is high. These results suggest access at the North Battleford Primary Healthcare Clinic is high. Thus, barriers to perceived access by patients do exist, and may be related to intrinsic patient factors, such as their ability to seek out access, reach healthcare services, and engage in their own healthcare.

Conclusions: Data shows not only do patients have good access to appointment slots, but also to their primary care provider. Perceived poor access is therefore an area in which healthcare models need to identify and improve upon.

Recommendations: Future focus on the reasons for perceived poor access should be pursued. If these reasons were identified specifically via patient satisfaction surveys, improvements could be
implemented by the PHC to improve the perceived poor access, and subsequently may improve healthcare outcomes.

References:
Drug-seeking behaviours in the Prince Albert community

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ABSTRACT

Background: Drug-seeking is a common problem found in emergency departments, walk-in clinics, and primary care. Little research has examined how physicians identify drug-seeking behaviours in Canada. Our goal is to determine which behaviours the physicians of Prince Albert have identified as drug-seeking, as well as how these behaviours are managed in practice.

Research Question(s): What are commonly identified drug seeking behaviours observed in primary care patients from the Prince Albert community and what strategies are local physicians utilizing to address this problem?

Methods/Methodology: This study utilized a cross-sectional model designed to gather perspectives regarding physician beliefs and experiences on drug-seeking behaviour in Prince Albert. Primary care physicians from the community of Prince Albert, including those working in emergency and family medicine were invited to participate.

Results/Findings: The three most common drugs sought by patients exhibiting drug-seeker behaviours were hydromorphone (100%), benzodiazepines (92%) and gabapentin (84%), while the least sought after were Tramadol (8%), bupropion (12%) and methadone (24%). Back pain was found by 96% of physicians to be very suspicious for drug-seeking, while abdominal pain was only found by 36% to be suspicious. Certain elements on history were found to be very suspicious for drug-seeking, with a complaint of prior prescription being lost or stolen being the most common (76%) followed by requesting narcotics by name (68%) and reporting non-narcotics as ineffective (60%). Most physicians used electronic means as collateral history for identifying drug seekers (88%) and most used drug contracts and urine screening as management strategies for prescribing narcotics.

Discussion: In general the results were consistent with previously reported beliefs and behaviours consistent with drug seeking behaviour. Identification of Gabapentin as a commonly sought drug of abuse in Prince Albert was an interesting result of this study.

Conclusions: Identified drug-seeking behaviours in the community of Prince Albert were congruent with those identified in the available literature.

Recommendations: Further study of drug seeking behaviours in other Saskatchewan communities is required. In addition, further study of the use of electronic resources to combat drug seeking behaviour.
References:
By the way, Doc – Do you have a family physician?
A survey of Saskatchewan family physicians' own access to a family physician

Kaitlyn Hughes, FMR II; Michelle Urbanski, FMR II;
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ABSTRACT

Background: Family physicians provide comprehensive care to patients, but where do they seek their own primary care? Approximately half of doctors do not have family doctors, yet 44% have a chronic health problem (2). Considering their high rates of chronic diseases and mental health issues, it is valuable to know their access to primary care and its impact.

Research Question(s): 1. What proportion of Saskatchewan family physicians has a family physician? 2. What is their pattern of primary care access? 3. How does their method of access impact morbidity?

Methods/Methodology: A cross-sectional survey was sent to all Saskatchewan family physicians regarding demographics, medical conditions, access to primary care, and perception of overall health. Quantitative analyses included descriptive statistics, Chi-squares, and logistic regression. Text data were coded, grouped into categories, and summarized.

Results/Findings: One hundred and seventy-nine of 977 surveys were completed (response rate = 18.3%). Seventy-eight percent of family physicians had a family doctor; women and those who had been in practice longer were more likely to have one. Urban family physicians were more likely to have a personal family physician than rural/remote colleagues ($\chi^2$df=1 = 8.469, P = .004). Those with a regular prescription were more likely to get one from a colleague ($\chi^2$df=1 = 7.519, P = .006). Reasons for not having a family physician included time constraints, not needing one, colleague prescribing, or poor access. Over one-third of physicians self-treated in the past year; those with regular prescriptions were more likely to obtain this from a colleague.

Discussion: Having a personal family physician is valued, but multiple barriers to accessing one were identified including time constraints, poor access, and confidentiality concerns. A large number of respondents recently started practice, introducing a potential bias that the population was healthier and exposed to training that emphasizes physician wellness.

Conclusions: Most Saskatchewan family physicians have a family physician; differences in access and utilization were not related to health outcomes. Common barriers identified for accessing a family physician included time constraints, limited access and a physician not perceived to be needed.
**Recommendations:** Larger scale studies across Canada are required to see if findings are reproducible.

**References:**


Development of a 3-D printed model for simulating shoulder anatomy and pathology

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ABSTRACT

Background: 3-D printers are emerging as technology for developing a variety of plastic-baseć structures with widespread applications across many fields. The cost and availability of the material, equipment and open source programs has allowed 3-D printing to be accessible in ones clinic. The technology has been used in healthcare, with applications in developing prosthetics and other medical equipment. We will examine the feasibility in applying this technology for teaching purposes by creating a model that can simulate the movements of a shoulder joint.

Research Question(s): Can a cost-effective 3-D printed shoulder model be designed for tactile and visual learning of shoulder anatomy, pathology and function for patients and medical learners?

Methods/Methodology: A 3-D model was used to print a humerus, scapula, and rotator cuff muscles. A combination of Polyactic Acid and Thermoplastic Polyurethane filaments were used to ensure both structural rigidity and flexibility of our model. The final model was constructed with screws and elastic materials. Acceleration forces will be measured using an accelerometer, the data is analyzed using a microcontroller which interprets data to depict which muscles are responsible for certain movements.

Results/Findings: A 3-D Printed model of the left shoulder was printed; the humerus, scapula, supraspinatus, infraspinatus, teres minor and subscapularis were placed in their appropriate anatomical positions. An accelerometer attached to the humerus and a single board microcontroller conveys the appropriate signal based on manipulation of the model.

Discussion: Multiple roadblocks were overcome from choice of material used for printing to anchoring muscles to the appropriate anatomical locations. A final working model of the shoulder was created that when manipulated will activate each individual muscle that is responsible for the movement. The model was cost effective and is easily reproducible.

Conclusions: A cost effective and structurally sound model of the shoulder was developed for teaching procedural and examination skills to medical learners as well as for use in patient teaching.
References:
The effect of patient education and personal experience on the perception of the importance of glycemic control and motivation to control Type 2 Diabetes

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ABSTRACT

Background: The prevalence of type 2 diabetes mellitus (T2DM) around the world is increasing. It is estimated that by the year 2040, 642 million people worldwide will have diabetes. The Canadian Diabetes Association recommends that patients be referred in a timely manner to diabetes self-management education (SME) programs involving an interdisciplinary team.

Research Question(s): What demographic, clinical, and diabetes education/information variables predict a higher motivation to control one’s T2DM? Secondary questions include: Is there a difference in perceived importance of glycemic control and/or motivation to control blood sugar between patients who recently attended an SME program, those who attended more than three months ago, and those who have never attended? Is there a difference between men and women in perceived importance of glycemic control and/or motivation to control blood sugar? What resources do patients rely upon in order to stay up-to-date on diabetes information?

Methods/Methodology: We used the TSRQ, a valid and reliable survey which assess patient motivation in three different areas; autonomous motivation, controlled motivation, and amotivation. The survey was adapted to include demographic information. Patients were recruited from two family medicine clinics, and diabetic specialist clinic in Moose Jaw. Our study was approved by the University of Saskatchewan Behavioural Research Ethics Board (Beh 18-33). Patients were compensated for their time with a $5.00 gift card.

Results/Findings: A total of 117 surveys were completed; 17 were removed for missing crucial data (n=3), for being answered by type 1 diabetics (n=9), or for failing to indicate diabetes type (n=5). We found that attendance at an education session was associated with a lower RAM index (mean difference = -0.86; 95% CI: -1.58 to -0.14; independent samples t = -2.36, p=0.02, two tailed). No other comparisons were statistically significant. A correlation between number of resources and motivation style was found to be significant for autonomous regulatory style only (r = 0.22; p=0.04).

Discussion: Patients who did attend an education session had a lower RAM index than those who did not, indicating that their controlled regulatory style was higher than those who had not been to education before. As the number of resources increased, so did the autonomous regulatory style mean value. This indicates that patients who accessed more resources were mcre
internally motivated to control their diabetes. Given that SME sessions are focused on internal motivation, one can infer that a refresher course would simply add to the already high number of resources a patient accesses.

Conclusions: This research indicates that various variables including demographic, clinical, and attendance at diabetes education do not predict a significant impact on higher motivation to control T2DM. However, there is a statistically significant association between attendance at diabetes education and RAM index, where those who attended actually had a lower RAM index than those who did not.

Recommendations: Our recommendations are as follows: 1. refresher courses are highly recommended, 2. physicians are a key resource, and so are encouraged to be knowledgeable in current diabetes research and management, and 3. family should be encouraged to be involved in counseling of patients, with patient’s permission.

References:
Habits die hard: Effectiveness of an educational intervention on ESR test ordering in the Prince Albert Emergency Department

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**ABSTRACT**

**Background:** Non-indicated investigation ordering is a widespread problem giving rise to increased healthcare costs, unnecessary patient anxiety, and possible patient harm. The literature has mixed results on whether or not educational interventions are effective in reducing unnecessary investigations.

**Research Question(s):** Will an educational intervention with emergency department physicians alter their test ordering behaviours over a four month sample period?

**Methods/Methodology:** A list was created of the ESR tests ordered in the Department between November 2016 and March 2017. From this list, 55 random charts were reviewed to determine why the ESR was ordered. Next, an education intervention was performed, which consisted of both a didactic lecture to Department physicians and an infographic summarizing indications for ESR posted in high traffic areas of the Department. Four months post-intervention, another list of all ESR tests ordered in the Department was generated and a similar number of charts were reviewed.

**Results/Findings:** The comparison of pre- and post-intervention data revealed that there were substantially fewer total ESR tests ordered in the Department compared to the previous year. This chart review showed that of the ESRs ordered in the Department, a smaller fraction of these were ordered by the Department physicians (71% before and 58% after intervention, with the remainder ordered by community family doctors and specialists), and a greater proportion of those Department-physician-ordered ESRs were for indicated reasons (46% before and 54% after intervention).

**Discussion:** The positive results arising from this intervention may have, in part, been due to our pre-existing relationship with the physicians we presented the data to. In addition, the decision-making infographic posted in the department was simple and easy to refer to during a busy emergency shift.

**Conclusions:** An educational intervention can improve the test ordering habits of physicians in a regional hospital, at least in the short term.

**Recommendations:** Future areas of research could include extending the post-intervention monitoring to observe longer-term effects, expanding the education intervention to specialists
and community family physicians, and attempting this type of education intervention with an unrelated but similarly overused test.

References:
15. Baron JM, Lewardrowski KB, Kamis IK, Singh B, Belkziz SM, Dighe AS. A novel strategy for evaluating the effects of an electronic test ordering alert message: optimizing cardiac


D-Dimer: A local evaluation of effectiveness and appropriate cut-off values

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ABSTRACT

**Background:** The D-dimer assay is a widely used clinical test to screen patients at low risk for possible pulmonary embolism (PE) and deep vein thrombosis (DVT). Previous studies have used the Wells score to assign patients as low risk and then used D-dimer screening with a cutoff value of >500ng/ml for CT PE scanning.\(^1\) Recently, some studies have shown evidence supporting raising the threshold for a positive screen using cut off value of 1000ng/ml.\(^2\) There is difficulty in generalizing these results to clinical settings as different commercial d-dimer assays do not yield the same results as assays used in the original studies.\(^3\)

**Research Question(s):** Is it possible to safely raise the threshold value for a positive D-dimer test in low risk patients?

**Methods/Methodology:** A retrospective chart review involving 342 charts for patients who presented to the Pasqua ER with query PE. Well’s Criteria score was calculated retrospectively and D-Dimer values and imaging results were collected. D-dimer results in low risk patients were statistically analyzed with the CT PE scan results to determine the negative predictive value (NPV) at multiple interval thresholds ranging from 500 to 1500 in intervals of 50. An appropriate D-dimer threshold would be determined by identifying when the NPV is no longer significant.

**Results/Findings:** A D-Dimer threshold of 1000 ng/mL had a NPV of 92.1% (95% CI = 82.8% to 96.5%) in patients studied. NPV remained at 100% until surpassing a cut-off of 750.

**Discussion:** A NPV of 92.1% in a screening test would not be acceptable in a clinical setting with a possible life threatening condition. Data does support raising the threshold to 750ng/ml. Multiple charts reviewed showed several instances where CT PE scans were intentionally not ordered even with D-dimer results above 500ng/ml in low risk patients. Sample size in this study was limited which affected confidence intervals.

**Conclusions:** A D-Dimer threshold of 750ng/mL may be appropriate in low risk patients presenting with query PE given local results.

**Recommendations:** Given the results, our suggestions would be for a larger and more thorough chart review to increase the study size and statistical power.
References:


Differences in Length of Stay in hospital for senior citizens in Long Term Care versus community settings: A retrospective review

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ABSTRACT

Background: Admissions to acute care settings require extensive resources to manage care, yet studies have shown that home care with appropriate follow up is cost effective. There have been limited studies on how being in long-term care (LTC) impacts a senior’s length of stay in hospital. Comparisons between community dwelling (CD) seniors and those in LTC would be useful for planning expected length of stay (LOS) and cutting costs associated with hospital care.

Research Question(s): When admitted to Pasqua Hospital, how does the overall LOS for senior citizens who reside in LTC compare to that of CD seniors? Are there differences in most responsible diagnosis (MRD) or alternate level of care (ALC) use?

Methods/Methodology: A retrospective chart review was conducted comparing LTC vs. CD patients aged 65 and older, admitted to Pasqua Hospital. Of an initial 1104 charts meeting the inclusion criteria, 410 charts were selected via case control matching (1:2 for LTC and CD). Demographic, clinical and administrative parameters were collected.

Results/Findings: LTC patients had significantly longer hospital LOS (Median = 7 days; IQR: 4 to 15.5) compared to CD patients (Median = 5 days; IQR: 3-8); \( U = 14102.500; P < .001 \). MRDs for both groups were comparable. Of the patients utilizing ALC, significantly more (16.3%) were from the LTC group versus 4.5% in the CD group; \( \chi^2 = 16.641; P < .001 \).

Discussion: Differences between LTC and CD populations were identified despite the former group returning to a facility that can provide further treatment and support for common conditions. Although the two groups did not differ significantly among demographic characteristics, comorbidities, or diagnosis, frailty and cognitive impairment were not assessed, which may contribute to increased LOS in hospital.

Conclusions: Patients admitted to hospital from LTC and discharged back to LTC had significantly longer LOS in hospital and greater utilization of ALC compared to their age- and comorbidity-matched controls from CD origins.

Recommendations: Incorporating frailty score and cognitive assessment obtained prospectively for elderly patients admitted to hospital could be used in future research to assess whether these could account for differences in LOS between LTC and CD patients.
References:
A qualitative assessment of family medicine residents’ experiences in Personal Care Homes

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ABSTRACT

Background: Geriatrics is an area of medicine that is becoming increasingly important with our aging population and more people than ever predicted to be utilizing care homes and facilities. There is a paucity of research examining post-graduate medical education in the setting of personal care homes.

Research Question: What were the attitudes of family medicine residents towards care of the elderly, and comfort with practicing in these populations, during a five month longitudinal exposure? Did this increase the interest in working in the care home setting?

Methods/Methodology: A qualitative study, examining three family medicine residents’ experience working in three different personal care homes over five months using interval contingent diary study with guiding questions was performed. Overarching and shifting themes were identified in each participant’s entries. These themes were compared between participants, and similarities and differences were analyzed using thematic analysis.

Results/Findings: The participant experiences had four main common themes: development of relationships with families, providing continuity of care, collaboration with allied health care providers, and comments on the logistics of working in the care home environment.

Discussion: The four main themes highlighted valuable aspects of working in care homes, including improved comfort working in care homes, and development of skills such as communication and collaboration that are vital in family medicine in general. The participants gained knowledge regarding the logistics of working in a care home and how this may fit into their practices in the future. The differences identified between participants’ data highlights how the varying nature of care homes can impact the clinical experience.

Conclusions: Longitudinal exposure to personal care homes resulted in increased comfort levels working in these environments, with development of unique clinical, communication, and professional skills.

Recommendations: We have made recommendations based on common challenges we identified. This will hopefully improve satisfaction and increase interest in geriatrics for other residents moving forward, which can have important implications for curriculum development in...
the future. Most suggestions revolve around improving communication, including clearer communication between allied health services, physicians, care aids, and patient’s families.

References:


Palliative care in a community: Identifying reasons for ER visits and hospitalizations in the final year of life

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ABSTRACT

Background: In patients with palliative diagnoses, poor symptom control often results in difficult visits to the emergency room (ER). These can be quite exhausting for both the patients and their families. Ideally, a multidisciplinary palliative care team would be able to coordinate the necessary care of these patients in acute situations to avoid ER visits and reduce hospital admissions. By looking at common reasons for ER presentation by these patients in the last year of life, we hope to illuminate potentially avoidable hospitalizations.

Research Question(s): Why, and how often, do palliative care patients present to the ER and get admitted to the Battleford Union Hospital (BUH) in the last year of life?

Methods/Methodology: This was a retrospective chart review of deceased patients known to the Palliative Care Program at BUH between August 1, 2016 and July 31, 2017. The number and reason for their ER visits and admissions to hospital in the last year of life were identified. Descriptive statistics were undertaken.

Results: Eight-one patients were included in the study. Among these, there were a total of 333 ER visits and 170 hospital admissions. The most common palliative presentations for ER visits was pain control (11.6%), while the most common single reason for admission was palliation/comfort care (12.5%), pain management (10.6%), and respiratory distress (9.4%).

Discussion: Our study identified the most common reasons for ER visits and admissions in palliative patients in the last year of life. Pain control, respiratory distress and palliation were the most common single diagnoses documented.

Conclusion: Support by a multidisciplinary team including family physicians and palliative care team members have the potential to prevent the unnecessary burden of hospitalization on patients and the healthcare system.

Recommendations: Recommendations are: education for healthcare providers, patients and families to increase early involvement of palliative care teams as well as involvement of family physicians in CDM-like visits aimed at palliative patients; and, introduction of a 24 hour palliative on-call rota whereby patients can contact a member of a palliative care team during an acute crisis may be implemented for improved care.
References:
Variations on bronchiolitis treatment in the Cypress Regional Hospital

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ABSTRACT

Background: Bronchiolitis is a common respiratory condition in children and the leading cause of hospital admissions for infants under one year of age. It is a disease diagnosed by history and physical exam and managed with supportive care in otherwise healthy children under two years of age. There remains significant variation in the management of bronchiolitis.

Research Question(s): Is there inappropriate testing and treatments being used for the diagnosis and management of patients with bronchiolitis under two years of age in Swift Current, SK, and if so, what are the influencing factors?

Methods/Methodology: A chart review (n=100) going back from December 2016 was done of children under 2 seen in the Emergency Department with a diagnosis of bronchiolitis. Chi-Square testing and t-tests were the primary tests used for analysis. Mann-Whitney U testing was used for the non-normally distributed data.

Results/Findings: At least one inappropriate test was done on at least 62% of children seen (one of a CBC, nasopharyngeal swab, blood culture, or chest X-ray). At least one inappropriate treatment was given to 76% of children (steroids, antibiotics, long or short acting bronchodilators, 3% hypertonic saline). After data analysis, a total of six statistically significant relationships were found.

Discussion: A significant amount of important demographic data was missing, including vaccination status in 29% of charts. Children who were not immunized or from rural areas were more likely to be inappropriately investigated, likely secondary to physicians attempting to not miss a significant diagnosis. Children who were male, had a family history of atopy, or positive auscultation findings were more likely to receive inappropriate treatments. Those who were vaccinated were less likely to receive inappropriate treatments.

Conclusions: There are improvements to be made in history taking and documentation for bronchiolitis. Unnecessary investigations and treatments are being done frequently for bronchiolitis, at expense to the system without improvement in care. Limitations in our study primarily relate to a small n of 100.
**Recommendations:** We recommend implementation of a standardized protocol for children under the age of 2 suspected to have bronchiolitis. There is also avenues for further research involving relationships between vaccination status and investigations and treatments in the Emergency Department.

**References:**


Characteristics of patients presenting to the ED in Swift Current, Saskatchewan with Acute Coronary Syndrome

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ABSTRACT

Background: Acute Coronary Syndrome (ACS) is a major source of morbidity and mortality in the Canadian population. In Saskatchewan alone, the rate of hospitalizations due to ACS was 3603 with 701 deaths during 2008-09.

Research Question(s): What are the incidence, demographics and subsequent outcomes of ACS in patients who present to the Emergency Department in Swift Current, SK?

Methods/Methodology: A retrospective chart audit was conducted for all Emergency Department visits that were coded with the diagnosis of ACS dated from January 1st 2015 to December 31st 2016. Chi-Square tests, t-tests, and binary logistic regression were the primary tests used for analysis.

Results/Findings: Clearly defined ACS was identified in 162 cases (n=162) observed during this time period. Age (OR = 1.20; 95% CI: 1.07 to 1.34; P = .001) and a comorbid diagnosis of diabetes mellitus (OR = 9.90; 95% CI: 1.82 to 53.83; P = .008) were predictors of 30-day mortality. The survival rate for those ACS patients without diabetes was 94.1% vs 75.0% with the diagnosis (χ² = 10.912, P = .001). All other known risk factors for ACS did not significantly predict 30-day mortality. Patients with NSTEMI had the poorest 30-day survival rate (79.5%) compared to the rest of the ACS spectrum (98.8%). They also tended to be older (M = 72.1, SD = 14.3) then patients with other types of ACS.

Discussion: NSTEMIs were likely more strongly related to mortality because of the older age at time of incidence. Despite thinking specialist care would benefit patients and rural patients would do worse, this was not found to be the case, which is reassuring for rural areas without direct in-house access to General Internal Medicine. The Hutterite population was expected to represent 6% of the data set based on local demographics, but only 1% was represented, leading to questions regarding their resilience to heart disease.

Conclusions: The only two predictors found to be significant in 30-day mortality were increasing age and presence of diabetes. There were no differences in urban versus rural location and other well-known risk factors of ACS.
Recommendations: Further research into the Hutterite population’s seeming resilience to ACS should be performed.

References: