

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

Jocelyn Barber, FMR II, Department of Academic Family Medicine, College of Medicine, University of Saskatchewan; and, Monica Kidd, MSc, MD, CCFP, Department of Family Medicine, Cumming School of Medicine, University of Calgary

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.² 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:

1. World Health Organization (WHO), United Nations Children's Fund (UNICEF). Innocenti declaration on the protection, promotion and support of breastfeeding. Florence (IT): WHO/UNICEF; 1990. 2 p. Available from: <https://www.unicef.org/programme/breastfeeding/innocenti.htm>.
2. United Nations Children's Fund (UNICEF). The state of the world's children 2012: children in an urban world. New York (NY): UNICEF; 2012. 156 p. Available from: https://www.unicef.org/sowc/files/SOWC_2012-Main_Report_EN_21Dec2011.pdf.
3. American Academy of Pediatrics. Breastfeeding and the use of human milk. *Pediatrics*. 1997 Dec;100(6):1035-9.
4. Uwaezuoke SN, Eneh CI, Ndu IK. Relationship between exclusive breastfeeding and lower risk of childhood obesity: a narrative review of published evidence. *Clin Med Insights Pediatr* [Internet]. 2017 Feb 16 [cited 2018 May 14];11:[7 p.]. Available from: <https://doi.org/10.1177/1179556517690196>.
5. Pannaraj PS, Li F, Cerini C, Bender JM, Yang S, Rollie A, Adisetiyo H, Zabih S, Lincez PJ, Bittinger K, Bailey A, Bushman FD, Sleasman JW, Aldrovandi GM. Association between breast milk bacterial communities and establishment and development of the infant gut microbiome. *JAMA Pediatr*. 2017 Jul;17(7):647-54.
6. Stuebe AM, Schwarz EB. The risks and benefits of infant feeding practices for women and their children. *J Perinatol*. 2010 Mar;30(3):155-62.
7. Shawky S, Abalkhail BA. Maternal factors associated with the duration of breast feeding in Jeddah, Saudi Arabia. *Paediatr Perinat Epidemiol*. 2003 Jan;17(1):91-6.
8. Akter S, Rahman MM. The determinants of early cessation of breastfeeding in Bangladesh. *World Health Popul*. 2010 Apr;11(4):5-12.
9. Baxter J, Cooklin AR, Smith J. Which mothers wean their babies prematurely from full breastfeeding? An Australian cohort study. *Acta Paediatr*. 2009 Aug;98(8):1274-7.
10. Odom EC, Li R, Scanlon KS, Perrine CG, Grummer-Strawn L. Reasons for earlier than desired cessation of breastfeeding. *Pediatrics*. 2013 Mar;131(3):e726-32.
11. Al-Ali N, Hatamleh R, Khader Y. Female public Jordanian university undergraduate students' intentions and attitudes toward breastfeeding: application of self-objectification theory. *Breastfeed Rev*. 2013 Nov;21(3):31-42.
12. Radtke Demirci J, Happ MB, Bogen DL, Albrecht SA, Cohen SM. Weighing worth against uncertain work: the interplay of exhaustion, ambiguity, hope and disappointment in mothers breastfeeding late preterm infants. *Matern Child Nutr*. 2015 Jan;11(1):59-72.
13. Fjeld E, Siziya S, Katempa-Bwalya M, Kankasa C, Moland KM, Tylleskär T; PROMISE-EBF Study Group. 'No sister, the breast alone is not enough for my baby': a qualitative assessment of potentials and barriers in the promotion of exclusive breastfeeding in southern Zambia. *Int Breastfeed J* [Internet]. 2008 Nov 5 [cited 2018 May 14];3(1):[12 p.]. Available from: <https://doi.org/10.1186/1746-4358-3-26>.

14. Jeong G, Park SW, Lee YK, Ko SY, Shin SM. Maternal food restrictions during breastfeeding. *Korean J Pediatr.* 2017 Mar;60(3):70–6.
15. Bamji MS, Murthy PVV, Williams L, Vardhana Rao MV. Maternal nutritional status & practices & perinatal, neonatal mortality in rural Andhra Pradesh, India. *Indian J Med Res.* 2008 Jan;127(1):44–51.
16. Bandyopadhyay M. Impact of ritual pollution on lactation and breastfeeding practices in rural West Bengal, India. *Int Breastfeed J* [Internet]. 2009 Mar 26 [cited 2018 May 14];4(1):[18 p.]. Available from: <https://doi.org/10.1186/1746-4358-4-2>.
17. Henrich J, Henrich N. The evolution of cultural adaptations: Fijian food taboos protect against dangerous marine toxins. *Proc Biol Sci.* 2010 Dec 22;277(1701):3715–24.
18. Santos-Torres MI, Vásquez-Garibay E. Food taboos among nursing mothers of Mexico. *J Health Popul Nutr.* 2003 Jun;21(2):142–9.
19. Kavle JA, Mehanna S, Khan G, Hassan M, Saleh G, Engmann C. Program considerations for integration of nutrition and family planning: beliefs around maternal diet and breastfeeding within the context of the nutrition transition in Egypt. *Matern Child Nutr* [Internet]. 2017 Jun 8 [cited 2018 May 14];14(1):[11 p.]. Available from: <https://doi.org/10.1111/mcn.12469>.
20. Bentley GR, Aunger R, Harrigan AM, Jenike M, Bailey RC, Ellison PT. Women’s strategies to alleviate nutritional stress in a rural African society. *Soc Sci Med.* 1999 Jan;48(2):149–62.
21. Gewa CA, Oguttu M, Yandell NS. Maternal nutrition in rural Kenya: health and socio-demographic determinants and its association with child nutrition. *Matern Child Nutr.* 2012 Jul;8(3):275–86.
22. Cervera P, Ngo J. Dietary guidelines for the breast-feeding woman. *Public Health Nutr.* 2001 Dec;4(6a):1357–62.
23. Liljeberg B. Dietary consultation for lactating women. *J Pediatr Health Care.* 1991 Jan-Feb;5(1):40–3.
24. Hyman PE, Milla PJ, Benninga MA, Davidson GP, Fleisher DF, Taminiu J. Childhood functional gastrointestinal disorders: neonate/toddler. *Gastroenterology.* 2006 Apr;130(5):1519–26.
25. Evans RW, Fergusson DM, Allardyce RA, Taylor B. Maternal diet and infantile colic in breast-fed infants. *Lancet.* 1981 Jun;1(8234):1340–2.
26. Iacovou M, Ralston RA, Muir J, Walker KZ, Truby H. Dietary management of infantile colic: a systematic review. *Matern Child Health J.* 2012 Aug;16(6):1319–31.
27. Lust KD, Brown JE, Thomas W. Maternal intake of cruciferous vegetables and other foods and colic symptoms in exclusively breast-fed infants. *J Am Diet Assoc.* 1996 Jan;96(1):46–8.
28. Harb T, Matsuyama M, David M, Hill RJ. Infant colic—what works: a systematic review of interventions for breast-fed infants. *J Pediatr Gastroenterol Nutr.* 2016 May;62(5):668–86.
29. Roberts DM, Ostapchuk M, O’Brien JG. Infantile colic. *Am Fam Physician.* 2004 Aug;70(4):735–40.
30. Radesky JS, Zuckerman B, Silverstein M, Rivara FP, Barr M, Taylor JA, Lengua LJ, Barr RG. Inconsolable infant crying and maternal postpartum depressive symptoms. *Pediatrics.* 2013 Jun;131(6):e1857-64.

31. Rautava P, Lehtonen L, Helenius H, Sillanpää M. Infantile colic: child and family three years later. *Pediatrics*. 1995 Jul;96(1 Pt 1):43–7.
32. Douglas PS, Hill PS. The crying baby: what approach? *Curr Opin Pediatr*. 2011 Oct;23(5):523–9.
33. Oggero R, Garbo G, Savino F, Mostert M. Dietary modifications versus dicyclomine hydrochloride in the treatment of severe infantile colics. *Acta Paediatr*. 1994 Feb;83(2):222–5.
34. Hill DJ, Roy N, Heine RG, Hosking CS, Francis DE, Brown J, Speirs B, Sadowsky J, Carlin JB. Effect of a low-allergen maternal diet on colic among breastfed infants: a randomized, controlled trial. *Pediatrics*. 2005 Nov;116(5):e709-15.
35. Garrison MM, Christakis DA. A systematic review of treatments for infant colic. *Pediatrics*. 2000 Jul;106(1 Pt 2):184–90.
36. Hall B, Chesters J, Robinson A. Infantile colic: a systematic review of medical and conventional therapies. *J Paediatr Child Health*. 2012 Feb;48(2):128–37.
37. Vandenplas Y, Marchand J, Meyns L. Symptoms, diagnosis, and treatment of cow's milk allergy. *Curr Pediatr Rev*. 2015;11(4):293–7.
38. O'Connor DL, Blake J, Bell R, Bowen A, Callum J, Fenton S, Gray-Donald K, Rossiter M, Adamo K, Brett K, Khatri N, Robinson N, Tumback L, Cheung A. Canadian consensus on female nutrition: adolescence, reproduction, menopause, and beyond. *J Obstet Gynaecol Can*. 2016 Jun;38(6):508-54.
39. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005 Nov;15(9):1277–88.
40. Coveney J. Food and trust in Australia: building a picture. *Public Health Nutr*. 2008 Mar;11(3):237–45.
41. Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process*. 1991 Dec;50(2):179–211.
42. Hausman B. *Viral mothers: breastfeeding in the age of HIV/AIDS*. Ann Arbor (MI): University of Michigan Press; 2010. 292 p.
43. Håman L, Barker-Ruchti N, Patriksson G, Lindgren EC. Orthorexia nervosa: an integrative literature review of a lifestyle syndrome. *Int J Qual Stud Health Well-being [Internet]*. 2015 Aug 14 [cited 2018 May 14];10:[15 p.]. Available from: <https://dx.doi.org/10.3402%2Fqhw.v10.26799>.
44. Bettinger JA, Greyson D, Money D. Attitudes and beliefs of pregnant women and new mothers regarding influenza vaccination in British Columbia. *J Obstet Gynaecol Can*. 2016 Nov;38(11):1045–52.
45. Zimmerman DR, Guttman N. “Breast is best”: knowledge among low-income mothers is not enough. *J Hum Lact*. 2001 Feb;17(1):14–9.
46. Amir LH. Social theory and infant feeding. *Int Breastfeed J [Internet]*. 2011 Jun 15 [cited 2018 May 14];6(1):[3 p.]. Available from: <https://dx.doi.org/10.1186%2F1746-4358-6-7>.
47. Amir LH, Donath SM. Maternal diet and breastfeeding: a case for rethinking physiological explanations for breastfeeding determinants. *Early Hum Dev*. 2012 Jul;88(7):467–71.

48. Dungy CI, McInnes RJ, Tappin DM, Wallis AB, Oprescu F. Infant feeding attitudes and knowledge among socioeconomically disadvantaged women in Glasgow. *Matern Child Health J.* 2008 May;12(3):313–22.
49. McIntyre E, Hiller JE, Turnbull D. Community attitudes to infant feeding. *Breastfeed Rev.* 2001 Nov;9(3):27–33.
50. Douglas PS, Hill PS, Brodribb W. The unsettled baby: how complexity science helps. *Arch Dis Child.* 2011 Sep;96(9):793–7.
51. Lee S, Kelleher SL. Biological underpinnings of breastfeeding challenges: the role of genetics, diet, and environment on lactation physiology. *Am J Physiol Endocrinol Metab.* 2016 Aug;311(2):E405–22.
52. Marangoni F, Cetin I, Verduci E, Canzone G, Giovannini M, Scollo P, Corsello G, Poli A. Maternal diet and nutrient requirements in pregnancy and breastfeeding. An Italian consensus document. *Nutrients* [Internet]. 2016 Oct 14 [cited 2018 May 14];8(10):[17 p.]. Available from: <https://doi.org/10.3390/nu8100629>.

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

Mohammad Ali Jamil, FMR II; Jill Farrukh, MSc, MD, CCFP

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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 breast feed. 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:

1. Bhattad MS, Baliga MS, Kriplani R. Clinical guidelines and management of ankyloglossia with 1-year followup: report of 3 cases. *Case Rep Dent* [Internet]. 2013 Jan 29 [cited 2018 May 7];2013:[6 p.]. Available from: <https://doi.org/10.1155/2013/185803>.
2. Benoiton L, Morgan M, Baguley K. Management of posterior ankyloglossia and upper lip ties in a tertiary otolaryngology outpatient clinic. *Int J Pediatr Otorhinolaryngol*. 2016 Sep;88(9):13-6.
3. Griffiths DM. Do tongue ties affect breastfeeding? *J Hum Lact*. 2004 Nov;20(4):409-14.
4. Amir LH, James JP, Beatty J. Review of tongue-tie release at a tertiary maternity hospital. *J Paediatr Child Health*. 2005 May-Jun;41(5-6):243-5.
5. Chinnadurai S, Francis DO, Epstein RA, Morad A, Kohanim S, McPheeters M. Treatment of ankyloglossia for reasons other than breastfeeding: a systematic review. *Pediatrics*. 2015 Jun;135(6):e1468-74.
6. Kenny-Scherber AC, Newman J. Office-based frenotomy for ankyloglossia and problematic breastfeeding. *Can Fam Physician*. 2016 Jul;62(7):570-1.
7. O'Callahan C, Macary S, Clemente S. The effects of office-based frenotomy for anterior and posterior ankyloglossia on breastfeeding. *Int J Pediatr Otorhinolaryngol*. 2013 May;77(5):827-32.
8. Brookes A, Bowley DM. Tongue tie: the evidence for frenotomy. *Early Human Dev*. 2014 Nov;90(11):765-8.
9. Sharma SD, Jayaraj S. Tongue-tie division to treat breastfeeding difficulties: our experience. *J Laryngol Otol*. 2015 Oct;129(10):986-9.
10. Ito Y. Does frenotomy improve breast-feeding difficulties in infants with ankyloglossia? *Pediatr Int*. 2014 Aug;56(4):497-505.
11. Webb AN, Hao W, Hong P. The effect of tongue-tie division on breastfeeding and speech articulation: a systematic review. *Int J Pediatr Otorhinolaryngol*. 2013 May;77(5):635-46.
12. Joseph KS, Kinniburgh B, Metcalfe A, Razaz N, Sabr Y, Lisonkova S. Temporal trends in ankyloglossia and frenotomy in British Columbia, Canada, 2004-2013: a population-based study. *CMAJ Open*. 2016 Jan;4(1):E33-40.

Building better brains with books: Promoting early literacy development through clinic-based interventions for primary care providers

Sherri Galasso, BSc, BEd, MSc, MD, CCFP (FMR II); Breanna Davis, BSc, MD, CCFP

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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:

1. Duursma E, Augustyn M, Zuckerman B. Reading aloud to children: the evidence. *Arch Dis Child*. 2008 Jul;93(7):554-7.
2. Fletcher KL, Reese E. Picture book reading with young children: a conceptual framework. *Dev Rev*. 2005 Mar;25(1):64-103.
3. Hart B, Risley T. Meaningful differences in the everyday experience of young American children. Baltimore (MD): Brookes Publishing; 1995. 308 p.
4. Hayes DP, Ahrens MG. Vocabulary simplification for children: a special case of 'motherese'? *J Child Lang*. 1988 Jun;15(2):395-410.
5. Klass P, Dreyer BP, Mendelsohn AL. Reach Out and Read: literacy promotion in pediatric primary care. *Adv Pediatr*. 2009;56(1):11-27.
6. Shaw A; Canadian Paediatric Society, Community Paediatrics Committee. Read, speak, sing: promoting literacy in the physician's office. *Paediatr Child Health*. 2006 Nov;11(9) 601-6.
7. Suskind D. Thirty million words: building a child's brain. New York (NY): Dutton; 2015. 320 p.
8. York Y, Loeb S. One step at a time: the effects of an early literacy text messaging program for parents of preschoolers. Cambridge (MA): National Bureau of Economic Research; 2014. 59 p. (National Bureau of Economic Research working paper; no. 20659).
9. Young KT, Davis K, Schoen C, Parker S. Listening to parents: a national survey of parents with young children. *Arch Pediatr Adolesc Med*. 1998 Mar;152(3):255-62.
10. Zuckerman B. Promoting early literacy in pediatric practice: twenty years of reach out and read. *Pediatrics*. 2009 Dec;124(6):1660-5.

Rural obstetrical care: Examining the process of selecting delivery location in a remote northern Saskatchewan community - physician perspectives

Nicholas Martel, FMR II; Tamara Tsang, FMR II; Jeff Irvine, MPH, MD, CCFP

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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:

1. Iglesias S, Grzybowski S, Klein MC, Gagné GP, Lalonde A. Rural obstetrics. Joint position paper on rural maternity care. Joint Working Group of the Society of Rural Physicians of Canada (SRPC), the Maternity Care Committee of the College of Family Physicians of Canada (CFPC), and the Society of Obstetricians and Gynaecologists of Canada (SOGC). *Can Fam Physician*. 1998 Apr;44(4):831–43.
2. Society of Obstetricians and Gynaecologists of Canada (SOGC). SOGC joint position paper: rural maternity care. Ottawa (ON): SOGC; 2012. 8 p. Available from: https://sogc.org/wp-content/uploads/2013/01/gui282PP1210E_000.pdf.
3. Canadian Institute for Health Information (CIHI). Hospital births in Canada: a focus on women living in rural and remote areas. Ottawa (ON): CIHI; 2013. 8 p. Available from: https://www.cihi.ca/en/birth2013_summary_en.pdf.
4. Iglesias S, Bott N, Ellehoj E, Yee J, Jennissen B, Bunnah T, Schopfloch D. Outcomes of maternity care services in Alberta, 1999 and 2000: a population-based analysis. *J Obstet Gynaecol Can*. 2005 Sep;27(9):855–63.
5. Couchie C, Sanderson S. A report on best practices for returning birth to rural and remote aboriginal communities. *J Obstet Gynaecol Can*. 2007 Mar;29(3):250–4.
6. Society of Obstetricians and Gynaecologists of Canada. SOCG policy statement. No., 251, December 2010. Returning birth to Aboriginal, rural, and remote communities. *J Obstet Gynaecol Can*. 2010 Dec;32(12):1186–8.
7. National Aboriginal Council of Midwives (NACM). Restoration and renewal: Aboriginal midwifery in Canada. Montreal (QC): NACM; 2012. 9 p. Available from: http://d7.nacm-dev.site.koumbit.net/sites/aboriginalmidwives.ca/files/pamphlet-three-double_panels.pdf.
8. Kornelsen J, Grzybowski S, Iglesias S. Is rural maternity care sustainable without general practitioner surgeons? *Can J Rural Med*. 2006 Summer;11(3):218–20.
9. de Leeuw S. The missing of mums and babes; addressing Canadian's rural maternal care crisis. *Can Fam Physician*. 2016 Jul;62(7):580–3.
10. Sutherns R, Bourgeault IL. Accessing maternity care in rural Canada: there's more to the story than distance to a doctor. *Health Care Women Int*. 2008 Sep;29(8):863–83.
11. Iglesias A, Iglesias S, Arnold D. Birth in Bella Bella: emergence and demise of a rural family medicine birthing service. *Can Fam Physician*. 2010 Jun;56(6):e233–40.
12. Angle P, Kurtz Landy C, Murthy Y, Cino P. Key issues and barriers to obstetrical anesthesia care in Ontario community hospitals with fewer than 2,000 deliveries annually. *Can J Anaesth*. 2009 Sep;56(9):667–77.
13. Douglas J, Preston R. Provision of obstetric anesthesia: throwing down the gauntlet! *Can J Anaesth*. 2009 Sep;56(9):631–5.
14. Grzybowski S, Kornelsen J, Cooper E. Rural maternity care services under stress: the experiences of providers. *Can J Rural Med*. 2007 Spring;12(2):89–94.
15. Society of Obstetricians and Gynaecologists of Canada; College of Family Physicians of Canada; Society of Rural Physicians of Canada. Joint policy statement: number of births to maintain competence. *Can Fam Physician*. 2002 Apr;48(4):751.

16. Medves JM, Davies BL. Sustaining rural maternity care—don't forget the RNs. *Can J Rural Med*. 2005 Winter;10(1):29–35.
17. MacKinnon KA. Labouring to nurse: the work of rural nurses who provide maternity care. *Rural Remote Health*. 2008 Oct-Dec;8(4):1047.
18. Van Wagner V, Epoo B, Nastapoka J, Harney E. Reclaiming birth, health, and community: midwifery in the Inuit villages of Nunavik, Canada. *J Midwifery Womens Health*. 2007 Jul-Aug;52(4):384–91.
19. Dooley J, Kelly L, St Pierre-Hansen N, Antone I, Guilfoyle J, O'Driscoll T. Rural and remote obstetric care close to home: program description, evaluation and discussion of Sioux Lookout Meno Ya Win Health Centre obstetrics. *Can J Rural Med*. 2009 Spring;14(2):75–9.
20. Kornelsen J, McCartney K. The safety of rural maternity services without local access to cesarean section. Vancouver (BC): Perinatal Services BC; 2015. 162 p. Available from: http://www.perinatalservicesbc.ca/Documents/Resources/SystemPlanning/Rural/SafetyRuralMaternityServicesWithoutLocalAccessCsection_2015.pdf.
21. Grzybowski S, Stoll K, Kornelsen J. Distance matters: a population based study examining access to maternity services for rural women. *BMC Health Serv Res* [Internet]. 2011 Jun 10 [cited 2018 May 16];11:[8 p.]. Available from: <https://doi.org/10.1186/1472-6963-11-147>.
22. Lisonkova S, Sheps SB, Janssen PA, Lee SK, Dahlgren L, Macnab YC. Birth outcomes among older mothers in rural versus urban areas: a residence-based approach. *J Rural Health*. 2011 Spring;27(2):211–9.
23. Lisonkova S, Haslam MD, Dahlgren L, Chen I, Synnes AR, Lim KI. Maternal morbidity and perinatal outcomes among women in rural versus urban areas. *CMAJ*. 2016 Dec;188(17-18):E456–65.
24. Kornelsen J, Grzybowski S. Safety and community: the maternity care needs of rural parturient women. *J Obstet Gynaecol Can*. 2005 Jun;53(1):554–61.
25. Kornelsen J, Kotaska A, Waterfall P, Willie L, Wilson D. Alienation and resilience: the dynamics of birth outside their community for rural First Nations women. *J Aborig Health*. 2011 Mar;7(1):55–64.
26. Kornelsen J, Stoll K, Grzybowski S. Stress and anxiety associated with lack of access to maternity services for rural parturient women. *Aust J Rural Health*. 2011 Feb;19(1):9–14.
27. Kornelsen J, Kotaska A, Waterfall P, Willie L, Wilson D. The geography of belonging: the experience of birthing at home for First Nations women. *Health Place*. 2010 Jul;16(4):638–45.
28. Mamwetan Churchill River Health Region (MCRHR). Annual report 2009-2010: together in wellness. La Ronge (SK): MCRHR; 2010. 82 p. Available from: <http://www.mcrhealth.ca/media/files/MCRHR%202009-10%20Annual%20Report%20-%20FINAL.pdf>.
29. Mamwetan Churchill River Health Region (MCRHR). Annual report 2015-2016: together in wellness. La Ronge (SK): MCRHR; 2015. 73 p. Available from: http://www.mcrhealth.ca/mrws/filedriver/Main/final_MCRHR_Annual_Report_2015-2016.pdf.

30. Stockdale DR, Irvine J, Tan L. Child birth complication and interventions among northern, First Nations and other Saskatchewan Women, 1992/93. J SOGC. 1999 Jan;21(1);47-57.

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

Amanda Klinger¹, FMR II; Robert Thorpe^{1,2}, MD, CCFP;
Stephanie Mancini^{1,2}, MD, CCFP; Michelle McCarron^{1,3}, PhD

1. Department of Academic Family Medicine, College of Medicine, University of Saskatchewan
2. Saskatchewan Health Authority (Moose Jaw Area)
3. Research and Performance Support, Saskatchewan Health Authority (Regina Area)

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%), $\chi^2_{1df} = 29.496$; $P < 0.001$. Augmentation of labour occurred in 56.1% of deliveries with epidural analgesia and 19.4% of deliveries without, $\chi^2_{1df} = 63.744$; $P < 0.001$. The rate of vacuum-assisted delivery was higher with epidural analgesia (24.3%) than without (9.2%), $\chi^2_{1df} = 18.964$; $P < 0.001$. 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:

1. Joint Position Paper Working Group of the Canadian Association of Midwives, Canadian Association of Perinatal Health and Women's Health Nurses, College of Family Physicians of Canada, Society of Obstetricians and Gynaecologists of Canada, and the Society of Rural Physicians of Canada. Joint position paper on rural maternity care. *Can J Rural Med*. 2012 Fall;17(4):135-43.
2. Orrantia E, Poole H, Strike J, Zelek B. Evaluation of a novel model for rural obstetric care. *Can J Rural Med*. 2010 Winter;15(1):14-8.
3. Lisonkova S, Haslam MD, Dahlgren L, Chen I, Synnes AR, Lim KI. Maternal morbidity and perinatal outcomes among women in rural versus urban areas. *CMAJ*. 2016 Dec;188(17-18):E456-65.
4. Goldberg AB, Cohen A, Lieberman E. Nulliparas' preferences for epidural analgesia: their effects on actual use in labor. *Birth*. 1999 Sep;26(3):139-43.
5. Pennell A, Salo-Coombs V, Herring A, Spielman F, Fecho K. Anesthesia and analgesia-related preferences and outcomes of women who have birth plans. *J Midwifery Womens Health*. 2011 Jul-Aug;56(4):376-81.
6. Mei JY, Afshar Y, Gregory KD, Kilpatrick SJ, Esakoff TF. Birth plans: what matters for birth experience satisfaction. *Birth*. 2016 Jun;43(2):144-50.
7. Deering SH, Zaret J, McGaha K, Satin AJ. Patients presenting with birth plans: a case-control study of delivery outcomes. *J Reprod Med*. 2007 Oct;52(10):884-7.
8. Aragon M, Chhoa E, Dayan R, Kluffinger A, Lohn Z, Buhler K. Perspectives of expectant women and health care providers on birth plans. *J Obstet Gynaecol Can*. 2013 Nov;35(11):979-85.
9. Hadar E, Raban O, Gal B, Yogev Y, Melamed N. Obstetrical outcome in women with self-prepared birth plan. *J Matern Fetal Neonatal Med*. 2012 Oct;25(10):2055-7.
10. White-Corey S. Birth plans: tickets to the OR? *MCN Am J Matern Child Nurs*. 2013 Sep-Oct;38(5):268-73.
11. Lindholm A, Hildingsson I. Women's preferences and received pain relief in childbirth – a prospective longitudinal study in a northern region of Sweden. *Sex Reprod Healthc*. 2015 Jun;6(2):74-81.
12. Grond S, Meuser T, Stute P, Göhring UJ. Epidural analgesia for labour pain: a review of availability, current practices and influence on labour. *Acute Pain*. 2000 Mar;3(1):33-45.
13. Lain S, Ford J, Hadfield R, Blyth F, Giles W, Roberts C. Trends in the use of epidural analgesia in Australia. *Int J Gynaecol Obstet*. 2008 Sep;102(3):253-8.
14. Chestnut DH, Vandewalker GE, Owen CL, Bates JN, Choi WW. The influence of continuous epidural bupivacaine analgesia on the second stage of labor and method of delivery in nulliparous women. *Anesthesiology*. 1987 Jun;66(6):774-80.
15. Kinsella SM. Epidural analgesia for labour and instrumental vaginal delivery: an anaesthetic problem with an obstetric solution? *BJOG*. 2001 Jan;108(1):1-2.

16. Chestnut DH. Epidural anesthesia and instrumental vaginal delivery. *Anesthesiology*. 1991 May;74(5):805-8.
17. Johnson S, Rosenfeld JA. The effect of epidural anesthesia on the length of labor. *J Fam Pract*. 1995 Mar;40(3):244-7.
18. Canadian Institute for Health Information (CIHI). Giving birth in Canada: regional trends from 2001-2002 to 2005-2006. Toronto (ON): CIHI; 2007. 48 p. Available from: https://secure.cihi.ca/free_products/childbirth_aib_070725_e.pdf.
19. Canadian Institute for Health Information (CIHI). Hospital births in Canada: a focus on women living in rural and remote areas. Ottawa (ON): CIHI; 2013. 72 p. Available from: https://secure.cihi.ca/free_products/Hospital%20Births%20in%20Canada.pdf.
20. Clark A, Carr D, Loyd G, Cook V, Spinnato J. The influence of epidural analgesia on cesarean delivery rates: a randomized, prospective clinical trial. *Am J Obstet Gynecol*. 1998 Dec;179(6 Pt 1):1527-33.
21. Gribble RK, Meier PR. Effect of epidural analgesia on the primary cesarean rate. *Obstet Gynecol*. 1991 Aug;78(2):231-4.
22. Forrest F. Anaesthetic risk: problems and solutions. *Clin Risk*. 2004 May;10(3):87-91.
23. Truman C, Jin Y, Johnson D. Use of epidural analgesia for labour and delivery in Alberta. *Can J Rural Med*. 2002 Fall;7(4):265-70.
24. Canadian Institute for Health Information (CIHI). Childbirth indicators by place of residence: epidural rate for vaginal deliveries [Internet]. Ottawa (ON): CIHI; 2018 [cited 2018 May 9];[about 2 screens]. Available from: https://apps.cihi.ca/mstrapp/asp/Main.aspx?Server=apmstrextpd_i&project=Quick%20Stats&uid=pce_pub_en&pwd=&evt=2048001&visualizationMode=0&documentID=029DB170438205AEBCC75B8673CCE822.

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

Erin Cuddington, FMR II; Chantal Dufour, FMR II;
Sally Mahood, MD, CCFP; Michelle McCarron, PhD; Kelechi Eguzo, MD, GPO, MPH;
Stephanie Mancini, MB BCh, BAO, CCFP; Patricia Muddimann, MD, CCFP;
Stephanie Nyberg, MD, CCFP; Olivia Reis, MD, CCFP

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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:

1. Abbas AM, Abdellah MS, Khalaf M, Bahloul M, Abdellah NH, Ali MK, Abdelmagied AM. Effect of cervical lidocaine–prilocaine cream on pain perception during copper T380A intrauterine device insertion among parous women: a randomized double-blind controlled trial. *Contraception*. 2017 Mar;9(3):251–6.
2. Akers A, Steinway C, Sonalkar S, Perriera LK, Schreiber C, Harding J, Garcia-Espana JF. Reducing pain during intrauterine device insertion: a randomized controlled trial in adolescents and young women. *Obstet Gynecol*. 2017 Oct;130(4):795–802.
3. Aksoy H, Aksoy Ü, Ozyurt S, Açmaz G, Babayigit M. Lidocaine 10% spray to the cervix reduces pain during intrauterine device insertion: a double-blind randomised controlled trial. *J Fam Plann Reprod Health Care*. 2016 Apr;42(2):83-7.
4. Allen RH, Raker C, Goyal V. Higher dose cervical 2% lidocaine gel for IUD insertion: a randomized controlled trial. *Contraception*. 2013 Dec;88(6):730–6.
5. Bednarek PH, Micks EA, Edelman AB, Li H, Jensen JT. The effect of nitroprusside of IUD insertion experience in nulliparous women: a pilot study. *Contraception*. 2013 Apr;87(4):421-5.
6. Black A, Guilbert E, Costescu D, Dunn S, Fisher W, Kives S, Mirosh M, Norman WV, Pymar H, Reid R, Roy G, Varto H, Waddington A, Wagner MS, Whelan AM. Canadian Contraception Consensus (Part 1 of 4). *J Obstet Gynaecol Can*. 2015 Oct;37(10):936–42.
7. Black A, Guilbert E, Costescu D, Dunn S, Fisher W, Kives S, Mirosh M, Norman W, Pymar H, Reid R, Roy G, Varto H, Waddington A, Wagner MS, Whelan AM, Mansouri S. Canadian Contraception Consensus (Part 3 of 4): Chapter 7--Intrauterine contraception. *J Obstet Gynaecol Can*. 2016 Feb;38(2):182-222.
8. Braken J, Graham CA. Young women’s attitudes towards, and experiences of, long-acting reversible contraceptives. *Eur J Contracept Reprod Health Care*. 2014 Aug;19(4):276-84.
9. Castro TV, Franceschini SA, Poli-Neto O, Ferriani RA, Silva de Sá MF, Vieira CS. Effect of intracervical anesthesia on pain associated with the insertion of the levonorgestrel-releasing intrauterine system in women without previous vaginal delivery: a RCT. *Hum Reprod*. 2014 Nov;29(11):2439-45.
10. Chor J, Bregand-White J, Golobof A, Harwood B, Cowett A. Ibuprofen prophylaxis for levonorgestrel-releasing intrauterine system insertion: a randomized controlled trial. *Contraception*. 2012 Jun;85(6):558-62.
11. Crawford M, Davy S, Book N, Elliott JO, Arora A. Oral ketorolac for pain relief during intrauterine device insertion: a double-blinded randomized controlled trial. *J Obstet Gynaecol Can*. 2017 Dec;39(12):1143-9.
12. Elkhoully NI, Maher MA. Different analgesics prior to intrauterine device insertion: is there any evidence of efficacy? *Eur J Contracept Reprod Health Care*. 2017 Jun;22(3):222–6.

13. Fleming KL, Sokoloff A, Raine TR. Attitudes and beliefs about the intrauterine device among teenagers and young women. *Contraception*. 2010 Aug;82(2):178-82.
14. Goldthwaite LM, Baldwin MK, Page J, Micks EA, Nichols MD, Edelman AB, Bednarek PH. Comparison of interventions for pain control with tenaculum placement: a randomized clinical trial. *Contraception*, 2014 Mar;89(3):229-33.
15. Karasu Y, Cömert DK, Karadağ B, Ergün Y. Lidocaine for pain control during intrauterine device insertion. *J Obstet Gynaecol Res*. 2017 Jun;43(6):1061-6.
16. Lopez LM, Bernholc A, Zeng Y, Allen RH, Bartz D, O'Brien PA, Hubacher D. Interventions for pain with intrauterine device insertion. 2015 Jul 2015 [cited 2018 May 11]. In: *The Cochrane Database of Systematic Reviews* [Internet]. Hoboken (NJ): John Wiley & Sons, Ltd. c1999 - . 129K. Available from: <http://dx.doi.org/10.1002/14651858>. CD007373.pub3 Record No.: CD007373.
17. McNicholas CP, Madden T, Zhao Q, Secura G, Allsworth JE, Peipert JE. Cervical lidocaine for IUD insertional pain: a randomized controlled trial. *Am J Obstet Gynecol*. 2012 Nov;207(5):384.e1-6.
18. Mody SK, Kiley J, Rademaker A, Gawron L, Stika C, Hammond C. Pain control for intrauterine device insertion: a randomized trial of 1% lidocaine paracervical block. *Contraception*. 2012 Dec;86(6):704-9.
19. Nelson AL, Fong JK. Intrauterine infusion of lidocaine does not reduce pain scores during IUD insertion. *Contraception*. 2013 Jul;88(1):37-40.
20. Pergialiotis V, Vlachos DG, Protopappas A, Vlachos GD. Analgesic options for placement of an intrauterine contraceptive: a meta-analysis. *Eur J Contracept Reprod Health Care*. 2014 Jun;19(3):149-60.
21. Potter J, Rubin SE, Sherman P. Fear of intrauterine contraception among adolescents in New York City. *Contraception*. 2014 May;89(5):446-50.
22. Rapkin RB, Achilles SL, Schwarz EB, Meyn L, Cremer M, Boraas CM, Chen BA. Self-administered lidocaine gel for intrauterine device insertion in nulliparous women: a randomized controlled trial. *Obstet Gynecol*. 2016 Sep;128(3):621-8.
23. Tornblom-Paulander S, Tingåker BK, Werner A, Liliereutz C, Conner P, Wessel H, Ekman-Ordeberg G. Novel topical formulation of lidocaine provides significant pain relief for intrauterine device insertion: pharmacokinetic evaluation and randomized placebo-controlled trial. *Fertil Steril*. 2015 Feb;103(2):422-7.
24. Wiebe ER, Trouton KJ, Dicus J. Motivation and experience of nulliparous women using intrauterine contraceptive devices. *J Obstet Gynaecol Can*. 2010 Apr;32(4):335-8.
25. Zapata LB, Jatlaoui TC, Marchbanks PA, Curtis KM. Medications to ease intrauterine device insertion: a systematic review. *Contraception*. 2016 Dec;94(6):739-59.

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

Jared Diederichs, FMR II; Patrick McMahon, FMR II; Johnathan Tomas, FMR II;
Andries Muller, BSc, PhD, MD, CCFP, FCFP, MBChB, M.Prax.Med, Dip PEC

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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 complaint and non-compliant groups. Other studies could benefit from prospective use of counselling or reminder techniques.

References:

1. Haldar N, Cranston D, Turner E, MacKenzie I, Guillebaud J. How reliable is a vasectomy? Long-term follow-up of vasectomised men. *Lancet*. 2000 Jul;356(9223):43-4.
2. Deneux-Tharoux C, Kahn E, Nazerali H, Sokal DC. Pregnancy rates after vasectomy: a survey of US urologists. *Contraception*. 2004 May;69(5):401-6.
3. Senanayake E, Pacey AA, Maddireddy V, Shariff U, Hastie K, Rosario DJ. A novel cost-effective approach to post-vasectomy semen analysis. *BJU Int*. 2011 May;107(9):1447-52.
4. Shih G, Turok DK, Parker WJ. Vasectomy: the other (better) form of sterilization. *Contraception*. 2011 Apr;83(4):310-5.
5. Zini A, Grantmyre J, Chan P. CUA guideline: vasectomy. *Can Urol Assoc J*. 2016 Aug;10(7-8):E274-8.
6. Amundsen GA, Ramakrishnan K. Vasectomy: a "seminal" analysis. *South Med J*. 2004 Jan;97(1):54-60.
7. Badrakumar C, Gogoi NK, Sundaram SK. Semen analysis after vasectomy: when and how many? *BJU Int*. 2000 Sep;86(4):479-81.
8. Chawla A, Bowles B, Zini A. Vasectomy follow-up: clinical significance of rare nonmotile sperm in postoperative semen analysis. *Urology*. 2004 Dec;64(6):1212-5.
9. Attar KH, Gurung P, Holden S, Peters J, Philp T. Clearance after vasectomy: has the time come to modify the current practice? *Scand J Urol Nephrol*. 2010 Apr;44(3):147-50.
10. Korthorst RA, Consten D, Van Roijen JH. Clearance after vasectomy with a single semen sample containing < than 100 000 immotile sperm/mL: analysis of 1073 patients. *BJU Int*. 2010 Jun;105(11):1572-5.
11. Dhar NB, Jones JS, Bhatt A, Babineau D. A prospective evaluation of the impact of scheduled follow-up appointments with compliance rates after vasectomy. *BJU Int*. 2007 May;99(5):1094-7.
12. Duplisea J, Whelan T. Compliance with semen analysis. *J Urol*. 2013 Jun;189(6):2248-51.
13. Christensen RE, Maples DC Jr. Postvasectomy semen analysis: are men following up? *J Am Board Fam Pract*. 2005 Jan-Feb;18(1):44-7.
14. Maatman TJ, Aldrin L, Carothers GG. Patient noncompliance after vasectomy. *Fertil Steril*. 1997 Sep;68(3):552-5.
15. Shih G, Turok DK, Parker WJ. Vasectomy: the other (better) form of sterilization. *Contraception*. 2011 Apr;83(4):310-5.
16. Weiske WH. Vasectomy. *Andrologia*. 2001 May;33(3):125-34.

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

Christine Chang, FMR II; Bronwen Gould, FMR II; Breanna Davis, MD, CCFP;
Joanne Sivertson, MD, FRCPC; Shari McKay, MA

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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:

1. Khan KS, Wojdyla D, Say L, Gulmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. *Lancet*. 2006 Apr;367(9516):1066-74.
2. Norman WV, Guilbert ER, Okpaleke C, Hayden AS, Steven Lichtenberg E, Paul M, White KO, Jones HE. Abortion health services in Canada: results of a 2012 national survey. *Can Fam Physician*. 2016 Apr;62(4):e209-17.
3. Finer LB, Kost K. Unintended pregnancy rates at the state level. *Perspect Sex Reprod Health*. 2011 Jun;43(2):78-87.
4. Metcalfe A, Talavlikar R, du Prey B, Tough SC. Exploring the relationship between socioeconomic factors, method of contraception and unintended pregnancy. *Reprod Health* [Internet]. 2016 Mar 22 [cited 2018 May 15];13:[8 p.]. Available from: <https://doi.org/10.1186/s12978-016-0151-y>.
5. Canadian Medical Association. CMA policy summary: induced abortion. *CMAJ*. 1988 Dec;139(12):1176A-76B.
6. Black A, Francoeur D, Rowe T, Collins J, Miller D, Brown T, David M, Dunn S, Fisher WA, Fleming N, Fortin CA, Guilbert E, Hanvey L, Lalonde A, Miller R, Morris M, O'Grady T, Pymar H, Smith T, Henneberg E. Canadian contraception consensus. *J Obstet Gynaecol Can*. 2004 Apr;26(4):347-87, 389-436.
7. Burnett M, Aggarwal A, Davis V, Dempster J, Fisher W, Mackinnon K, Pellizzari R, Polomeno V, Rutherford M, Senikas V, Wagner MS. Sexual and reproductive health counselling by health care professionals. *J Obstet Gynaecol Can*. 2011 Aug;33(8):870-1.
8. Yee J, Apale AN, Deleary M. Sexual and reproductive health, rights, and realities and access to services for First Nations, Inuit, and Métis in Canada. *J Obstet Gynaecol Can*. 2011 Jun;33(6):633-7.
9. Vogel L. Abortion access grim in English Canada. *CMAJ*. 2015 Jan;187(1):17.
10. Dressler J, Maughn N, Soon JA, Norman WV. The perspective of rural physicians providing abortion in Canada: qualitative findings of the BC Abortion Providers Survey (BCAPS). *PLoS One* [Internet]. 2013 Jul 28 [cited 2018 May 15];8(6):[5 p.]. Available from: <https://doi.org/10.1371/journal.pone.0067070>.

11. Norman WV, Soon JA, Maughn N, Dressler J. Barriers to rural induced abortion services in Canada: findings of the British Columbia Abortion Providers Survey (BCAPS). PLoS One [Internet]. 2013 Jul 28;8(6):[7 p.]. Available from: <https://doi.org/10.1371/journal.pone.0067023>.
12. Perrot J, Ramnuo R, Mahood S, McKay S. Perceived barriers to family physician provision of medical abortions. Paper presented at: University of Saskatchewan's Department of Academic Family Medicine 23rd Annual Resident Research Day; 2013 May 31; Saskatoon, SK.

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

Erin Beresh¹, FMR II; Solveig Nilson¹, FMR II; Megan Clark¹, MD, CCFP; Mamata Pandey², PhD; Michelle McCarron^{1,2}, PhD; Adam Clay², MSc; Val Desjarlais³; Stuart Skinner⁴, MD, FRCPC

1. Department of Academic Family Medicine, College of Medicine, University of Saskatchewan
2. Research and Performance Support, Saskatchewan Health Authority (Regina Area)
3. Touchwood Agency Tribal Council
4. Division of Infectious Diseases, Department of Medicine, College of Medicine, University of Saskatchewan

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:

1. Statistics Canada. Aboriginal peoples in Canada: First Nations People, Metis, and Inuit. National Household Survey 2011. Ottawa (ON): Statistics Canada; 2014. 14 p. Available from: <http://www.statcan.gc.ca/nhs-enm/2011/as-sa/99-011-x/99-011-x2011001-end.pdf>.
2. Adelson N. The embodiment of inequity: health disparities in Aboriginal Canada. *Can J Public Health*. 2005 Mar-Apr;96(Suppl 2):S45-61.
3. Reading C, Wein F. Health inequalities and social determinants of Aboriginal peoples' health. Prince George (BC): National Collaborating Centre for Aboriginal Health; 2009. 36 p. Available from: <https://www.ccnsa-nccah.ca/docs/determinants/RPT-HealthInequalities-Reading-Wien-EN.pdf>.
4. King M, Smith A, Gracey M. Indigenous health part 2: the underlying causes of the health gap. *Lancet*. 2009 Jul;374(9683):76-85.
5. Kirmayer L, Simpson C, Cargo M. Healing traditions: culture, community and mental health promotion with Canadian Aboriginal peoples. *Australas Psychiatr*. 2003 Aug;11(Suppl 1):S15-23.
6. Browne AJ, Smye VL, Rodney P, Tang SY, Mussell B, O'Neil J. Access to primary care from the perspective of Aboriginal patients at an urban emergency department. *Qual Health Res*. 2011 Mar;21(3):333-48.
7. Statistics Canada [Internet]. 2016 Census. Ottawa (ON): Statistics Canada; 2016. Data Tables, 2016 Census – Aboriginal ancestry (22), residence by Aboriginal geography (10< age (10B) and sex (3) for the population in private households of Canada, provinces and territories, 2016 Census; 2018 Mar 28 [cited 2018 May 1]. Available from: <http://www5.statcan.gc.ca/olc-cel/olc.action?objId=98-400-X2016169&objType=46&lang=en&limit=0>.
8. The Truth and Reconciliation Commission of Canada (TRC). Honouring the truth, reconciling for the future: summary of the final report of the Truth and Reconciliation Commission of Canada. Ottawa (ON): TRC; 2015. 388 p. Available from: http://www.trc.ca/websites/trcinstitution/File/2015/Findings/Exec_Summary_2015_05_31_web_o.pdf.
9. Chiarella M, Salvage J, McInnes E. Celebrating connecting with communities: coproduction in global primary health care. *Prim Health Care Res Dev*. 2010 Apr;11(2):108-22.
10. Ramsden VR, Rabbitskin N, Westfall JM, Felzien M, Braden J, Sand J. Is knowledge translation without patient or community engagement flawed? *Fam Pract*. 2017 Jun;34(3):259-61.

11. Public Health Agency of Canada (PHAC). HIV/AIDS Epi Updates – Chapter 8: HIV/AIDS among Aboriginal people in Canada. Ottawa (ON): PHAC; 2014. 60 p. Available from: <https://www.canada.ca/content/dam/phac-aspc/migration/phac-aspc/aids-sida/publication/epi/2010/pdf/ch8-eng.pdf>.
12. Barclay K, Fletcher L. Policy priorities for primary healthcare improvement: a national conversation. *Healthcare Quarterly*. 2010;13(2):12-13.
13. Bingham B. Aboriginal community-based primary health care research: developing community driven primary health care research priorities. Surrey (BC): Fraser Health; 2013. 31 p. Available from: https://www.fraserhealth.ca/media/Aboriginal_Health_Primary_Health_Care_Research.pdf.
14. Nowell LS, Norris JM, White DE, Moules NJ. Thematic analysis: striving to meet the trustworthiness criteria. *Int J Qual Methods* [Internet]. 2017 Oct 2 [cited 2018 May 14];16:[13 p.]. Available from: <http://journals.sagepub.com/doi/full/10.1177/1609406917733847>.
15. Cameron BL, Plazas MPC, Salsa AS, Bearskin LRB, Hungler K. Understanding inequalities in access to health care services for Aboriginal people: a call for nursing action. *Adv Nurs Sci*. 2014 Jul-Sep;37(3):E1-16.
16. Struminger B, Arora S, Zalud-Cerrato S, Lowrance D, Ellerbrock T. Building virtual communities of practice for health. *Lancet*. 2017 Aug;390(10095):632-4.

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?

Katherine Gorsalitz, FMR II; Kelsey Lazar, FMR II; Janet Tootoosis, MD, CCFP

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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:

1. Levesque JF, Harris MF, Russell G. Patient-centred access to health care: conceptualizing access at the interface of health systems and populations. *Int J Equity Health* [Internet]. 2013 Mar 11 [cited 2018 May 15];12:[9 p.]. Available from: <https://doi.org/10.1186/1475-9276-12-18>.
2. Watson DE, Katz A, Reid RJ, Bogdanovic B, Roos N, Heppner P. Family physician workloads and access to care in Winnipeg: 1991 to 2001. *CMAJ*. 2004 Aug;171(4):339-42.
3. Schoen C, Osborn R, Doty MM, Bishop M, Peugh J, Murukutla N. Toward higher-performance health systems: adult's health care experiences in seven countries, 2007. *Health Aff (Millwood)*. 2007 Nov-Dec;26(6):w717-34.
4. George A, Rubin G. Non-attendance in general practice: a systematic review and its implications for access to primary health care. *Fam Pract*. 2003 Apr;20(2):178-84.
5. Vogel L. Canadians still waiting for timely access to care. *CMAJ*. 2017 Mar;189(9):E375-6.
6. Martin S. MDs worried about access to care, CMA survey indicates. *CMAJ*. 2000 Oct;163(7):869.
7. Arksey H, Hirst M. Unpaid carers' access to and use of primary care services. *Prim Health Care Res Dev*. 2005 Apr;6(2):101-16.
8. McAlister FA, Bakal JA, Green L, Bahler B, Lewanczuk R. The effect of provider affiliation with a primary care network in emergency department visits and hospital admissions. *CMAJ*. 2018 Mar;190(10):E276-84.
9. Deligiannidis KE. Primary care issues in rural populations. *Prim Care*. 2017 Mar;44(1):11-9.
10. Engström S, Foldevi M, Borgquist L. Is general practice effective? A systematic literature review. *Scand J Prim Health Care*. 2001 Jun;19(2):131-44.

Drug-seeking behaviours in the Prince Albert community

Jonathan Ness, FMR II; Bree Ardell, FMR II; Udoka Okpalauwaekwe, MBBS, MPH;
Breanna Davis, MD, CCFP; Vivian R Ramsden, RN, PhD

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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:

1. Zechnich AD, Hedges JR. Community-wide emergency department visits by patients suspected of drug-seeking behaviour. *Acad Emerg Med.* 1996 Apr;3(4):312-7.
2. Grover CA, Close RJ, Wiele ED, Villarreal K, Goldman LM. Quantifying drug-seeking behaviour: a case control study. *J Emerg Med.* 2012 Jan;42(1):15-21.
3. McNabb C, Foot C, Ting J, Breeze K, Stickley M. Diagnosing drug-seeking behaviour in an adult emergency department. *Emerg Med Australas.* 2006 Apr;18(2):138-42.
4. Weiner SG, Griggs CA, Langlois BK, Mitchell PM, Nelson KP, Friedman FD, Feldman JA. Characteristics of emergency department “doctor shoppers”. *J Emerg Med.* 2015 Apr;48(4):424-31.
5. Passik SD, Kirsh KL. The need to identify predictors of aberrant drug-related behaviour and addiction in patients being treated with opioids for pain. *Pain Med.* 2003 Jun;4(2):186-9.
6. Sim MG, Hulse GK, Khong E. Acute pain and opioid seeking behaviour. *Aust Fam Physician.* 2004 Dec;33(12):1009-12.
7. Passick SD, Kirsh KL, Donaghy KB, Portenoy RK. Pain and aberrant drug-related behaviours in medically ill patients with and without histories of substance abuse. *Clin J Pain.* 2006 Feb;22(2):173-81.
8. Grover CA, Elder JW, Close RJH, Curry SM. How frequently are “classic” drug-seeking behaviors used by drug-seeking patients in the emergency department. *West J Emerg Med.* 2012 Nov;13(5):416-21.
9. Weiner SG, Griggs CA, Mitchell PM, Langlois BK, Friedman FD, Moore RL, Lin SC, Nelson KP, Feldman JA. Clinician impression versus prescription drug monitoring program criteria in the assessment of drug-seeking behaviour in the emergency department. *Ann Emerg Med.* 2013 Oct;62(4):281-9.
10. Grover CA, Close RJ, Villarreal K, Goldman LM. Emergency department frequent user: pilot study of intensive case management to reduce visits and computed tomography. *West J Emerg Med.* 2010 Sep;11(4):336-43.
11. Pankratz L, Hickman DH, Toth S. The identification and management of drug-seeking behaviour in a medical center. *Drug Alcohol Depend.* 1989 Oct;24(2):115-8.
12. Hawkins SC, Smeeks F, Hamel J. Emergency management of chronic pain and drug-seeking behavior: an alternate prospective. *J Emerg Med.* 2008 Feb;34(2):125-9.
13. Fiessler F, Riggs R, Salo D, Klemm R, Flannery A, Shih R. Care plans reduce ED visits in those with drug-seeking behavior. *Am J Emerg Med.* 2015 Dec;33(12):1799-801.
14. Gugelmann HM, Perrone J. Can prescription drug monitoring programs help limit opioid abuse? *JAMA.* 2011 Nov;306(20):2258-9.
15. Webster LR, Webster RM. Predicting aberrant behaviours in opioid-treated patients: preliminary validation of the Opioid Risk Tool. *Pain Med.* 2005 Nov-Dec;6(6):432-42.
16. Butler SF, Fernandez K, Benoit C, Budman SH, Jamison RN. Validation of the revised Screener and Opioid Assessment for Patients with Pain (SOAPP-R). *J Pain.* 2008 Apr;9(4):360-72.

17. Weiner SG, Horton LC, Green TC, Butler SF. Cross-validation of a prescription opioid abuse risk tool and prescription drug monitoring data in the emergency department [abstract]. *Acad Emerg Med*. 2014 May;21(Suppl 1):S163.
18. Longo LP, Parran T Jr, Johnson B, Kinsey W. Addiction: part II. Identification and management of the drug-seeking patient. *Am Fam Physician*. 2000 Apr;61(8):2401-8.
19. McCaffery M, Grimm MA, Pasero C, Ferrell B, Uman GC. On the meaning of “drug seeking”. *Pain Manag Nurs*. 2005 Dec;6(4):122-6.
20. Carlson, MJ, Baker LH. Difficult, dangerous, and drug seeking: the 3D way to better patient care. *Am J Public Health*. 1998 Aug;8(8):1250-2.

**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;
Sarah Liskowich, MD, CCFP; Jean-Francois (Mickey) Rostoker, MD, CCFP;
Vivian R Ramsden, RN, PhD; Michelle McCarron, PhD

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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:

1. Royal College of Physicians and Surgeons Canada (RCPSC). CanMEDS: Better standards, better physicians, better care [Internet]. Ottawa (ON): RCPSC; 2018 [cited 2018 Apr 5];[about 2 screens]. Available from: <http://www.royalcollege.ca/rcsite/canmeds/canmeds-framework-e>.
2. Kay MP, Mitchell GK, Del Mar CB. Doctors do not adequately look after their own physical health. *Med J Aust*. 2004 Oct;181(7):368-70.
3. Chambers R, Belcher J. Self-reported health care over the past 10 years: a survey of general practitioners. *Br J Gen Pract*. 1992 Apr;42(357):153-6.
4. Lam ST. Special considerations in the care of the physician-patient: a lesson for medical education. *Acad Psychiatry*. 2014 Oct;38(5):632-7.
5. Montgomery AJ, Bradley C, Rochfort A, Panagopoulou E. A review of self-medication in physicians and medical students. *Occup Med (Lond)*. 2011 Oct;61(7):490-7.
6. Richards JG. The health and health practices of doctors and their families. *N Z Med J*. 1999 Mar;112(1084):96-9.
7. Davidson SK, Schattner PL. Doctors' health-seeking behaviour: a questionnaire survey. *Med J Aust*. 2003 Sep;179(6):302-5.
8. Field R, Haslam D. Do you have your own doctor, doctor? *Br J Gen Pract*. 2008 Jul;58(552):462-4.
9. Pullen D, Lonie CE, Lyle DM, Cam DE, Doughty MV. Medical care of doctors. *Med J Aust*. 1995 May;162(9):481-4.
10. Baldwin PJ, Dodd M, Wrate RM. Young doctors' health—II. Health and health behaviour. *Soc Sci Med*. 1997 Jul;45(1):41-4.
11. Campbell S, Delva D. Physician do not heal thyself. Survey of personal health practices among medical residents. *Can Fam Physician*. 2003 Sep;49(9):1121-7.
12. Töyry S, Räsänen K, Kujala S, Äärimaa M, Juntunen J, Kalimo R, Luhtala R, Mäkelä P, Myllymäki K, Seurri M, Husman K. Self-reported health, illness, and self-care amongst Finnish physicians: a national survey. *Arch Fam Med*. 2000;9(10):1079-85.
13. Vance L, Howse K. Personal health care practices in residency: cross-sectional survey [abstract]. *Can Fam Physician*. 2016 Feb;62(2):S66.
14. Benkhadra K, Adusumalli J, Rajjo T, Hagen PT, Wang Z, Murad MH. A survey of health care needs of physicians. *BMC Health Serv Res* [Internet]. 2016 Sep 6 [cited 2018 May 11];16(1):[5 p.]. Available from: <https://doi.org/10.1186/s12913-016-1728-4>.
15. Chen JY, Tse EY, Lam TP, Li DK, Chao DV, Kwan CW. Doctors' personal health care choices: a cross-sectional survey in a mixed public/private setting. *BMC Public Health* [Internet]. 2008 May 28 [cited 2018 May 11];8:[7 p.]. Available from: <https://doi.org/10.1186/1471-2458-8-183>.

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

Brendan Gracias, FMR II; Wihan van Heerde, FMR II;
Matthew Wong, FMR II; Jason Hosain, MD, CCFP

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

ABSTRACT

Background: 3-D printers are emerging as technology for developing a variety of plastic-based 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:

1. Shams L, Seitz AR. Benefits of multisensory learning. *Trends Cogn Sci*. 2008 Nov;12(11):411–7.
2. Babatunde OM, Kim HM, Desandis BA, Rogers Ce, Levine WN. A physician's guide to the physical examination of the shoulder. *Phys Sportsmed*. 2012 Feb;40(1):91–101.
3. Life Science Integrated Database Center (LSIDC) [Internet]. Kashiwa (JP): LSIDC; c2014. *BodyParts3D/Anatomography*; 2013 May [cited 2018 May 11];[about 1 screen]. Available from: <http://lifesciencedb.jp/bp3d/>.
4. Tinkercad: create 3d digital designs with online CAD [Internet]. San Francisco (CA): Autodesk, Inc.; c2018 [cited 2018 May 11]. Available from: <https://www.tinkercad.com/>.
5. 3D printing software: Simplify3D [Internet]. Cincinnati (OH): Simplify3D; c2018 [cited 2018 May 11]. Available from: <https://www.simplify3d.com/>.
6. Mueller B. Additive manufacturing technologies – rapid prototyping to direct digital manufacturing [book review]. *Assembly Autom*. 2012 Apr;32(2):[1 p.]. Review of: Gibson I, Rosen DW, Stucker B. *Additive manufacturing technologies: rapid prototyping to direct digital manufacturing*. New York (NY): Springer-Verlag New York; 2009. 498 p.
7. 3D Hubs: local manufacturing [Internet]. Amsterdam (NL): 3D Hubs; c2018. *What is 3D printing? The definitive guide to additive manufacturing*; [cited 2018 May 12];[about 24 screens]. Available from: <https://www.3dhubs.com/what-is-3d-printing>.
8. Arduino [Internet]. Somerville (MA): Arduino; c2018 [cited 2018 May 12]. Available from: <https://www.arduino.cc/>.
9. SparkFun. SparkFun 6 Degrees of Freedom Breakout – LSM6DS3 [Internet]. [cited 2018 May 12]. Available from: <https://cdn.sparkfun.com/assets/parts/1/0/6/4/6/13339-01.jpg>.

The effect of patient education and personal experience on the perception of the importance of glycemic control and motivation to control Type 2 Diabetes

Karissa Brabant, MSc, FMR II; Kate Pilon, FMR II; Falah Majid, MD, FRCPC;
Michelle McCarron, PhD; Jamie Stushnoff, MD, CCFP

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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). Patient 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 more

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:

1. Lau DCW. Diabetes in the elderly: a silent global tsunami. *Can J Diabetes*. 2016 Feb;40(1):2–3.
2. Diabetes Canada Clinical Practice Guidelines Expert Committee; Sherifali D, Berard LD, Gucciardi E, MacDonald B, MacNeill G. 2018 Clinical practice guidelines: self-management education and support. *Can J Diabetes*. 2018 Apr;42(Suppl 1):S36–41.
3. Kronsbein P, Jörgens V, Mühlhauser I, Scholz V, Venhaus A, Berger M. Evaluation of a structured treatment and teaching programme on non-insulin-dependent diabetes. *Lancet*. 1988 Dec;332(8625):1407–11.
4. Cochran J, Conn VS. Meta-analysis of quality of life outcomes following diabetes self-management training. *Diabetes Educ*. 2008 Sep-Oct;34(5):815–23.
5. Aghili R, Polonsky WH, Valojerdi AE, Malek M, Keshtkar AA, Esteghamati A, Heyman H, Khamseh ME. Type 2 diabetes: model of factors associated with glycemic control. *Can J Diabetes*. 2016 Oct;40(5):424–30.
6. Kim HS, Kim H, Yang HK, Lee EY, Jeong YJ, Kim TM, Yang SJ, Baik SY, Lee SH, Cho JH, Choi IY, Yim HW, Cha BY. Physician-directed diabetes education without a medication change and associated patient outcomes. *Diabetes Metab J*. 2017 Jun;41(3):187–94.
7. Gucciardi E, Smith PL, Demelo M. Use of diabetes resources in adults attending a self-management education program. *Patient Educ Couns*. 2006 Dec;64(1-3):322–30.
8. Zammitt NN, Frier BM. Hypoglycemia in type 2 diabetes: pathophysiology, frequency, and effects of different treatment modalities. *Diabetes Care*. 2005 Dec;28(12):2948–61.
9. Aronson R, Goldenberg R, Boras D, Skovgaard R, Bajaj H. The Canadian Hypoglycemia Assessment Tool Program: insights into rates and implications of hypoglycemia from an observational study. *Can J Diabetes*. 2018 Feb;42(1):11–7.
10. Yong YM, Shin, KM, Lee KM, Cho JY, Ko SH, Yoon MH, Kim TW, Jeong JH, Park YM, Ko SH, Ahn YB. Intensive individualized reinforcement education is important for the prevention of hypoglycemia in patients with type 2 diabetes. *Diabetes Metab J*. 2015 Apr;39(2):154-63.

11. Williams GC, Grow VM, Freedman ZR, Ryan RM, Deci EL. Motivational predictors of weight loss and weight-loss maintenance. *J Pers Soc Psychol.* 1996 Jan;70(1):115–26.
12. Levesque CS, Williams GC, Elliot D, Pickering MA, Bodenhamer B, Finley PJ. Validating the theoretical structure of the Treatment Self-regulation Questionnaire (TSRQ) across three different health behaviors. *Health Educ Res.* 2007 Oct;22(5):691–702.
13. Anderson RM, Funnell MM. Patient empowerment: myths and misconceptions. *Patient Educ Couns.* 2010 Jun;79(3):277–82.
14. Funnell MM, Nwankwo R, Gillard ML, Anderson RM, Tang TS. Implementing an empowerment-based diabetes self-management education program. *Diabetes Educ.* 2005 Jan-Feb;31(1):53–61.
15. Williams GC, McGregor HA, Zeldman A, Freedman ZR, Deci EL. Testing a self-determination theory process model for promoting glycemic control through diabetes self-management. *Health Psychol.* 2004 Jan;23(1):58–66.
16. Mathew R, Gucciardi E, De Melo M, Barata P. Self-management experiences among men and women with type 2 diabetes mellitus: a qualitative analysis. *BMC Fam Pract [Internet].* 2012 Dec 19 [cited 2018 May 14];13:[12 p.]. Available from: <https://doi.org/10.1186/1471-2296-13-122>.
17. Gehlaut RR, Dogbey GY, Schwartz FL, Marling CR, Shubrook JH. Hypoglycemia in type 2 diabetes - more common than you think. *J Diabetes Sci Technol.* 2015 Apr;9(5):999–1005.

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

Joel Buhiire, FMR II; Chris Little, FMR II; Breanna Davis, MD, CCFP;
Shari McKay, MA; Udoka Okpalauwaekwe, MBBS, MPH

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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:

1. Zhi M, Ding EL, Theisen-Toupal J, Whelan J, Arnaut R. The landscape of inappropriate laboratory testing: a 15-year meta-analysis. *PLoS One* [Internet]. 2013 Nov 15 [cited 2018 May 1];8(11):[8 p.]. Available from: <https://doi.org/10.1371/journal.pone.0078962>.
2. Schuur JD, Carney DP, Lyn ET, Raja AS, Michael JA, Ross NG, Venkatesh AK. A top-five list for emergency medicine. *JAMA Intern Med*. 2014 Apr;174(4):509-15.
3. Choosing Wisely Canada [Internet]. Toronto (ON): Choosing Wisely Canada; c2018. About; 2018 [cited 2018 May 13];[about 4 screens]. Available from: <https://choosingwiselycanada.org/about/>.
4. Sah S, Elias P, Ariely D. Investigation momentum: the relentless pursuit to resolve uncertainty. *JAMA Intern Med*. 2013 May;173(10):932-3.
5. Rehmani R, Amanullah S. Analysis of blood tests in the emergency department of a tertiary care hospital. *Postgrad Med J*. 1999 Nov;75(889):662-6.
6. Studdert DM, Mello MM, Sage WM, DesRoches CM, Peugh J, Zapert K, Brennan TA. Defensive medicine among high-risk specialist physicians in a volatile malpractice environment. *JAMA*. 2005 Jun;293(21):2609-17.
7. Portale JV, Harper LJ, Fields JM. Emergency physicians' knowledge of the total charges of medical care. *Am J Emerg Med*. 2013 Jun;31(6):950-2.
8. Bloomgarden Z, Sidel VW. Evaluation of utilization of laboratory tests in a hospital emergency room. *Am J Public Health*. 1980 May;70(5):525-8.
9. Chu KH, Waghlikar AS, Greenslade JH, O'Dwyer JA, Brown AF. Sustained reductions in emergency department laboratory test orders: impact of a simple intervention. *Postgrad Med J*. 2013 Oct;89(1056):566-71.
10. Petrou P. Failed attempts to reduce inappropriate laboratory utilization in an emergency department setting in Cyprus: lessons learned. *J Emerg Med*. 2016 Mar;50(3):510-7.
11. Neilson EG, Johnson KB, Rosenbloom ST, Dupont WD, Talbert D, Giuse DA, Kaiser A, Miller RA; Resource Utilization Committee. The impact of peer management on test-ordering behavior. *Ann Intern Med*. 2004 Aug;141(3):196-204.
12. Kahan NR, Waitman DA, Vardy DA. Curtailing laboratory test ordering in a managed care setting through redesign of a computerized order form. *Am J Manag Care*. 2009 Mar;15(3):173-6.
13. Feldman LS, Shihab HM, Thiemann D, Yeh HC, Ardolino M, Mandell S, Brotman DJ. Impact of providing fee data on laboratory test ordering. *JAMA Intern Med*. 2013 May;173(10):903-8.
14. Tierney WM, Miller ME, McDonald CJ. The effect on test ordering of informing physicians of the charges for outpatient diagnostic tests. *N Engl J Med*. 1990 May;322(21):1499-504.
15. Baron JM, Lewandrowski 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

- marker use. *J Pathol Inform* [Internet]. 2012 Feb 29 [cited 2018 May 13];3:[7 p.]. Available from: <https://doi.org/10.4103/2153-3539.93400>.
16. Morgan S, Morgan A, Kerr R, Tapley A, Magin P. Test ordering by GP trainees: effects of an educational intervention on attitudes and intended practice. *Can Fam Physician*. 2016 Sep;62(9):733-41.
 17. Miyakis S, Karamanof G, Lontos M, Mountokalakis TD. Factors contributing to inappropriate ordering of tests in an academic medical department and the effect of an educational feedback strategy. *Postgrad Med J*. 2006 Dec;82(974):823-9.
 18. Stafford RS. Feedback intervention to reduce routine electrocardiogram use in primary care. *Am Heart J*. 2003 Jun;145(6):979-85.
 19. Kroenke K, Hanley JF, Copley JB, Matthews JI, Davis CE, Foulks CJ, Carpenter JL. Improving house staff ordering of three common laboratory tests. Reductions in test ordering need not result in underutilization. *Med Care*. 1987 Oct;25(10):928-35.
 20. Prat G, Lefèvre M, Nowak E, Tonnelier JM, Renault A, L'Her E, Boles JM. Impact of clinical guidelines to improve appropriateness of laboratory tests and chest radiographs. *Intensive Care Med*. 2009 Jun;35(6):1047-53.
 21. Thakkar RN, Kim D, Knight AM, Riedel S, Vaidya D, Wright SM. Impact of an educational intervention on the frequency of daily blood test orders for hospitalized patients. *Am J Clin Pathol*. 2015 Mar;143(3):393-7.
 22. Wang TJ, Mort EA, Nordberg P, Chang Y, Cadigan ME, Mylott L, Ananian LB, Thompson BT, Fessler M, Warren W, Wheeler A, Jordan M, Fifer MA. A utilization management intervention to reduce unnecessary testing in the coronary care unit. *Arch Intern Med*. 2002 Sep;162(16):1885-90.
 23. Gottheil S, Khemani E, Copley K, Keeney M, Kinney J, Chin-Yee I, Gob A. Reducing inappropriate ESR testing with computerized clinical decision support. *BMJ Qual Improv Reports* [Internet]. 2016 Apr 5 [cited 2018 May 13];5(1):[4 p.]. Available from: <https://doi.org/10.1136/bmjquality.u211376.w4582>.
 24. Wigder HN, Cohan Ballis SF, Lazar L, Urgo R, Dunn BH. Successful implementation of a guideline by peer comparisons, education, and positive physician feedback. *J Emerg Med*. 1999 Sep-Oct;17(5):807-10.
 25. Gentile NT, Ufberg J, Barnum M, McHugh M, Karras D. Guidelines reduce x-ray and blood gas utilization in acute asthma. *Am J Emerg Med*. 2003 Oct;21(6):451-3.
 26. Volz KA, McGillicuddy DC, Horowitz GL, Wolfe RE, Joyce N, Sanchez LD. Eliminating amylase testing from the evaluation of pancreatitis in the emergency department. *West J Emerg Med*. 2010 Sep;11(4):344-7.
 27. Cameron C, Naylor CD. No impact from active dissemination of the Ottawa Ankle Rules: further evidence of the need for local implementation of practice guidelines. *CMAJ*. 1999 Apr;160(8):1165-8.
 28. Choosing Wisely [Internet]. Philadelphia (PA): Choosing Wisely; c2018. ASCP – CRP for acute phase inflammation; 2015 Feb 3 [cited 2018 May 13];[about 1 screen]. Available from: <http://www.choosingwisely.org/clinician-lists/american-society-clinical-pathology-erythrocyte-sedimentation-rate-for-acute-phase-inflammation/>.

29. Costenbader KH, Chibnik LB, Schur PH. Discordance between erythrocyte sedimentation rate and C-reactive protein measurements: clinical significance. *Clin Exp Rheumatol*. 2007 Sep-Oct;25(5):746–9.
30. Brigden ML. Clinical utility of the erythrocyte sedimentation rate. *Am Fam Physician*. 1999 Oct;60(5):1443–50.
31. Colombet I, Pouchot J, Kronz V, Hanras X, Capron L, Durieux P, Wyplosz B. Agreement between erythrocyte sedimentation rate and C-reactive protein in hospital practice. *Am J Med*. 2010 Sep;123(9):863.e7-13.
32. Best Practice Advocacy Centre New Zealand (BPACNZ). Clinical audit: CRP vs ESR. Dunedin (NZ): BPACNZ; 2009. 12 p. Available from: https://bpac.org.nz/resources/other/audits/bpac_crp_audit_wv.pdf.
33. Berbari EF, Kanj SS, Kowalski TJ, Darouiche RO, Widmer AF, Schmitt SK, Hendershot EF, Holtom PD, Huddleston PM 3rd, Peterman GW, Osmon DR; Infectious Diseases Society of America. 2015 Infectious Diseases Society of America (IDSA) clinical practice guidelines for the diagnosis and treatment of native vertebral osteomyelitis in adults. *Clin Infect Dis*. 2015 Sep;61(6):e26–46.
34. Osmon DR, Berbari EF, Berendt AR, Lew D, Zimmerli W, Steckelberg JM, Rao N, Hanssen A, Wilson WR. Diagnosis and management of prosthetic joint infection: clinical practice guidelines by the Infectious Diseases Society of America. *Clin Infect Dis*. 2013 Jan;56(1):e1–25.
35. Assasi N, Blackhouse G, Campbell K, Hopkins RB, Levine M, Richter T, Budden A. Comparative value of erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) testing in combination versus individually for the diagnosis of undifferentiated patients with suspected inflammatory disease or serious infection: a systematic review and economic analysis. Ottawa (ON): Canadian Agency for Drugs and Technologies in Health; 2015. 66 p. Available from: https://www.cadth.ca/sites/default/files/pdf/HT0006-OP0516_ESRandCRP_e.pdf.

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

Geoffrey Zerr, FMR II; Shizar Goosheh, FMR I; Sarah Liskowich, MD, CCFP;
Michelle McCarron, PhD; Bijhan Ebrahim, MD, CCFP (EM)

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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:

1. Linkins LA, Takach Lapner S. Review of D-dimer testing: good, bad, and ugly. *Int J Lab Hematol*. 2017 May;39(Suppl 1):98–103.
2. Kabrhel C, Mark Courtney D, Camargo CA Jr, Plewa MC, Nordenholz KE, Moore CL, Richman PB, Smithline HA, Beam DM, Kline JA. Factors associated with positive D-dimer results in patients evaluated for pulmonary embolism. *Acad Emerg Med*. 2010 Jun;17(6):589–97.
3. Haase C, Joergensen M, Ellervik C, Joergensen MK, Bathum L. Age- and sex-dependent reference intervals for D-dimer: evidence for a marked increase by age. *Thromb Res*. 2013 Dec;132(6):676–80.
4. Chapman CS, Akhtar N, Campbell S, Miles K, O'Connor J, Mitchell VE. The use of D-Dimer assay by enzyme immunoassay and latex agglutination techniques in the diagnosis of deep vein thrombosis. *Clin Lab Haematol*. 1990 Mar;12(1):37–42.
5. De Monyé W, Sanson BJ, Mac Gillavry MR, Pattynama PM, Büller HR, van den Berg-Huysmans AA, Huisman MV; ANTELOPE-Study Group. Embolus location affects the sensitivity of a rapid quantitative D-dimer assay in the diagnosis of pulmonary embolism. *Am J Respir Crit Care Med*. 2002 Feb;165(3):345–8.
6. Bates SM, Takach Lapner S, Douketis JD, Kearon C, Julian J, Parpia S, Schulman S, Weitz JI, Linkins LA, Crowther M, Lim W, Spencer FA, Lee AY, Gross PL, Ginsberg J. Rapid quantitative D-dimer to exclude pulmonary embolism: a prospective cohort management study. *J Thromb Haemost*. 2016 Mar;14(3):504–9.
7. Verschuren FR, Hainaut P, Thys FR, Elamly A, Dessomme B, Lavenne E, Reynaert MS. ELISA D-dimer measurement for the clinical suspicion of pulmonary embolism in the emergency department: one-year observational study of the safety profile and physician's prescription. *Acta Clin Belg*. 2003 Jul-Aug;58(4):233–40.
8. Saar JA, Maack C; European Society of Cardiology. Diagnosis and management of acute pulmonary embolism. ESC guidelines 2014. *Herz*. 2015 Dec;40(8):1048-54.
9. Kim SR, Lee JH, Park KH, Park HJ, Park JW. Varied incidence of immediate adverse reactions to low-osmolar non-ionic iodide radiocontrast media used in computed tomography. *Clin Exp Allergy*. 2017 Jan;47(1):106–12.
10. Hurwitz LM, Reiman RE, Yoshizumi TT, Goodman PC, Toncheva G, Nguyen G, Lowry C. Radiation dose from contemporary cardiothoracic multidetector CT protocols with an anthropomorphic female phantom: implications for cancer induction. *Radiology*. 2007 Dec;245(3):742–50.
11. Wiener RS, Schwartz LM, Woloshin S. When a test is too good: how CT pulmonary angiograms find pulmonary emboli that do not need to be found. *BMJ* [Internet]. 2013 Jul 2 [cited 2018 May 22];347:[7 p.]. Available from: <https://doi.org/10.1136/bmj.f3368>.
12. Wysowski DK, Nourjah P, Swartz L. Bleeding complications with warfarin use. *Arch Intern Med*. 2007 Jul;167(13):1414-9.
13. Anderson DR, Kahn SR, Rodger MA, Kovacs MJ, Morris T, Hirsch A, Lang E, Stiell I, Kovacs G, Dreyer J, Dennie C, Cartier Y, Barnes D, Burton E, Pleasance S, Skedgel C, O'Rourke K, Wells PS. Computed tomographic pulmonary angiography vs ventilation-perfusion lung scanning in patients with suspected pulmonary embolism. *JAMA*. 2007 Dec;298(23):2743-53.

14. Wells PS, Anderson DR, Rodger M, Ginsberg JS, Kearon C, Gent M, Turpie AG, Bormanis J, Weitz J, Chamberlain M, Bowie D, Barnes D, Hirsh J. Derivation of a simple clinical model to categorize patients probability of pulmonary embolism: increasing the models utility with the SimpliRED D-dimer. *Thromb Haemost.* 2000 Mar;83(3):416–20.
15. van Belle A, Büller HR, Huisman MV, Huisman PM, Kaasjager K, Kamphuisen PW, Kramer MH, Kruip MJ, Kwakkel-van Erp JM, Leebeek FW, Nijkeuter M, Prins MH, Sohne M, Tick LW; Christopher Study Investigators. Effectiveness of managing suspected pulmonary embolism using an algorithm combining clinical probability, D-dimer testing, and computed tomography. *JAMA.* 2006 Jan;295(2):172-9.
16. Riley RS, Gilbert AR, Dalton JB, Pai S, McPherson RA. Widely used types and clinical applications of D-dimer assay. *Lab Med.* 2016 May;47(2):90–102.
17. DynaMed Plus. D-dimer testing for venous thromboembolism [Internet]. Ipswich (MA): EBSCO Industries, Inc.; [updated 2017 Nov 21; cited 2018 Feb 28];[about 20 screens]. Available from: <http://www.dynamed.com/topics/dmp~AN~T114964/D-dimer-testing-for-venous-thromboembolism>.
18. Righini M, Van Es J, Den Exter PL, Roy PM, Verschuren F, Ghuysen A, Rutschmann OT, Sanchez O, Jaffrelot M, Trinh-Duc A, Le Gall C, Moustafa F, Principe A, Van Houten AA, Ten Wolde M, Douma RA, Hazelaar G, Erkens PM, Van Kralingen KW, Grootenboers MJ, Durian MF, Cheung YW, Meyer G, Bounameaux H, Huisman MV, Kamphuisen PW, Le Gal G. Age-adjusted D-dimer cutoff levels to rule out pulmonary embolism: the ADJUST-PE Study. *JAMA.* 2014 Mar;311(11):1117-24.
19. Takach Lapner S, Julian JA, Linkins LA, Bates SM, Kearon C. Questioning the use of an age-adjusted D-dimer threshold to exclude venous thromboembolism: analysis of individual patient data from two diagnostic studies. *J Thromb Haemost.* 2016 Oct;14(10):1953–9.
20. Mullier F, Vanpee D, Jamart J, Dubuc E, Bailly N, Douxfils J, Chatelain C, Dogné JM, Chatelain B. Comparison of five D-dimer reagents and application of an age adjusted cut-off for the diagnosis of venous thromboembolic disease in emergency department. *Blood Coagul Fibrinolysis.* 2014 Jun;25(4):309-15.
21. Saskatchewan Medical Association (SMA). SMA fee guide. Saskatoon (SK): SMA; 2017. 219 p. Available from: http://www.sma.sk.ca/kaizen/content/files/SMA_FEE_GUIDE_OCTOBER_2017.pdf.
22. Kline J, Courtney D, Moore C, Kabrhel C, Smithline H, McCubbin T, Richman P, Plewa M, O’Neil B, Beam D, Nordenholtz K, Camargo C, Johnson C. Prospective, multicenter validation of the Pulmonary Embolism Rule-out Criteria [abstract]. *Acad Emerg Med.* 2007 May;14(Suppl 1):S7.

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

Katherine Smythe, FMR II; Mason Wardrop, FMR II; Matthew Bear, FMR I; Michelle McCarron, PhD; Sarah Liskowich, MD, CCFP; Kish Lyster, MD, CCFP (EM)

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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; $\chi^2_{df=1} = 16.641$; $P < .001$.

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:

1. Majeed MU, Williams DT, Pollock R, Amir F, Liam M, Foong KS, Whitaker CJ. Delay in discharge and its impact on unnecessary hospital bed occupancy. *BMC Health Serv Res* [Internet]. 2012 Nov 20 [cited 2018 May 16];12:[6 p.]. Available from: <https://doi.org/10.1186/1472-6963-12-410>.
2. Saravay SM, Kaplowitz M, Kurek J, Zeman D, Pollack S, Novik S, Knowlton S, Brendel M, Hoffman L. How do delirium and dementia increase length of stay of elderly general medical inpatients? *Psychosomatics*. 2004 May-Jun;45(3):235-42.
3. Herrmann FR, Safran C, Levkoff SE, Minaker KL. Serum albumin level on admission as a predictor of death, length of stay, and readmission. *Arch Intern Med*. 1992 Jan;152(1):125-30.
4. Johnston M, Wakeling A, Graham N, Stokes F. Cognitive impairment, emotional disorder and length of stay of elderly patients in a district general hospital. *Br J Med Psychol*. 1987 Jun;60(Pt 2):133-9.
5. Smith DP, Enderson BL, Maull KI. Trauma in the elderly: determinants of outcome. *South Med J*. 1990 Feb;83(2):171-7.
6. Nicolas F, Le Gall JR, Alperovitch A, Lorait P, Villers D. Influence of patients' age on survival, level of therapy and length of stay in intensive care units. *Intensive Care Med*. 1987 Jan;13(1):9-13.
7. Canadian Institute of Health Information (CIHI). Analysis in brief: alternate level of care in Canada. Ottawa (ON): CIHI; 2009. 20 p. Available from: https://secure.cihi.ca/free_products/ALC_AIB_FINAL.pdf.
8. Raïche M, Hébert M, Dubois MF; PRISMA Partners. User guide for the PRISMA-7: questionnaire to identify elderly people with severe loss of autonomy. In: Hébert R, Tourigny A, Gagnon M, editors. Integrated service delivery to ensure persons' functional autonomy [Internet]. Saint-Hyacinthe (QC): Edisem, Inc.; c2005 [cited 2018 May 10]. pp. 147-165. Available from: http://www.prisma-qc.ca/documents/document/Prisma_English.pdf.
9. Folstein FM, Folstein SE. MMSE©-2™: Mini-Mental State Examination, 2nd Edition™. 2nd ed. Lutz (FL): PAR, Inc.; 2010.
10. Nasreddine ZS, Phillips NA, Bédirian V, Charbonneau S, Whitehead V, Collin I, Cummings JL, Chertkow H. The Montreal Cognitive Assessment (MoCA): a brief screening tool for mild cognitive impairment. *J Am Geriatr Soc*. 2005 Apr;53(4):695-9.

A qualitative assessment of family medicine residents' experiences in Personal Care Homes

Sonya Englert, FMR II; Robyn Schuler, FMR II; Anil Keshvara, FMR II;
Rae Petrucha, MD, CCFP; Nicole Jacobson, MA; Vivian R Ramsden, RN, PhD

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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:

1. Statistics Canada [Internet]. Ottawa (ON): Statistics Canada; c2018. Canada's population estimates: age and sex, July 1, 2015; 2015 Sep 29 [cited 2018 May 15];[about 3 screens]. Available from: <http://www.statcan.gc.ca/daily-quotidien/150929/dq150929b-eng.htm>.
2. Raetz J, Osborn J. Nursing home practice among recent family medicine residency graduates. *Fam Med*. 2013 Sep;45(8):576-9.
3. Diachun LL, Hillier LM, Stolee P. Interest in geriatric medicine in Canada: how can we secure a next generation of geriatricians? *J Am Geriatr Soc*. 2006 Mar;54(3):512-9.
4. Torrible SJ, Diachun LL, Rolfson DB, Dumbrell AC, Hogan DB. Improving recruitment into geriatric medicine in Canada: findings and recommendations from the geriatric recruitment issues study. *J Am Geriatr Soc*. 2006 Sep;54(9):1453-62.
5. Helton MR, Pathman DE. Caring for older patients: current attitudes and future plans of family medicine residents. *Fam Med*. 2008 Nov-Dec;40(10):707-14.
6. Eshbaugh E, Gross PE, Hillebrand K, Davie J, Henninger WR. Promoting careers in gerontology to students: what are undergraduates seeking in a career? *Gerontol Geriatr Educ*. 2013 Feb;34(2):150-60.
7. Brooks TR. Attitudes of medical students and family practice residents toward geriatric patients. *J Natl Med Assoc*. 1993 Jan;85(1):61-4.
8. Higashi RT, Tillack AA, Steinman M, Harper M, Johnston CB. Elder care as "frustrating" and "boring": understanding the persistence of negative attitudes toward older patients among physicians-in-training. *J Aging Stud*. 2012 Dec;26(4):476-83.
9. Ahmed NN, Farnie M, Dyer CB. The effect of geriatric and palliative medicine education on the knowledge and attitudes of internal medicine residents. *J Am Geriatr Soc*. 2011 Jan;59(1):143-7.
10. Tufan F, Yuruyen M, Kizilarlanoglu MC, Akpınar T, Emiksiye S, Yesil Y, Ozturk ZA, Bobzbulut UB, Bolayir B, Tasar PT, Yavuzer H, Sahin S, Ulger Z, Ozturk GB, Halil M, Akcicek F, Doventas A, Kepkci Y, Ince N, Karan MA. Geriatrics education is associated with positive attitudes toward older people in internal medicine residents: a multicenter study. *Arch Gerontol Geriatr*. 2015 Mar-Apr;60(2):307-10.
11. Warshaw G. Geriatric medicine training in family practice residency. *Am J Med*. 1994 Oct;97(4A):12S-4S.
12. Robinson BE, Barry PP, Renick N, Bergen MR, Stratos GA. Physician confidence and interest in learning more about common geriatric topics: a needs assessment. *J Am Geriatr Soc*. 2001 Jul;49(7):963-7.
13. Li I, Arenson C, Warshaw GA, Bragg EJ, Shaull R, Counsell SR. A national survey on the current status of family practice residency education in geriatric medicine. *Fam Med*. 2003 Jan;35(1):35-41.

14. Denson S, Simpson D, Denson K, Brown D, Manzi G, Rehm J, Wessel B, Duthie EH Jr. Geriatrics education team model results in sustained geriatrics training in 15 residency and fellowship programs and scholarship. *J Am Geriatr Soc.* 2016 Apr;64(4):855–61.
15. Nieman LZ, Vernon MS, Horner RD. Designing and evaluating an episodic, problem-based geriatric curriculum. *Fam Med.* 1992 Jul;24(5):378-81.
16. McCrystle SW, Murray LM, Pinheiro SO. Designing a learner-centered geriatrics curriculum for multilevel medical learners. *J Am Geriatr Soc.* 2010 Jan;58(1):142-51.
17. Reuben DB, Bachrach PS, McCreath H, Simpson D, Bragg EJ, Warshaw GA, Snyder R, Frank JC. Changing the course of geriatrics education: an evaluation of the first cohort of Reynolds geriatrics education programs. *Acad Med.* 2009 May;84(5):619-26.
18. Roberts E, Richeson N, Thornhill JT, Corwin SJ, Eleazer GP. The Senior Mentor Program at the University of South Carolina School of Medicine: an innovative geriatric longitudinal curriculum. *Gerontol Geriatr Educ.* 2006;27(2):11-23.
19. Roscoe LA, Schonwetter, RS, Wallach PM. Advancing geriatrics education: evaluation of a new curricular initiative. *Teach Learn Med.* 2005 Fall;17(4):355-62.
20. Goldenhar LM, Margolin EG, Warshaw G. Effect of extracurricular geriatric medicine training: a model based on student reflections on healthcare delivery to elderly people. *J Am Geriatr Soc.* 2008 Mar;56(3):548-52.
21. Molema F, Koopmans R, Helmich E. The nursing home as a learning environment: dealing with less is learning more. *Acad Med.* 2014 Mar;89(3):497-504.
22. Hastings SN, Whitson HE, White HK, Sloane R, MacDonald H, Lekan DA, McConnell ES. After-hours calls from long-term care facilities in a geriatric medicine training program. *J Am Geriatr Soc.* 2007 Dec;55(12):1989-94.
23. Mezey M, Mitty E, Burger SG. Nursing homes as a clinical site for training geriatric health care professionals. *J Am Med Dir Assoc.* 2009 Mar;10(3):196-203.
24. White HK. The nursing home in long-term care education. *J Am Med Dir Assoc.* 2008 Feb;9(2):75-81.
25. Pruchnicki A, Janeski J, Mitchell E, Fetten E. Teaching at an assisted living facility. *Care Manag J.* 2008;9(4):186-91.

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

Samuel Fanous, FMR II; Nazanin Rajabi, FMR II,
Aaron Prystupa, MD, CCFP; Scott Parker, RN

Department of Academic Family Medicine, College of Medicine, University of Saskatchewan

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:

1. Barbera L, Taylor C, Dudgeon D. Why do patients with cancer visit the emergency department near the end of life? *CMAJ*. 2010 Apr;182(6):563–8.
2. Earle CC, Park ER, Lai B, Weeks JC, Ayanian JZ, Block S. Identifying potential indicators of the quality of end-of-life cancer care from administrative data. *J Clin Oncol*. 2003 Mar;21(6):1133–8.
3. Cotogni P, De Luca A, Saini A, Brazzi L. Unplanned hospital admissions of palliative care patients: a great challenge for internal and emergency medicine physicians. *Intern Emerg Med*. 2017 Aug;12(5):569–71.
4. Grudzen CR, Richardson LD, Johnson PN, Hu M, Wang B, Ortiz JM, Kistler EA, Chen A, Morrison RS. Emergency department-initiated palliative care in advanced cancer: a randomized clinical trial. *JAMA Oncol*. 2016 Jan;2(5):591-8.
5. Wallace EM, Cooney MC, Walsh J, Conroy M, Twomey F. Why do palliative care patients present to the emergency department? Avoidable or unavoidable? *Am J Hosp Palliat Care*. 2013 May;30(3):253–6.
6. Seow H, Brazil K, Sussman J, Pereira J, Marshall D, Austin PC, Husain A, Rangrej J, Barbera L. Impact of community based, specialist palliative care teams on hospitalisations and emergency department visits late in life and hospital deaths: a pooled analysis. *BMJ* [Internet]. 2014 Jun 6 [cited 2018 May 22];348:g3496[10 p.]. Available from: <https://doi.org/10.1136/bmj.g3496>.
7. Baird-Bower D, Roach J, Andrews M, Onslow F, Curnin E. Help is just a phone call away: after-hours support for palliative care patients wishing to die at home. *Int J Palliat Nurs*. 2016 Jun;22(6):286–91.

Variations on bronchiolitis treatment in the Cypress Regional Hospital

Kayla Fehr¹, FMR II; James Kakish¹, FMR II; Shamsuddin Fakhir², MBS, DCH, MD, FRCP, CH(UK); Tara Lee^{1,2}, MD, CCFP; Michelle McCarron^{1,3}, PhD; Warren Berry³, MPH

1. Department of Academic Family Medicine, College of Medicine, University of Saskatchewan
2. Saskatchewan Health Authority (Swift Current Area)
3. Research and Performance Support, Saskatchewan Health Authority (Regina Area)

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:

1. Van Cleve WC, Christakis DA. Unnecessary care for bronchiolitis decreases with increasing inpatient prevalence of bronchiolitis. *Pediatrics*. 2011 Nov;128(5):e1106-12.
2. Willson DF, Horn SD, Hendley JO, Smout R, Gassaway J. Effect of practice variation on resource utilization in infants hospitalized for viral lower respiratory illness. *Pediatrics*. 2001 Oct;108(4):851-5.
3. Barben JU, Robertson CF, Robinson PJ. Implementation of evidence-based management of acute bronchiolitis. *J Paediatr Child Health*. 2000 Oct;36(5):491-7.
4. Chao JH, Lin RC, Marneni S, Pandya S, Alhajri S, Sinert R. Predictors of airspace disease on chest x-ray in emergency department patients with clinical bronchiolitis: a systematic review and meta-analysis. *Acad Emerg Med*. 2016 Oct 3;23(10):1107-18.
5. Salyer JW. Respiratory care of bronchiolitis patients: a proving ground for process improvement. *Respir Care*. 2004 Jun;49(6):581-3.
6. Ecochard-Dugelay E, Beliah M, Perreaux F, de Laveaucoupet J, Bouyer J, Epaud R, Labrune R, Ducou-Lepointe H, Gajdos V. Clinical predictors of radiographic abnormalities among infants with bronchiolitis in a paediatric emergency department. *BMC Pediatr* [Internet]. 2014 Jun 6 [cited 2018 May 16];14:[10 p.]. Available from: <https://doi.org/10.1186/1471-2431-14-143>.
7. Friedman JN, Rieder MJ, Walton JM; Canadian Paediatric Society, Acute Care Committee, Drug Therapy and Hazardous Substances Committee. Bronchiolitis: recommendations for diagnosis, monitoring and management of children one to 24 months of age. *Paediatr Child Health*. 2014 Nov;19(9):485-98.
8. Hartling L, Bialy LM, Vandermeer B, Tjosvold L, Johnson DW, Plint AC, Klassen TP, Patel H, Fernandes RM. Epinephrine for bronchiolitis. 2011 Jun 15 [cited 2018 May 16]. In: *The Cochrane Database of Systematic Reviews* [Internet]. Hoboken (NJ): John Wiley & Sons, Ltd. c1999 - . 129K. Available from: <https://doi.org/10.1002/14651858.CD003123.pub3> Record No.: CD003123.
9. Plint, AC, Johnson DW, Patel H, Wiebe N, Correll R, Brant R, Mitton C, Gouin S, Bhatt M, Joubert G, Black KJ, Turner T, Whitehouse S, Klassen TP; Pediatric Emergency Research Canada. Epinephrine and dexamethasone in children with bronchiolitis. *N Engl J Med*. 2009 May;360(20):2079-89.
10. Ralson SL, Lieberthal AS, Meissner HC, Alverson BK, Baley JE, Gadomski AM, Johnson DW, Light MJ, Maraga NF, Mendonca EA, Phelan KJ, Zorc JJ, Stanko-Lopp D, Brown MA, Nathanson I, Rosenblum E, Sayles S 3rd, Hernandez-Cancio S; American Academy of Pediatrics. Clinical practice guideline: the diagnosis, management and prevention of bronchiolitis. *Pediatrics*. 2014 Nov;134(5):1474-502.

11. Ng C, Foran M, Koyfman A. Do glucocorticoids provide benefit to children with bronchiolitis? *Ann Emerg Med*. 2014 Oct;64(4):389-91.
12. Parikh K, Hall M, Teach SJ. Bronchiolitis management before and after the AAP guidelines. *Pediatrics*. 2014 Jan;133(1):e1–7.
13. Farley R, Spurling GK, Eriksson L, Del Mar CB. Antibiotics for bronchiolitis in children under two years of age. 2014 Oct 9 [cited 2018 May 16]. In: *The Cochrane Database of Systematic Reviews* [Internet]. Hoboken (NJ): John Wiley & Sons, Ltd. c1999 – 129K. Available from: <https://doi.org/10.1002/14651858.CD005189.pub4> Record No.:CD005189.
14. Gadowski AM, Scribani MB. Bronchodilators for bronchiolitis. 2017 Jun 17 [cited 2016 Nov 22]. In: *The Cochrane Database of Systematic Reviews* [Internet]. Hoboken (NJ): John Wiley & Sons, Ltd. c1999 - . 129K. Available from: <https://doi.org/10.1002/14651858.CD001266.pub4> Record No.:CD001266.

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

Maria Weyland¹, FMR II; Reid Sonntag¹, FMR II; Kristine Pederson^{1,2}, MD, CCFP;
Kevin Wasko^{1,2}, MD, CCFP; Michelle McCarron^{1,3}, PhD; Warren Berry³, MPH

1. Department of Academic Family Medicine, College of Medicine, University of Saskatchewan
2. Saskatchewan Health Authority (Swift Current Area)
3. Research and Performance Support, Saskatchewan Health Authority (Regina Area)

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 ($\chi^2_{df=1} = 10.912$, $P = .001$). 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 ($M = 72.1$, $SD = 14.3$) than 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 disease²¹.

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:

1. Wilsdon T. The burden of acute coronary syndrome: the second leading cause of death in Canada. London (UK): Charles Rivers Associates; 2010. 4 p. Available from: <http://www.crai.ca/sites/default/files/publications/Burden-of-acute-coronary-syndrome-in-Canada.pdf>.
2. Statistics Canada. Mortality, summary list of causes 2009. Ottawa (ON): Statistics Canada; 2012. 125 p. Available from: <http://www.statcan.gc.ca/pub/84f0209x/84f0209x2009000-eng.pdf>.
3. Hegele RA. Genetic prediction of coronary heart disease: lessons from Canada. *Scand J Lab Invest Suppl.* 1999;59(Suppl 230):153-67.
4. Tang EW, Wong CK, Herbison P. Global Registry of Acute Coronary Events (GRACE) hospital discharge risk score accurately predicts long-term mortality post acute coronary syndrome. *Am Heart J.* 2007 Jan;153(1):29-35.
5. Loslier J, Vanasse A, Niyonsenga T, Courteau J, Orzanco G, Hemiari A. Myocardial infarction in Quebec rural and urban populations between 1995 and 1997. *Can J Rural Med.* 2007 Spring;12(2):95-102.
6. Makita S, Onoda T, Ohsawa M, Tanaka F, Segawa T, Takahashi T, Satoh K, Itai K, Tanno K, Sakata K, Omama S, Yoshida Y, Ishibashi Y, Koyama T, Kuribayashi T, Ogasawara K, Ogawa A, Okayama A, Nakamura M. Influence of mild-to-moderate alcohol consumption on cardiovascular diseases in men from the general population. *Atherosclerosis.* 2012 Sep;224(1):222-7.
7. Carlton EW, Khattab A, Greaves K. Beyond triage: the diagnostic accuracy of emergency department nursing staff risk assessment in patients with suspected acute coronary syndromes. *Emerg Med J.* 2016 Feb;33(2):99-104.
8. Vu HD, Heller RF, Lim LL, D'Este C, O'Connell RL. Mortality after acute myocardial infarction is lower in metropolitan regions than in non-metropolitan regions. *J Epidemiol Community Health.* 2000 Aug;54(8):590-5.
9. Coventry LL, Bremner AP, Williams TA, Celenza A. The effect of presenting symptoms and patient characteristics on prehospital delay in MI patients presenting to emergency department by ambulance: a cohort study. *Heart Lung Circ.* 2015 Oct;24(10):943-50.
10. O'Keefe-McCarthy S, McGillion M, Clarke SP, McFetridge-Durdle J. Pain and anxiety in rural acute coronary syndrome patients awaiting diagnostic cardiac catheterization. *J Cardiovasc Nurs.* 2015 Nov-Dec;30(6):546-57.
11. Austin D, Yan AT, Spratt JC, Kunadian V, Edwards RJ, Egred M, Bagnall AJ. Patient characteristics associated with self-presentation, treatment delay and survival following primary percutaneous coronary intervention. *Eur Heart J Acute Cardiovasc Care.* 2014 Sep;3(3):214-22.

12. Christenson J, Innes G, McKnight D, Boychuk B, Grafstein E, Thompson CR, Rosenberg F, Anis AH, Gin K, Tilley J, Wong H, Singer J. Safety and efficiency of emergency department assessment of chest discomfort. *CMAJ*. 2004 Jun;170(12):1803-7.
13. Goodman DA, Kavsak PA, Hill SA, Worster A. Presenting characteristics of patients undergoing cardiac troponin measurements in the emergency department. *CJEM*. 2015 Jan;17(1):62-6.
14. Thuresson M, Jarlöv MB, Lindahl B, Svensson L, Zedigh C, Herlitz J. Symptoms and type of symptom onset in acute coronary syndrome in relation to ST elevation, sex, age, and a history of diabetes. *Am Heart J*. 2005 Aug;150(2):234-42.
15. Tu JV, Khalid L, Donovan LR, Ko DT; Canadian Cardiovascular Outcomes Research team/Canadian Cardiovascular Society Acute Myocardial Infarction Quality Indicator Panel. Indicators of quality of care for patients with acute myocardial infarction. *CMAJ*. 2008 Oct;179(9):909-15.
16. Heart & Stroke Foundation (HSF). 2016 Report on the health of Canadians: the burden of heart failure. Ottawa (ON): HSF; 2016. 12 p. Available from: <http://www.heartandstroke.ca/-/media/pdf-files/canada/2017-heart-month/heartandstroke-reportonhealth-2016.ashx?la=en&hash=0478377DB7CF08A281E0D94B22BED6CD093C76DB>.
17. Blokker BM, Janssen JH, van Beeck E. Referral patterns of patients presenting with chest pain at two rural emergency departments in Western Australia. *Rural Remote Health* [Internet]. 2010 Sep 5 [cited 2018 May 16];10(3):[9 p.]. Available from: <http://www.rrh.org.au/articles/subviewnew.asp?ArticleID=1558>.
18. Hegele RA. Genetic prediction of atherosclerosis: lessons from studies in native Canadian populations. *Clin Chim Acta*. 1999 Aug;286(1-2):47-61.
19. Ko DT, Newman AM, Alter DA, Austin PC, Chiu M, Cox JL, Goodman SG, Tu JV; Canadian Cardiovascular Outcomes Research Team. Secular trends in acute coronary syndrome hospitalization from 1994 to 2005. *Can J Cardiol*. 2010 Mar;26(3):129-34.
20. Smith JN, Negrelli JM, Manek MB, Hawes EM, Viera AJ. Diagnosis and management of acute coronary syndrome: an evidence-based update. *J Am Board Fam Med*. 2015 Mar-Apr;28(2):283-93.
21. Cypress Health Region (CHR). 2011-12 Annual report to the Minister of Health. Swift Current (SK): CHR; 2012. 88 p. Available from: <https://cypresshealth.ca/wp-content/uploads/2015/04/2011-12-Annual-Report-FINAL.pdf>.