

Managing Anaphylaxis: Evaluating Teaching Methods in Family Medicine Residency

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ABSTRACT

Background: Simulation training in medical education is increasing. It improves reported self-confidence levels and physicians' knowledge. It encourages skill acquisition through experience and has a role in assessment and acquisition of competencies.

Research Questions: Residents receiving simulation teaching would report higher levels of confidence and demonstrate more competence in office management of anaphylaxis and they would exhibit a higher level of sustainability in learning compared to residents who received didactic teaching.

Methods/Methodology: Family Medicine Residents (n=25) were randomly assigned to a simulation (n=12) or didactic (n=13) teaching session. All were examined using an OSCE following the session and at seven or eight months. Participants completed pre- and post-questionnaires that measured their management experience, confidence and comfort levels.

Results/Findings: There was a significant improvement in confidence and comfort level in both groups following initial teaching ($p<0.05$). There was no significant difference between groups in confidence or comfort level at follow up. There was no significant difference in OSCE performance initially or at follow-up between the groups. Participants rated simulation teaching as a more effective teaching method than didactic teaching ($p<0.05$).

Discussion: Residents in the didactic group may have had previous experience with management of anaphylaxis and their OSCE performance may have been influenced by this factor. The interval between baseline and follow-up may have been too long. Also, the combination of didactic and simulation teaching may be superior to either method alone.

Conclusions: All Residents reported improvement in their levels of confidence and comfort with anaphylaxis management after baseline teaching sessions. Participants who received simulation teaching were not more competent in anaphylaxis management nor were their performances more sustainable.

Recommendations: Future studies with a larger number of participants and a longer duration of simulation teaching would be valuable in assessing its role in Family Medicine Residency training.

References:

1. Vozenilek J. See one, do one, teach one: advanced technology in medical education. *Acad Emerg Med*. 2004;11(11):1149-54.
2. Gaba J. The future vision of simulation in health care. *Qual Saf Health Care*. 2004;13 Suppl 1:i2-10.
3. Issenberg BS, Mcgaghie WC, Petrusa ER, Lee Gordon D, Scalese RJ. Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. *Med Teach*. 2005;27(1):10-28.
4. Levin A. Fewer crashes caused by pilots [Internet]. McLean, VA: USA Today. 2004 [cited 2012 Nov 10]. 1 p. Available from: <http://www.hf.faa.gov/hfmaint/Portals/1/NTSB%20takes%20unusual%20step%20to%20address%20plane%20crash.pdf>.
5. Weller J, Dowell A, Kljakovic M, Robinson B. Simulation training for medical emergencies in general practice. *Med Ed*. 2005;39(11):1154.
6. Scalese R, Obeso V, Issenberg S. Simulation technology for skills training and competency assessment in medical education. *J Gen Intern Med*. 2008; 23(1):46-49.
7. Ziv A, Wolpe PR, Small SD, Glick S. Simulation-based medical education: an ethical imperative. *Acad Med*. 2003 Aug;78(8):783-8.
8. Bradley P. The history of simulation in medical education and possible future directions. *Med Ed*. 2006;40(3):254-62.
9. McGaghie WC, Issenberg SB, Cohen ER, Barsuk JH, Wayne DB. Does simulation-based medical education with deliberate practice yield better results than traditional clinical education? A meta-analytic comparative review of the evidence. *Acad Med*. 2011;86(6):706-11.
10. Okuda Y, Bryson EO, DeMaria S, Jacobson L, Quinones J, Shen B, Levine AI. The utility of simulation in medical education: what is the evidence? *Mt Sinai J Med*. 2009;76(4):330-43.
11. Kim J, Neillpovitz D, Cardinal P, Chiu M, Clinch J. A pilot study using high-fidelity simulation to formally evaluate performance in the resuscitation of critically ill patients: the University of Ottawa critical care medicine, high-fidelity simulation, and crisis resource management I study. *Crit Care Med*. 2006;34(8):2167-74.
12. Miller G. The assessment of clinical skills/competence/performance. *Acad Med*. 1990;65(9):63-7.
13. Gordon JA, Oriol NE, Cooper JB. Bringing good teaching cases "to life": a simulator-based medical education service. *Acad Med*. 2004 Jan;79(1):23-7.
14. Willett TG, Kirlew M, Cardinal P, Karas P. An evaluation of the acute critical events simulation (ACES) course for family medicine residents. *Can J Rural Med*. 2011;16(3):89.
15. Liddy C, Dreise H, Gaboury I. Frequency of in-office emergencies in primary care. *Can Fam Physician*. 2009;55(10):1004-5.
16. Mugford B, Martin A, Owen H. Simulation training in emergency medicine: an important need for primary care training. *Aust Fam Physician*. 2004 April;33(4):279-80.

17. Gerard JM., Thomas SM, Germino KW, Street MH, Burch W, Scalzo A J. The effect of simulation training on PALS skills among family medicine residents. *Fam Med*. 2011;43(6):392-9.
18. O'Leary FM, Hokin B, Enright K, Campbell DE. Treatment of a simulated child with anaphylaxis: an in situ two-arm study. *J Paediatr Child Health*. 2013; 49(7):541-7.
19. Mason, VM, Lyons, P. Use of simulation to practice multidisciplinary anaphylaxis management. *Dimensions of Critical Care Nursing*. 2013;32(6):280-85.
20. Minehart RD, Rudolph J, Pian-Smith MC, Raemer DB. Improving faculty feedback to resident trainees during a simulated case: a randomized, controlled trial of an educational intervention. *Anesthesiology*. 2014;120(1):160-71.
21. Straub HL, Morgan G, Ochoa P, Grable I, Wang E, Kharasch M, Plunkett BA. Targeted obstetric haemorrhage programme improves incoming resident confidence and knowledge. *J Obst Gynec*. 2013;33(8):798-801.
22. Magee SR, Shields R, Nothnagle M. Low cost, high yield: simulation of obstetric emergencies for family medicine training. *Teach learn Med*. 2013; 25(3):207-10.
23. Langan TS, Rigby IJ, Walker IW, Howes D, Donnon T, Lord JA. Simulation-based training in critical resuscitation procedures improves residents' competence. *CJEM*. 2009; 11(6):535-9.
24. Menderes G, Azodi M. Residents' learning and retention of electrosurgery principles with didactic and hands-on simulation. *Obstet Gynecol*. 2014;123(5):S116-S117.
25. LaVelle BA, McLaughlin MA. Simulation-based education improves patient safety in ambulatory care. In: Henriksen K, Battles JB, Keyes MA, Grady ML, editors. *Advances in patient safety: new directions and alternative approaches*. vol 3: performance and tools [Internet]. Rockville, MD: Agency for Healthcare Research and Quality; 2008 Aug [cited 2012 Nov 10] .[about 19 p.]. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK43667/>

What are the Reasons Patients with Non-Life Threatening Problems/Conditions present to the Emergency Department in the Regina Qu'Appelle Health Region?

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ABSTRACT

Background: In Canada, many patients with non-urgent (CTAS IV/V) medical problems account for a large proportion of Emergency Department (ED) visits. Commonly cited reasons for non-life threatening ED attendance include: the lack of a primary care provider (PCP); the inaccessibility of an existing PCP; the perceived urgency of the patient's problem; the need for specific services; and, timely access to specialists.

Research Question: To identify patient's reasons for attending Regina Qu'Appelle Health Region (RQHR) EDs for non-life threatening problems? Do patients have access to PCPs and PCP after-hours care in the RQHR?

Methods/Methodology: A self-completed 9-item questionnaire was distributed to all consenting CTAS IV and V patients presenting to RQHR EDs between June and September, 2013.

Results/Findings: A total of 239 eligible patients completed the questionnaire. Most (82%; n=191/233) had a PCP; of these patients, 59.4% could not get an appointment within 24 hours with their PCP and 82.2% stated that their PCP did not offer after-hours care. More than half (52.9%, n=234/239) of patients felt that their problem was serious and 51.5% (n=123/239) of patients attended the ED in anticipation of specific services. Thirty-nine percent (n=215/239) of patients felt that their presenting problem could have been treated elsewhere. Most (86.9%, n=222/239) of patients would attend an urgent care centre (UCC).

Discussion: These results may reflect the lack of access to timely services by PCPs in the RQHR. PCPs may no longer offer these services (e.g: suturing) or patients perceive the ED superior in terms of access to diagnostic investigations and specialist care.

Conclusions: It is not the lack of PCPs that result in the presentation of non-life threatening medical problems to RQHR EDs. It is untimely access (within 24 hours) and unavailability of after-hours access to PCPs, in addition to patient's perceived need for specific services that account for the presentation of non-urgent patients to RQHR EDs.

Recommendations: Increased availability of PCP after-hours care and the use of UCCs should be considered in this Health Region.

References:

1. Vertesi L. Does the Canadian Emergency Department Triage and Acuity Scale identify non-urgent patients who can be triaged away from the emergency department? *CJEM*. 2004;6(5):337-42.
2. Canadian Association of Emergency Physicians and National Emergency Nurses Affiliation. Joint position statement on emergency department overcrowding. *CJEM*. 2001;3(2):82-8.
3. Bullard MJ, Villa-Roel C, Bond K, Vester M, Holroyd BR, Rowe BH. Tracking emergency department overcrowding in a tertiary care academic institution. *Healthc Q*. 2009;12(3):99-106.
4. Rowe B, Bond K, Ospina M, Blitz S, Afilalo M, Campbell S, Schull M. Frequency, determinants, and impact of overcrowding in emergency departments in Canada: a national survey of emergency department directors [Technology report no 67.3]. Ottawa: Canadian Agency for Drugs and Technologies in Health; 2006.
5. Guo B, Harstall C. Strategies to reduce emergency department overcrowding. *Health Technology Assessment Report #38*. AHFMR. 2006 Feb.
6. Holroyd BR, Rowe BH, Sinclair D. Current political issues facing emergency medicine in Canada. *Emerg Med Australas*. 2004;16(3):190-4.
7. Derlet RW, Richards JR. Overcrowding in the nation's emergency departments: complex causes and disturbing effects. *Ann Emerg Med*. 2000;35(1):63-8.
8. Burnett MH, Grover SA. Use of the emergency department for non-urgent care during regular business hours. *CMAJ*. 1996;154(9):1345-51.
9. Dunnion ME, Kelly HW. From the emergency department to home: discharge planning and communication of information between an emergency department and primary care sector following discharge of older people from an emergency department of a rural general hospital. *J Clin Nurs*. 2005;14(6):776-85.
10. Jansen JO, Grant IC. Communication with general practitioners after accident and emergency attendance: computer generated letters are often deficient. *Emerg Med J*. 2003 May;20(3):256-7.
11. Murphy AW. 'Inappropriate' attenders at accident and emergency departments II: health service responses [review]. *Fam Pract*. 1998;15(1):33-7.
12. Sempere-Selva T, Peiró S, Sendra-Pina P, Martínez-Espín C, López-Aguilera I. Inappropriate use of an accident and emergency department: magnitude, associated factors, and reasons — an approach with explicit criteria. *Ann Emerg Med*. 2001;37(6):568-79.
13. Gentile S, Vignally P, Durand A-C, Gainotti S, Sambuc R, Gerbeaux P. Non-urgent patients in the emergency department? A French Formula to prevent misuse. *BMC Health Serv Res*. 2010;10:66. doi: 10.1186/1472-6963-10-66.
14. New Zealand Health Technology Assessment. Emergency department attendance. A critical appraisal of the key literature. New Zealand Health Technology Assessment (NZHTA), editor. Christchurch, New Zealand: The Clearing House for Health Outcomes and Health Technology Assessment, 1998; Report No. 8.
15. Regina Qu'Appelle Health Region. 2009/2010 annual report [Internet]. Regina, SK: Regina Qu'Appelle Health Region; 2010 [cited 2012 Dec 10]. 84 p. Available from: http://www.rqhealth.ca/inside/publications/history/pdf_files/rqhr_ar_2009_10.pdf.
16. Government of Saskatchewan. Census shows Saskatchewan grew by 65,000 people in five

- years[Internet]. Regina, SK: Government of Saskatchewan; 2012 Feb 8 [cited 2012 Dec 10th]. Available from <http://www.gov.sk.ca/news?newsId=10f3edfa-c08b-4a62-a9d3-b33fb4991ab2>.
17. Bisby K, Veikle C, Hammond D, McKague M, Woods R, McKay. A study of patient opinions on emergency department use for low-acuity medical issues in the Saskatoon health region. 2010. Located at: Department of Academic Family Medicine, Westwind Primary Health Center University of Saskatchewan, Saskatoon, SK.
 18. Noseworthy SB. Emergency department overcrowding: waiting for disaster. *Outlook Spring*. 2004;27(1):12-7.
 19. Rondeau KV, Francescutti LH. Emergency department overcrowding: the impact of resource scarcity on physician job satisfaction... including commentary by Zandardelli JJ. *J Healthc Manag*. 2005 Sep-Oct;50(5):327-42.
 20. Health Council of Canada. Fixing the foundation: an update on primary health care and home care renewal in Canada [Internet]. Toronto, ON: Health Council;2008 Jan [cited 2008 Oct 15]. 56 p.Available from: http://www.homecareontario.ca/public/docs/publications/general-publications/2008/Fixing_the_Foundation.pdf.
 21. Schoen C, Osborn R, Doty MM, Bishop M, Peugh J, Murukutla N. Toward higher-performance health systems: adults' health care experiences in seven countries, 2007. *Health Aff (Millwood)*. 2007 Nov-Dec;26(6):w717-734.
 22. Canadian Association of Emergency Physicians and the National Emergency Nurses Affiliation (CAEP/NENA). Access to acute care in the setting of emergency department overcrowding. *CJEM* 2003 Mar;5(2):81-6.
 23. Boushy D., Dubinsky I. Primary care physician and patient factors that result in patients seeking emergency care in a hospital setting: the patient's perspective. *J Emerg Med*. 1999;17(3):405-15.
 24. Wong WB, Edgar G, Liddy C, Vaillancourt C. Can after-hours family medicine clinics represent an alternative to emergency departments? Survey of ambulatory patients seeking after-hours care. *Can Fam Physician* 2009;55(11):1106-7.e4
 25. Afialo J, Marinovich A, Afialo M, Colacone A, Leger R, Unger B, Giguere C. Non-urgent emergency department patient characteristics and barriers to primary care. *Acad Emerg Med*. 2004;11(12):1302-10.
 26. Wolcott BW. What is an emergency? Depends on whom you ask. *JACEP*. 1979 Jun;8(6):241-3.
 27. Christakis DA, Mell L, Keopsell TD, Zummerman FJ, Connell FA. Association of lower continuity of care with greater risk of emergency department use and hospitalization in children. *Pediatr*. 2001 Mar;107(3):524-9.
 28. Gill JM, Mainous AG III. The role of provider continuity in preventing hospitalizations. *Arch Fam Med*. 1998;7(4):352-7.
 29. Howard M, Goertzen J, Kaczorowski J, Hutchison B, Morris K, Thabane L, Levine M, Papaioannou A . Emergency department and walk-in clinic use in models of primary care practice with different after-hours accessibility in Ontario. *Health Policy*. 2008 August; 4(1):73-88.
 30. Bamezi A, Melnick G, Nawathe A. The cost of an emergency department visit and its relationship to emergency department volume. *Ann Emerg Med*. 2005 May;45(5):483-90.

31. Kasperski J. News briefs to members July 15, 2008 [Internet]. Ottawa, ON: The Ontario College of Family Physicians. 2008 Jul 15 [cited Dec 8]. 2p. Available from: <http://ocfp.on.ca/docs/communications/july-15-2008.pdf?Status=Master>.
32. Jones M. Walk-in primary medical care centres: lessons from Canada. *BMJ*. 2000 Oct 14;321(7266):928-31.
33. Field S, Lantz A. Emergency department use by CTAS Levels IV and V patients. *CJEM*. 2006 Sep;8(5):317-22.
34. Canadian Institute for Health Information. Understanding emergency department wait times [Internet]. Ottawa, On: Canadian Institute for Health Information; 2008 [cited 2012 Dec 8] Available from: https://secure.cihi.ca/free_products/Wait_times_e.pdf.

Improving the Emergency Department Clinical Encounter through Culturally and Linguistically Appropriate Patient Communication Tools in Prince Albert

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ABSTRACT

Background: Research to assess the utility of patient communication interventions that are culturally and linguistically appropriate is limited, particularly in the Emergency Department setting.

Research Question: Is the creation of a culturally- and linguistically-appropriate patient communication tool perceived as acceptable and useful by community members who represent the Indigenous community?

Methods/Methodology: A written pamphlet was designed to enhance communication between a patient and the emergency room physician by inviting the patient to ask four key questions. The pamphlet was to be validated through a focus group of indigenous community members. Feedback was collected and concepts were subjected to qualitative data analysis, with assignment to codes, categories, and themes.

Findings/Discussion: Four major themes were identified. Health care professionals tend to work and think in terms that can be incongruous with the priorities and illness experience of the patient. Barriers to reciprocal communication are influenced by culture, language, education, and situational circumstance – these features need to be recognized in patient interactions. Oral communication is the most important and effective form of communication to promote patient understanding and satisfaction. The health care system has a responsibility to work directly with Indigenous patients to develop sustainable resources and adapt current resources that facilitate patient engagement.

Conclusions: When the tool was evaluated by the focus group from the target audience, it was evident that, although appreciated, the tool was culturally, linguistically, and contextually inappropriate, and could not be validated for use. The key messages gathered from the participants were that the health care system is fraught with barriers to optimal patient-physician communication, and that culturally and contextually appropriate solutions should include access to language interpreters, in the spirit of valuing oral communication.

Recommendation: Further investment is needed in promoting the value and use of oral communication in the medical encounter.

References:

1. Williams MV, Davis T, Parker RM, Weiss BD. The role of health literacy in patient-physician communication. *Fam Med*. 2002;34(5):383-9.
2. Baker DW, Gazmararian JA, Williams MV, Scott T, Parker RM, Green D, Ren J, Peel J. Functional health literacy and the risk of hospital admission among medicare managed care enrollees. *Am J Public Health*. 2002;92(8):1278-83.
3. World Health Organization. Social determinants of health [Internet]. Geneva, CH: World Health Organization Available from: http://www.who.int/social_determinants/en/.
4. McCray AT. Promoting health literacy. *J Am Med Inform Assn*. 2005;12(2):152-63.
5. Baker DW, Parker RM, Williams MV, Clark WS, Nurss J. The relationship of patient reading ability to self-reported health and use of health services. *Am J Public Health*. 1997;87(6):1027-30.
6. Engel KG, Heisler M, Smith DM, Robinson CH, Forman JH, Ubel PA. Patient comprehension of emergency department care and instructions: Are patients aware of when they do not understand? *Ann Emerg Med*. 2009;53(4):454-61.
7. Powers RD. Emergency department patient literacy and the readability of patient-directed materials. *Ann Emerg Med*. 1988 Feb;17(2):124-6.
8. Dimoska A, Tattersall MHN, Butow PN, Shepherd H, Kinnersley P. Can a prompt list empower cancer patients to ask relevant questions? *Cancer*. 2008;113(2):225-37.
9. Harrington J, Noble LM, Newman SP. Improving patients' communication with doctors: a systematic review of intervention studies. *Patient Educ Couns*. 2004;52(1):7-16.
10. Little P, Dorward M, Warner G, Moore M, Stephens K, Senior J, Kendrick T. Randomized controlled trial of effect of leaflets to empower patients in consultations in primary care. *BMJ*. 2004;328(7437):441-4.
11. Kinnersley P, Edwards AG, Hood K, Cadbury N, Ryan R, Prout H, Owen D, MacBeth F, Butow P, Butler C. Interventions before consultations for helping patients address their information needs. *Cochrane Db Syst Rev*. 2007(3):CD004565.
12. Street RL Jr, Gordon H, Haidet P. Physicians' communication and perceptions of patients: is it how they look, how they talk, or is it just the doctor? *Soc Sci Med*. 2007;65(3):586-98.
13. Griffin SJ, Kinmonth AL, Veltman MW, Gillard S, Grant J, Stewart M. Effect on health-related outcomes of interventions to alter the interaction between patients and practitioners: a systematic review of trials. *Ann Fam Med*. 2004;2(6):595-608.

Methadone Bridging: From Community Prescriber to In-Patient Drug Administration

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ABSTRACT

Background: Patients on methadone maintenance treatment require timely dosing of their once daily methadone to ensure stable drug levels and to avoid withdrawal effects. Patients on methadone in the community often have co-existing chronic diseases and acute conditions that require admission to the hospital. Sparse research has been conducted to examine the quality of care surrounding the hospital admission of patients who are on community methadone maintenance treatment programs.

Research Questions:

- 1) What are the demographic characteristics of community prescribed methadone patients who have been admitted to the hospital?
- 2) How much time elapses between admission, the hospital doctor ordering methadone, and the patient receiving methadone?

Methods: One hundred and thirty-one (131) randomly selected patient visits from the year 2012 were included in the analysis based on inclusion criteria. Patient demographics, timeline surrounding hospital admission and the timeline surrounding methadone dosing were recorded. The data collected was entered into SPSS v.21 for analysis, including descriptive statistics, Chi-square and ANOVA where appropriate.

Results: Of the 131 patient visits, 61% were female, the mean age was 38 (SD=11.8) years. Maternity patients comprised 19% of patient visits. Respiratory conditions were the most common admitting diagnosis (25%), followed by pregnancy related conditions (18%), infectious conditions (14%), drug & alcohol related conditions (13%), gastrointestinal conditions (12%), pain (8%), cardiac (4%), psychiatric (2%) and trauma (2%). The mean time between methadone doses was 48 (SD=33) hours, from admission to dosage was 29 (SD=30) hours, from admission to order was 21 (SD=25) hours, and the mean time from order to dosage was 11 (SD=21) hours.

Discussion/Conclusions: Despite medical knowledge and hospital policy around methadone maintenance therapy, over 90% of the patients had more than 24 hours between methadone doses. The largest delay is in time from admission to dosage, suggesting physicians are not capable and/or present to order methadone in a timely manner.

Recommendation: All admitting physicians in the hospital should be encouraged to obtain a methadone prescribing license. This will likely decrease the delay in dosage and improve patient care in the RQHR.

References:

1. Health Canada. Canadian alcohol and drug use monitoring survey (CADUMS) highlight report 2011 [Internet]. Ottawa, ON: Health Canada; 2012 [cited 2014 May 5]. 10p. Available from: <http://www.hc-sc.gc.ca/hc-ps/drugs-drogues/stat/2011/summary-sommaire-eng.php>.
2. Health Canada. Best practices – methadone maintenance treatment [Internet]. Ottawa, ON: Health Canada; 2002 [cited 2014 May 5]. 104 p. Available from: www.hc-sc.gc.ca/hc-ps/pubs/adp-apd/methadone-bp-mp/index-eng.php.
3. Ladouceur R. Opioid dependence. Can Fam Physician. 2013;59(4):333.
4. Luce J, Strike C. A cross-Canada scan of methadone maintenance treatment policy developments. Ottawa, ON: Canadian Executive Council on Addictions; 2011.
5. Lynch M. Nonmedical use of prescription opioids: what is the real problem? Pain Res Manag. 2013;18(2):67-8.
6. Shield KD, Jones W, Rehm J, Fischer B. Use and nonmedical use of prescription opioid analgesics in the general population of Canada and correlations with dispensing levels in 2009. Pain Res Manag. 2013;18(2):69-74.

How Would You Investigate? An Analysis of Laboratory Test Ordering by Family Physicians

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ABSTRACT

Background: Family physicians are obliged to be stewards of healthcare resources primarily due to costs to the system and patient well-being. Laboratory tests represent a substantial portion of the health care budget, and ordering of same is practiced by most physicians.

Research Questions: What laboratory investigations would be selected in common, ambiguous patient presentations by Family Medicine practitioners and residents in the Saskatoon Health Region? How accurate are they in estimating costs of a few common laboratory tests?

Methods/Methodology: Participants were recruited through the College of Physicians and Surgeons of Saskatchewan and the Saskatoon Family Medicine Residency unit. The survey consisted of two common clinical scenarios with laboratory requisition forms, and questions regarding practice setting; years in practice/residency; and knowledge of costs. Data were analyzed using SPSS v.21. This study was approved by the Behavioural Research Ethics Board of the University of Saskatchewan.

Results/Findings: There was a 26.7% response rate. Respondents estimated the costs of five common laboratory costs accurately 16-37% of the time, with a wide range of incorrect estimates. Lower estimates tended to be provided by urban physicians, and those with greater than 20 years of practice experience. However, 64% of physicians felt their knowledge regarding costs was at least average, and only 36% believed knowledge would change their ordering practices. In the two clinical scenarios, only 7% of respondents would order only the indicated tests in the first case and 79% in the second. 380 extra tests were ordered between the two scenarios.

Discussion: Lack of knowledge about laboratory costs may be because costs are not part of the medical curriculum and/or this information is not readily accessible. Additional tests may have been ordered based upon respondents' clinical experiences, convenience, and insufficient information provided in the scenarios.

Conclusions: Family physicians have the responsibility to be sagacious in ordering tests, in the context of increasing healthcare costs, evidence of wasted healthcare resources, and potential for patient harm. Physicians should have proficient knowledge of the costs of tests they order, and

be cognizant of the guidelines in choosing necessary tests. Although our study is limited in size and scope, it substantiates this fundamental responsibility.

References:

1. Royal College of Physicians and Surgeons of Canada. CanMEDS: better standards, better physicians, better care[Internet]. Ottawa, ON: Royal College of Physicians and Surgeons of Canada; 2011 [Cited 2011 Sep 23]. [about 2 screens]. Available from: <http://www.royalcollege.ca/public/resources/aboutcanmeds>.
2. College of Family Physicians of Canada. CanMEDS-Family Medicine [Internet]. Ottawa, ON: College of Family Physicians of Canada; 2009 Oct [Cited 2011 Sep 23]. 24 p. Available from <http://www.cfpc.ca/uploadedFiles/Education/CanMeds%20FM%20Eng.pdf>.
3. Health Council of Canada. Decisions, decisions: family doctors as gatekeepers to prescription drugs and diagnostic imaging in Canada [Internet]. Toronto, ON: Health Council of Canada; 2010 Sep [Cited 2011 Sep 23]. 50 p. Available from: http://healthcouncilcanada.ca/tree/2.33-DecisionsHSU_Sept2010.pdf.
4. Pines JM, Meisel, ZF. Why doctors order too many tests (It's not just to avoid lawsuits) [Internet]. Time Magazine. 2011 Feb 25 [Cited 2014 May 18]. [about 5 screens]. Available from: <http://content.time.com/time/health/article/0,8599,2053354,00.html>.
5. Government of Saskatchewan. Patient-centered care top priority for health budget [Internet]. Regina, SK: Government of Saskatchewan; 2011 Mar 23 [Cited 2014 May 18]. [about 3 screens]. Available from: <http://www.gov.sk.ca/news?newsId=4ff940c4-11ca-4b14-b93a-90b6dc2e0f2a>.
6. Skinner BJ, Rovere M. Canada's Medicare bubble: is government health spending sustainable without user-based funding? [Internet]. Vancouver, BC: Fraser Institute [Internet]. 2011 Apr [Cited 2011 Sep 23]. 40 p. Available from: <http://www.fraserinstitute.org/uploadedFiles/fraser-ca/Content/research-news/research/publications/canadas-medicare-bubble.pdf>.
7. Canadian Institute for Health Information. Health care spending to reach \$192 billion this year [Internet]. Retrieved Sept. 23, 2011 from http://www.cihi.ca/CIHI-ext-portal/internet/en/Document/spending+and+health+workforce/spending/RELEASE_28OCT10.
8. Government of Canada. Canadians in Context—Aging Population [Internet]. Ottawa, ON: Government of Canada; 2011 [Cited 2011 Sep 23]. [about 3 screens]. Available from: <http://www4.hrsdc.gc.ca/.3ndic.1t.4r@-eng.jsp?iid=33>.
9. Fox M. Healthcare system wastes up to \$800 Billion a year [Internet]. New York, NY: Thomson Reuters; 2009 Oct 26 [Cited 2014 May 18]. [about 2 screens]. Available from: <http://www.reuters.com/article/2009/10/26/us-usa-healthcare-waste-idUSTRE59POL320091026>.
10. Talega T. Ontario cancels vitamin D testing for all [Internet]. Toronto, ON: The Star; 2010 Aug 13 [Cited 2011 Sep 19]. [about 5 screens]. Available from: http://www.thestar.com/life/health_wellness/2010/08/13/ontario_cancels_vitamin_d_testing_for_all.html.
11. Hanley DA, Cranney A, Jones G, Whiting SJ, Leslie WD, Cole DE, Atkinson S A, Josse RG, Feldman S, Kline GA, Rosen C. Vitamin D in adult health and disease: a review and

- guideline statement from Osteoporosis Canada. *CMAJ*. 2010;182(12):E610-8.
12. Berrington de González A, Mahesh M, Kim KP, Bhargavan M, Lewis R, Mettler F, Land C. Projected cancer risks from computed tomographic scans performed in the United States in 2007. *Arch Intern Med*. 2009;169(22):2071-7.
 13. Hoffman RM, Zeliadt SB. The cautionary tale of PSA testing. *Arch Intern Med*. 2010;170(14):1262-3.
 14. Stuebing EA, Miner TJ. Surgical vampires and rising health care expenditures: reducing the cost of daily phlebotomy. *Arch Surg*. 2011;146(5):524-7.
 15. Attali M, Barel Y, Somin M, Beilinson N, Shankman M, Ackerman A, Malnick SD. A cost-effective method for reducing the volume of laboratory test in a university-associated teaching hospital. *Mt Sinai J Med*. 2006;73(5):787-94.
 16. Larsson A, Biom S, Wernroth ML, Hulten G. Effects of an education programme to change clinical laboratory testing habits in primary care. *Scand J Prim Health Care*. 1999 Dec;17(4):238-43.
 17. Bunting P S, van Walraven C. Effect of a controlled feedback intervention on laboratory test ordering by community physicians. *Clin Chem*. 2004;50(2):321-6.
 18. Allan GM, Innes G. Do physicians know the costs of medical care? Survey in British Columbia. *Can Fam Physician*. 2004;50(2):263-70.
 19. Allan GM, Innes G. Family practice resident's awareness of medical care costs in British Columbia. *Fam Med*. 2002;34(2):104-9.
 20. Innes G, Grafstein E, McGrogan J. Do emergency physicians know the costs of medical care? *CJEM*. 2000;2(2):95-102.
 21. Schilling UM. Cost awareness among Swedish physicians working at the emergency department. *Eur J Emerg Med*. 2009;16(3):131-4.
 22. College of Physicians and Surgeons of Saskatchewan. Physicians Mailing List; January 2014.
 23. Raziano DB, Jayadevappa R, Valezula D, Weiner M, Lavizzo-Mourey R. E-mail versus conventional postal mail survey of geriatric chiefs. *Gerontologist*. 2001;41(6):799-804.
 24. Seguin R, Godwin M, MacDonald S, McCall M. E-mail or snail mail? Randomized controlled trial on which works better for surveys. *Can Fam Physician*. 2004;50(3):414-9.
 25. VanDenKerkhof EG, Parlow JL, Goldstein DH, Milne B. In Canada, anesthesiologists are less likely to respond to an electronic, compared to a paper questionnaire. *Can J Anaesth*. 2004;51(5):449-54.
 26. Akl EA, Maroun N, Klocke RA, Montori V, Schünemann HJ. Electronic mail was not better than postal mail for surveying residents and faculty. *J Clin Epidemiol*. 2005;58(4):425-9.
 27. Edwards PJ, Roberts I, Clarke MJ, Diguiseppi C, Wentz R, Kwan I, Cooper R, Felix LM, Pratap S. Methods to increase response to postal and electronic questionnaires. *Cochrane Database Syst Rev*. 2009; 8(3):MR000008.
 28. Toward Optimized Practice (TOP). Investigation and Management of Primary Thyroid Dysfunction: A Summary [Internet]. Edmonton, AB: Toward Optimized Practice; 2007 [Cited 2014 May 18]. 3 p. Available from: http://www.topalbertadoctors.org/download/349/thyroid_summary.pdf.
 29. Guidelines and Protocols Advisory Committee. Thyroid function tests: diagnoses and monitoring of thyroid function disorders in adults [Internet]. Victoria, BC: Medical

- Services Commission; 2010 Jan 1 [Cited 2014 May 18]. 6 p. Available from: <http://www.bcguidelines.ca/pdf/thyroid.pdf>.
30. Anti-infective Review Panel. Pharyngitis. In: Anti-infective guidelines for community-acquired infections (2013 ed.). Toronto: MUMS Guideline Clearinghouse; 2013. 8 p.
 31. Hayward RS, Guyatt G, Moore KA, McKibbin A, Carter AO. Canadian physicians' attitudes about and preferences regarding clinical practice guidelines. *CMAJ*. 1997;156(12):1715-23.
 32. Worrall G, Chaulk P, Freake D. The effects of clinical practice guidelines on patient outcomes in primary care: a systematic review. *CMAJ*. 1997;156(12):1705-12.
 33. Gauthier M, Chevalier I, Gouin S, Lamarre V, Abela A. Ceftriaxone for refractory acute otitis media: impact of a clinical practice guideline. *Pediatr Emerg Care*. 2009;25(11):739-43.
 34. Strumpf EC, Chai Z, Kadiyala S. Adherence to cancer screening guidelines across Canadian provinces: an observational study. *BMC Cancer*. 2010;10(304):1-8.
 35. Cabana MD, Rand CS, Powe NR, Wu AW, Wilson MH, Abboud PA, Rubin HR. Why don't physicians follow clinical practice guidelines? A framework for improvement. *JAMA*. 1999;282(15):1458-65.
 36. Mittelstaedt M. Some provinces getting a bad deal on vitamin D tests [Internet]. *The Globe and Mail*. 2010 Jan 20 [Cited 2014 May 18]. Available from: <http://www.theglobeandmail.com/news/national/some-provinces-getting-a-bad-deal-on-vitamin-d-tests/article1207849/>.
 37. Government of Saskatchewan. Payment schedule for insured services provided by a physician [Internet]. Regina, SK: Government of Saskatchewan; 2014 Apr 1 [Cited 2014 May 18]. 301 p. Available from: <http://www.health.gov.sk.ca/Default.aspx?DN=f5476d7f-bc8b-4ea2-8edf-c0261ef66acd&l=English>.

Are Saskatoon Family Physicians Referring Patients who Smoke for Bone Densitometry based on the Osteoporosis Canada 2010 Clinical Guidelines: A Retrospective Study of West Winds Primary Health Centre

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ABSTRACT

Background: Clinical practice guidelines were developed by Osteoporosis Canada in 2010 to screen for 10-year fragility fracture risk. Studies demonstrate that smokers are at an increased risk for the development of a hip fracture versus non-smokers. Assessing fragility fracture risk, by using the clinical risk factor of smoking to refer for Bone Mineral Density (BMD) testing, may lead to earlier treatment and possible decrease in morbidity and mortality.

Research Question: Are patients at West Winds Primary Health Centre, aged 50 to 64 years, with the specific risk factor of current smoking being referred for BMD by family physicians according to the 2010 Osteoporosis Canada Guidelines?

Methods/Methodology: A retrospective chart review was performed which collected information including age (50 to 64 years), current smoking, other risk factors, referrals and results for BMD, from January 1, 2011 to December 31, 2012. Data was entered into SPSS v. 20 for analysis, including descriptive statistics, t-tests, Chi-square and regression.

Results/Findings: Of the 225 subjects (77 males, 148 females; mean age of 54.9 years, SD=3.47) analyzed, 50 patients had a positive smoking status. Ten percent of these were referred for BMD testing. It was also noted that 24% of non-smoking patients (n= 175) had risk factors but were not referred for BMD testing.

Discussion: The results of this retrospective chart review confirmed our research question that there was a deficiency in physician BMD referrals for current smokers. Not only did it show a lack of BMD referrals for these patients, it also occurred for non-smokers with risk factors.

Conclusion: Patients aged 50 to 64 years are not being adequately screened for 10-year fragility fracture risk based on the new guidelines.

Recommendation: Future research could explore whether there is a reduction in morbidity or mortality observed in the screened, diagnosed and treated smokers aged 50-64 years.

References:

1. Brown J, Fortier, M. SOGC clinical practice guideline: Canadian Consensus Conference on Osteoporosis, 2006 update. JOGC. 2006 Feb;172:S95-S112.
2. Ioannidis G, Papaioannou, A, Hopman W, Akhtar-Danesh N, Anastassiades T, Pickard L, Kennedy CC, Prior JC, Olszynski WP, Davison KS, Goltzman D, Thabane L, Gafni A, Papadimitropoulos EA, Brown JP, Josse RG, Hanley DA, Adachi JD. Relation between fractures and mortality: results from the Canadian Multicentre Osteoporosis Study. CMAJ. 2009;181(5):265-71.
3. Mackay J, Eriksen M. The tobacco atlas. Geneva: World Health Organization; 2002. 17 p.
4. Ward KD, Klesges RC. A meta-analysis of the effects of cigarette smoking on bone mineral density. Calcif Tissue Int. 2001;68(5):259-70.
5. Papaioannou A, Morin S, Cheung A, Atkinson S, Brown J, Feldman S, Hanley DA, Hodsman A, Jamal SA, Kaiser SM, Kvern B, Siminoski K, Leslie WD. 2010 clinical practice guidelines for the diagnosis and management of osteoporosis in Canada: summary. CMAJ. 2010;182(17):1864-73.
6. Tarride J, Hopkins R, Leslie W, Morin J, Adachi A, Papaioannou L, et al. The burden of illness of osteoporosis in Canada. Osteoporos Int. 2012; 23(11):2591-2600.
7. Looker AC, Orwoll ES, Johnston CC Jr, Lindsay RI, Wahner HW, Dunn WL, Calvo MS, Harris TB, Heyse SP. Prevalence of low femoral bone density in older US adults from NHANES III. J Bone Miner Res. 1997;12(11):1761-8.
8. Bessette L, Ste-Marie L, Jean S, Davison K, Beaulieu M, Baranci M, Bessant J, Brown JP. The care gap in diagnosis and treatment of women with a fragility fracture. Osteoporos Int. 2008; 19(1):79-86.
9. Papaioannou A, Giangregorio L, Kvern B, Boulos P, Ioannidis G, Adachi J. The osteoporosis care gap in Canada. BMC Musculoskelet Disord. 2004;5 (1):11.
10. Fraser L, Langsetmo L, Berger C, Ioannidis G, Goltzman D, Adachi J, Papaioannou A, Josse R, Kovacs CS, Olszynski WP, Towheed T, Hanley DA, Kaiser SM, Prior J, Jamal S, Kreiger N, Brown JP, Johansson H, Oden A, McCloskey E, Kanis JA, Leslie WD. Fracture prediction and calibration of a Canadian FRAX[®] tool: a population-based report from CaMos. Osteoporos Int. 2011;22(3):829-37.
11. Leslie W, Berger C, Langsetmo L, Lix L, Adachi J, Hanley D, Ioannidis G, Josse RG, Kovacs CS, Towheed T, Kaiser S, Olszynski WP, Prior JC, Jamal S, Kreiger N, Goltzman D, Canadian Multicenter Osteoporosis Study Research Group. Construction and validation of a simplified fracture risk assessment tool for Canadian women and men: results from the CaMos and Manitoba cohorts. Osteoporos Int. 2011;22(6):1873-83.
12. World Health Organization. Assessment of fracture risk and its application to screening for postmenopausal osteoporosis [Internet]. Geneva: World Health Organization; 1994 [cited 2012 Sept 22]. 136p. Report No.:843. Available from: http://whqlibdoc.who.int.proxy1.lib.umanitoba.ca/trs/WHO_TRS_843.pdf
13. Baim S, Binkley N, Bilezikian JP, Kendler DL, Hans DB, Lewiecki EM, Silverman S. Official positions of the International Society for Clinical Densitometry and executive summary of the 2007 ISCD Position Development Conference. J Clin Densitom. 2008;11(1):75- 91.
14. Leslie W, Lix L, Lagsetmo L, Berger C, Goltzman D, Hanley D, Adachi JD, Johansson H, Oden A, McCloskey E, Kanis JA. Construction of a FRAX[®] model for the assessment of

fracture probability in Canada and implications for treatment. *Osteoporos Int.* 2011;22(3):817-27.

15. Szulc P, Garnero P, Claustrat B, Marchand F, Duboeuf F, Delmas P. Increased bone resorption in moderate smokers with low body weight: The Minos study. 2002; 87(2):666-74.
16. Yan C, Avadhani NG, Iqbal J. The effects of smoke carcinogens on bone. *Curr Osteoporos Rep.* 2011Dec;9(4):202-9.
17. Willett W, Stampfer MJ, Bain C, Lipnick R, Speizer FE, Rosner B, Cramer D, Hennekens CH. Cigarette smoking, relative weight, and menopause. *Am J Epidemiol.* 1983 Jun;117(6):651-8.
18. Ortego-Centeno N, Munoz-Torres M, Jodar E, Hernandez-Quero J, Jurado-Duce A, de la Higuera Torres-Puchol J. Effects of tobacco consumption on bone mineral density in healthy young men. *Calcif Tissue Int.* 1997;60(6):496-500.
19. Yoshimura N, Kinoshita H, Danjoh S, Takijiri T, Morioka S, Kasamatsu T, Sakata K, Hashimoto T. Bone loss at the lumbar spine and the proximal femur in a rural Japanese community, 1990-2000: The Miyama study. *Osteoporos Int.* 2002 Oct;13(10):803-8.
20. Supervia A, Nogues X, Enjuanes A, Vila J, Mellibovsky L, Serrano S, Aubia J, Diez-Perez A. Effect of smoking and smoking cessation on bone mass, bone remodeling, vitamin D, PTH, and sex hormones. *J Musculoskelet Neuronal Interact.* 2006;6(3):234-41.

Strategies to Improve Infant Sleep: Reflecting upon Practice and Experience

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ABSTRACT

Background: Many parents have questions for their physicians, family & friends regarding how to get their babies “sleep trained” yet we receive little to no formal training on this topic in medical school and residency. As residents in family medicine, we feel inadequate in counseling our patients on this issue. As recent new Moms, we experienced firsthand the stress and frustration of sleep deprivation and the desperate lengths parents go to in order to improve their infants’ sleep habits.

There is an abundance of different approaches to encouraging infant sleep and many different books on the subject. Much of the information in the popular press seems to be strongly worded but largely unfounded, experiential or based on pseudo-science. Furthermore, there are major social influences and pressures that influence parent responses to their infants’ sleep habits. Our hope is to reflect upon and analyze our own physician practices, parenting experiences and interpret them within the context of available medical literature which will enhance our patient counselling strategies on this very important issue.

Research Question: How can our own experiences as new Moms inform our counselling of new parents as a physician?

Methods/Methodology: Narrative inquiry.

Results/Findings: Our understanding and professional knowledge was challenged by our lived experiences as parents. On reflection, the professional advice that we had given in the past made us aware of the gap between theory and practice as there are many contextual and cultural factors that influence whether the expert advice is appropriate for the patient or in this case the parent and whether or not it was successfully applied. Our feelings of inadequacy, frustration as parents trying to implement the “expert advice” and replicate the successes of others created an awareness that an individual’s reality can be in stark contrast to that anticipated by the physician.

Discussion: There is a paucity of evidence on infant sleep strategies. Most evidence is limited to opinion or small sample sizes and the majority of studies were not randomized.

Conclusions/Recommendations: In light of the wide array of information parents may find and the limited evidence, we, as physicians should listen to parents and attempt to understand

culturally appropriate parenting styles and personal preferences. Parents should be supported in their choices regarding infant sleep and educated on implementing these practices safely.

References:

1. Semple A. What influences baby-sleeping behaviour at night? A review of evidence. *New Dig.* 2008;42:25-30.
2. Weissbluth M. *Healthy sleep habits, happy twins: a step-by-step program for sleep training your multiples.* New York, NY: Ballantine Books; 2009.
3. Galland BC, Taylor BJ, Elder DE, Herbison P. Normal sleep patterns in infants and children: a systematic review of observational studies. *Sleep Med Rev.* 2012;16:213-22.
4. Jenni OG, O'Connor BB. Children's Sleep: an interplay between culture and biology. *Pediatr.* 2005;115(1 Suppl):204-16.
5. Druckerman P. *Bringing up Bébé: one American woman discovers the wisdom of French parenting.* New York, NY: Penguin Press; 2012.
6. Sinai D, Tikotzky L. Infant sleep, parental sleep and parenting stress in families of mothers on maternity leave and in families of working mothers. *Infant Behav Dev.* 2012 Apr;35(2):179-86.
7. Babycenter. Pacifier and sleep training [internet]. San Francisco, CA: Babycenter; 2012 [Cited 2014 May 18]. Available from: http://community.babycenter.com/post/a31742989/pacifier_and_sleep_training.
8. Price CT, Schwend RM. Improper swaddling a risk factor for developmental dysplasia of the hip. *AAP news.* 2011; 32(9):11.
9. Clarke, N. Swaddling and hip dysplasia: an orthopaedic perspective. *Arch Dis Child.* 2014 Jan;99(1):5-6.
10. Van Sleuwen BE, Engelberts AC, Boere-Boonekamp MM, Kuis W, Schulpen T, L'Hoir M. Swaddling: a systematic review. *Pediatrics.* 2007 Oct;120(4):e1097-106.
11. Gerard C, Harris K, Thach B. Spontaneous arousals in supine infants while swaddled and unswaddled during rapid eye movement and quiet sleep. *Pediatrics.* 2002;110(6):e70.
12. Fraco P, Seret N, Van Hees J, Scaillet S, Grosswater J, Kahn A. Influence of swaddling on sleep and arousal characteristics of healthy infants. *Pediatrics.* 2005;115(5):1307-11.
13. Meyer L, Erler T. Swaddling: a traditional care method rediscovered. *World J Pediatr.* 2011;7(2):155-60.
14. Karp H. *The happiest baby guide to great sleep.* New York, NY: Avon; 2013.
15. Spencer J, Moran D, Lee A, Talbert D. White noise and sleep induction. *Arch Dis Child.* 1990;65(1):135-7.
16. Anuntaseree W, Mo-suwan L, Vasiknanonte P, Kuasirikul S, Ma-a-tee A, Choprapawan C. Night waking in Thai infants at 3 months of age: association between parental practices and infant sleep. *Sleep Med.* 2008;9(5):564-71.
17. Weissbluth M. *Healthy sleep habits, happy child.* New York, NY: Ballantine Books; 2003.
18. Doan T, Gardiner A, Gay C, Lee K. Breast-feeding increases sleep duration of new parents. *J Perinat Neonatal Nurs.* 2007;21(3):200-6.
19. Kendal-Tackett K, Cong Z, Hale TW. *Clin Lactation.* 2011;2(2):22-6.
20. Touchette E, Petit D, Paquet J, Bolvin M, Japel C, Tremblay RE, Montplaisir JY. Factors associated with fragmented sleep at night across early childhood. *Arch Pediatr Adolesc Med.* 2005 Mar;159(3):242-9.

21. Elias MF, Nicolson NA, Bora C, Johnston J. Sleep/wake patterns of breast-fed infants in the first 2 years of life. *Pediatrics*. 1986 Mar;77(3):322-9
22. Bainbridge R, Mimouni F, Landi T, Crossman M, Harris L, Tsang R. Effect of rice cereal feeding on bone mineralization and calcium homeostasis in cow milk formula fed infants. *J Am Coll Nutr*. 1996;15(4):383-8.
23. Macknin M, Medendorp S, Maier M. Infant sleep and bedtime cereal. *Am J Dis Child*. 1989;143(9):1066-8.
24. Ramos KD, Youngclarke DM. Parenting advice books about child sleep: cosleeping and crying it out. *Sleep*. 2006 Dec;29(12):1616-23.
25. Ramchandani P, Wiggs L, Webb V, Stores G. A systematic review of treatments for settling problems and night waking in young children. *BMJ*. 2000;320(7229):209-13.
26. Price AMH, Wake M, Ukoumunne OC, Hiscock H. Five-year follow-up of harms and benefits of behavioural infant sleep intervention: randomized trial. *Pediatrics*. 2012 Oct;130(4):643-51.
27. Morgenthaler TI, Owens J, Alessi C, Boehlecke B, Brown M, Coleman J, Friedman L, Kapur VK, Lee-Chiong T, Pancer J, Swick TJ. Practice parameters for behavioral treatment of bedtime problems and night waking in infants and young children. *Sleep*. 2006;29(10):1277-81.
28. Douglas PS, Hill PS. Behavioral sleep interventions in the first six months of life do not improve outcomes for mothers of infants: a systematic review. *J Dev Behav Pediatr*. 2013;34(7):497-506.
29. Pantley E. The no-cry sleep solution: gentle ways to help your baby sleep through the night. New York, NY: McGraw-Hill; 2002.
30. Leduc D, Cote A, Woods S. Canadian Pediatric Society recommendations for safe sleeping environments for infants and children. *Pediatr Child Health*. 2004;9(9):659-63.
31. Hauck FR, Signore C, Fein SB, Raju TN. Infant sleeping arrangements and practices during the first year of life. *Pediatrics*. 2008 Oct;122 Suppl 2:S113-20.
32. Ball HL. Breastfeeding, bed-sharing and infant sleep. *Birth*. 2003;30(3):181-8.
33. Quillin SI, Glenn, LL. Interaction between feeding method and co-sleeping on maternal-newborn sleep. *J Obstet Gynecol Neonatal Nurs*. 2004;33(5):580-8.
34. Adams SM, Jones DR, Esmail A, Mitchell EA. What affects the age of first sleeping through the night? *J Paediatr Child Health*. 2004;40(3):96-101.
35. Ramos KD, Youngclarke D, Anderson JE. Parental perceptions of sleep problems among co-sleeping and solitary sleeping children. *Infant Child Dev*. 2007;16(4):417-31.
36. Keller MA, Goldberg WA. Co-sleeping: help or hindrance for young children's independence? *Infant Child Dev*. 2004;13(5):369-88.
37. Okami P, Weisner T, Olmstead R. Outcome correlates of parent-child bedsharing: an eighteen-year longitudinal study. *J Dev Behav Pediatr*. 2002;23(4):244-53.
38. Sleep J, Gilham P, St James-Roberts I, . A randomized controlled trial to compare alternative strategies for preventing infant crying and sleep problems in the first 12 weeks: the COSI study. *Prim Health Care Res Dev*. 2002;3(3):176-83.
39. Kerr SM, Jowett SA, Smith LN. Preventing sleep problems in infants: a randomized controlled trial. *J Adv Nurs*. 1996;24(5):938-42.

A Merger between Intravenous Catheterization and Venipuncture: Will it Result in Better Patient Care?

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ABSTRACT

Background: In North American emergency departments (EDs), intravenous (IV) catheterization for administration of fluids and medications is typically performed separately from the venipuncture used for the collection of blood for laboratory tests. There are potential benefits from the collection of blood for laboratory tests at the time of IV catheterization. These benefits may include one needle poke instead of two. There may also be benefits in terms of improved patient flow in the ED.

Research Question: Is there a difference in the time interval between IV catheter insertion and venipuncture in the ED such that it would be important to consider combining the two procedures?

Methods/Methodology: A retrospective chart review of a randomized sample of 190 charts was performed on patients, who had registered at the St. Paul's Hospital ED in the month of November, 2013. Ethics approval was obtained. Adults aged 18 years and older were included in the sample.

Results/Findings: Twenty-eight percent of patients had both IV catheterization and venipuncture. The mean time interval between IV catheterization and venipuncture was 45.40 minutes. This time difference was similar between CTAS groups. There was a difference in this time interval between sexes, with mean time intervals of 18.88 minutes for males and 58.43 minutes for females ($p=0.05$).

Discussion: The time interval between IV catheterization and venipuncture is likely a result of multiple factors. It is difficult to explain the pattern of females having a longer time interval between procedures than males.

Conclusions: It is important to consider combining IV catheterization and phlebotomy. Any such discussion would have to consider the limitations of performing phlebotomy from an IV catheter, such as increased rates of hemolysis.

Recommendations: Further studies are needed to examine if this interval between procedures is present in other EDs. For patients who had a larger time interval between procedures, a more detailed analysis of the circumstances would help determine if decreasing this interval would be clinically significant.

References:

1. Wiler J, Gentle C, Halfpenny J, Heins A, Mehrotra A, Mikhail M, Fite D. Optimizing emergency department front-end operations. *Ann Emerg Med.* 2010 Feb;55(2):142-60.
2. Asplin B. Measuring crowding: time for a paradigm shift. *Acad Emerg Med.* 2006 Apr;13(4):459-61.
3. Heyer N, Derzon J, Wings L, Shaw C, Mass D, Christenson R, Snyder S, Epner P, Liebow E. Effectiveness of practices to reduce blood sample hemolysis in EDs: a laboratory medicine best practices systematic and meta-analysis. *Clin Biochem.* 2012;45(13-14):1012-32.
4. Halm A, Gleaves M. Obtaining blood samples from peripheral intravenous catheters: best practice? *Am J Crit Care.* 2009 Sep;18(5):474-8.
5. Pelletier R, Humphries K, Shimony A, Bacon S, Lavoie K, Rabi D, Karp I, Tsadok M, Pilote L, GENESIS-PRAXY Investigators. Sex-related differences in access to care among patients with premature acute coronary syndrome. *CMAJ.* 2014 Apr 15;186(7):497-504.
6. Lowe G, Stike R, Pollack M, Bosley J, O'Brien P, Hake A, Landis G, Billings N, Gordon P, Manzella S, Stover T. Nursing blood specimen collection techniques and hemolysis rates in an emergency department: analysis of venipuncture versus intravenous catheter collection techniques. *J Emerg Nurs.* 2008 Feb;34(1):26-32.
7. Lippi G, Carvelli G, Mattiuzzi C. Critical review and meta-analysis of spurious hemolysis in blood samples collected from intravenous catheters. *Biochem Med.* 2013;23(2):193-200.
8. Retezar R, Bessman E, Ding R, Zeger S, McCarthy M. The effect of triage diagnostic standing orders on emergency department treatment time. *Ann Emerg Med.* 2011 Feb;57(2):89-99.

The Electronic Health Record: Does it make a difference?

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ABSTRACT

Background: Usage of electronic medical records (EMR's) continues to grow and while there is a plethora of research into the benefits of EMR usage there is limited research examining how EMR usage affects the quality of the relationship and interaction between physician and patient.

Research Question: Which factors affect a patient's satisfaction with the care that they receive including the use of the EMR?

Methods/Methodology: Patients at the Regina FMU anonymously completed a questionnaire designed to examine patient feelings regarding EMR usage and its effect on their overall satisfaction with the care they received. The responses to these questionnaires were then analyzed using correlation matrices to determine which elements of the interaction were related to increased or decreased satisfaction.

Results/Findings: The study found that 57.6% ($n = 92$) felt that EMR had improved their medical care and that this feeling was positively correlated to feelings that medical care received was nearly perfect ($0.210, p = 0.045, n = 91$) and the feeling that the physician was being complete ($0.208, p = 0.048, n = 91$). Conversely, the study also showed that feelings that the doctor spent too much time looking at the computer screen were correlated with dissatisfaction with the medical care received ($0.364, p = 0.00, n = 91$).

Discussion: The study showed that EMR's can be successfully employed in the clinical setting. However, it potentially could be detrimental to the relationship between patient and physician if the physician becomes overly involved with the computer.

Conclusions: EMR's can be used effectively without damage to the relationship between physician and patient, provided there remains a strong emphasis on the overall quality of communication.

Recommendations: Based on the results of this study, we recommend that usage of EMR's continues to increase and grow into additional areas of medical practice. Perhaps more conscious attention paid to communication skills is required.

References:

1. Herrin BS. Best practices in EMR system acquisition. *J Med Assoc Ga.* 2011;100(3):30.
2. Luberti A. Patients learn to see the value in EHRs. Interview by Kayt Sukel. *Healthc Inform.* 2011;28(5):40, 42.
3. SolomonGL, Dechter M. Are patients pleased with computer use in the examination room? *J Fam Pract.* 1995;41(3):241-4.
4. Callen J, Bevis M, McIntosh J. Patients' perceptions of general practitioners using computers during the patient-doctor consultation. *HIM J.* 2005;34(1):8-12.
5. Irani JS, Middleton JL, Marfati R, Omana ET, D'Amico F. The use of electronic health records in the exam room and patient satisfaction: a systematic review. *Am Board of Fam Med.* 2009;22(5):553-62.
6. Nuque HV, Wampler B, Meador J, Bell K. How have electronic medical records impacted patient care? *ONS Connect.* 2010;25(10):13.
7. Shachak A, Reis S. The impact of electronic medical records on patient-doctor communication during consultation: a narrative literature review. *J Eval Clin Prac.* 2009;15(4):641-9.
8. Gomez G, Aillach E. Ways to improve patient-physician relationship. *Curr Opin Psychiatry.* 2013;26(5):453-7.
9. Ishikawa H, Hashimoto H, Kiuchi T. The evolving concept of "patient-centeredness" in patient-physician communication research. *Soc Sci Med.* 2013;96:147-53.
10. Henry SG, Fuhrel-Forbis A, Rogers MA, Eggly S. Association between nonverbal communication during clinical interactions and outcomes: a systematic review and meta-analysis. *Patient Educ Couns.* 2012;86(3):297-315.
11. Neumann M, Edelhauser F, Kreps GL, Scheffer C, Lutz G, Tauschel D, Visser A. Can patient-provider interaction increase the effectiveness of medical treatment or even substitute it?--An exploration on why and how to study the specific effect of the provider. *Patient Educ Couns.* 2010;80(3):307-14.

Keeping Our Eyes on Our Kids: Child Well-being in Swift Current, Saskatchewan

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ABSTRACT

Background: Childhood obesity is related to several co-morbid conditions and recent studies have shown that its prevalence is increasing. Due to a lack of robust data concerning the prevalence of overweight and obesity in rural pediatric populations there is poor understanding if these children are at increased risk of childhood overweight and obesity and related co-morbidities.

Research Question: What is the prevalence of unhealthy weight in the pediatric population of the Cypress Health Region and are there any related co-morbid conditions?

Methods/Methodology: A quantitative cross-sectional study employing anthropometric measurements and a questionnaire was performed over 3 months from 2013 to 2014. Frequencies and Chi-square analysis were conducted to determine the extent of age adjusted nutritional status outside the normal range and the relationship to co-morbid illness for children in these categories.

Results: The analysis resulted in a final sample of 200 patient encounters, with a response rate of 98.1%. The rate of underweight, overweight, and obesity varied by age. The rate of overweight and obese children was similar to previously published rates. There was no relationship found between overweight and obese children and related co-morbidities.

Discussion: The data did not support a relationship between overweight and obese children and co-morbid conditions, but did for children in the underweight group. There was a statistically significant difference in waist circumference between weight categories, though our study lacked the power to determine age-appropriate weight category ranges for this measure. There was a phenomenon of interest: There were no overweight or obese children up to 1 year of age; at the same time the combined rate of overweight and obese 2 year olds was 30.8%

Conclusions: The rates of overweight and obesity for several ages was greater than the previously published rates for children in Saskatchewan. For the rate of underweight in children less than 2 years, there was no locatable comparative data.

Recommendation: The rate of under-weight children less than 2 years of age and rates of overweight and obesity in children age 2-12 years suggests that the implementation of a multidisciplinary clinic is warranted for the rural pediatric population studied.

References:

1. Wang Y. Child obesity and health [Internet]. Int Encyclopaedia of Public Health. 2008 [Cited 2014 Mar 15]; 590-604. Available from: <http://www.sciencedirect.com/science/article/pii/B9780123739605006286>.
2. Childhood Obesity Foundation. Statistics [Internet]. Vancouver, BC: Childhood Obesity Foundation; [Cited 2012 Dec 12] [about 3 screens]. Available from: <http://www.childhoodobesityfoundation.ca/statistics>.
3. Tremblay M. Major initiatives related to childhood obesity and physical inactivity in Canada: the year in review. Can J Public Health. 2012;103(3):164-9.
4. Serdula MK, Ivery D, Coates RJ, Freedman DS, Williamson DF, Byers T. Do obese children become obese adults? A review of the literature. Prev Med. 1993;22(2):167-77.
5. Han JC, Lawlor DA, Kimm SYS. Childhood obesity. Lancet. 2010;375(9727):1737-48.
6. Daniels SR, Arnett DK, Eckel RH, Gidding SS, Hayman LL, Kumanyika S, Robinson TN, Scott BJ, St. Jeor S. Overweight in children and adolescents pathophysiology, consequences, prevention and treatment. Circulation. 2005;111(15):1999-2012.
7. Weintraub Y, Singer S, Alexander D, Hacham S, Menuchin G, Lubetzky R, Steinberg DM, Pinhas-Hamiel O. Enuresis - an unattended comorbidity of childhood obesity. Int J Obes (Lond). 2012;37(1):75-8.
8. Barness LA. Obesity in children. Fetal Pediatr Pathol. 2007;26(2):75-85.
9. Harriger JA, Thompson JK. Psychological consequences of obesity: weight bias and body image in overweight and obese youth. Int Rev Psychiatry. 2012;24(3):247-53.
10. Alberta Health Services. Alberta: Childhood overweight and obesity: summary of evidence from the Cost of Obesity in Alberta report [Internet]. Calgary, AB: Alberta Health Services; 2010 Mar [cited 2014 Apr 6]. 26 p. Available from: <http://www.albertahealthservices.ca/poph/hi-poph-surv-phids-childhood-overweight-obesity-2010.pdf>.
11. Seeley JM. The characteristics of obesity and being overweight in children living in two Saskatchewan communities. Master's Thesis. Saskatoon, SK: University of Saskatchewan; 2005.
12. Russell-Mayhew S, McVey G, Bardick A, Ireland A. Mental health, wellness, and childhood overweight/obesity. J Obes. 2012;2012:281801: 9p.
13. Veloso S, Matos M, Carvalho M, Diniz J. Psychosocial factors of different health behaviour patterns in adolescents: Association with overweight and weight control behaviours. J Obes. 2012;2012:852672: 11p.
14. Braet C, Mervielde I. Psychological aspects of childhood obesity: a controlled study in a clinical and nonclinical sample. J Pediatr Psychol. 1997;22(1):59-71.
15. Gibson L, Byrne S, Blair E, Davis E, Jacoby P, Zubrick S. Clustering of psychosocial symptoms in overweight children. Aust N Z J Psychiatry. 2008;42(2):118-25.
16. Gray W, Crawford M, Follansbee-Junger K, Dumont-Driscoll M, Janicke D. Associations between actual and perceived weight and psychosocial functioning in children: the importance of child perceptions. Child Obes. 2012;8(2):147-54.

17. Boddy L, Knowles Z, Davies I, Warburton G, Mackintosh K, Houghton L, Fairclough S. Using formative research to develop the healthy eating component of the change! school-based curriculum intervention. *BMC Public Health*. 2012;12(1):710.
18. Dehghan M, Akhtar-Danesh N, Merchant A. Childhood obesity, prevalence and prevention. *Nutr J*. 2005;4(1):24.
19. Swinburn B, Caterson I, Seidell J, James W. Diet, nutrition and the prevention of excess weight gain and obesity. *Public Health Nutr*. 2004;7(1A):123-6.
20. Brauchla M, Juan W, Story J, Kranz S. Sources of dietary fiber and the association of fiber intake with childhood obesity risk (in 2–18 year olds) and diabetes risk of adolescents 12–18 year olds: NHANES 2003–2006. *J Nutr Metab*. 2012;2012:736258: 7p.
21. Jaime PC, Lock K. Do school based food and nutrition policies improve diet and reduce obesity? *J Prev Med*. 2009;48(1):45-53.
22. Story M, Nannery MS, Schwartz MB. Schools and obesity prevention: creating school environments and policies to promote healthy eating and physical activity. *Milbank Q*. 2009;87(1):71-100.
23. Negelev E. Pediatric weight clinic [Internet]. Calgary, AB: Pediatric Weight Clinic. 2012 [cited 2012 Dec 13]. Available from: <http://www.pediatricobesityclinic.com/m.php?p=faq>.
24. Anand S. Multidisciplinary, clinic-based teams support obese children in changing behaviors, leading to increased physical activity, improved diet, and weight loss [Internet]. Rockville, MD: Agency for Healthcare Research and Quality; 2012 May 9 [cited 2012 Dec 13]. Available from: <http://www.innovations.ahrq.gov/content.aspx?id=3141>.
25. Cypress Health Region. Home [Internet]. Swift Current, SK: Cypress Health Region. 2012 [cited 2012 Dec 14]. Available from: <http://www.cypresshealth.ca>.
26. Statistics Canada. Census Profile [Internet]. Ottawa, ON: Statistics Canada. 2012 Nov 2 [cited 2012 Dec 12]. Available from: <http://www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/index.cfm?Lang=E> English.

Pain Anxiety and Pain Acceptance as Correlates to Physical Activity in Patients with Arthritis

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ABSTRACT

Background: Levels of physical activity are uniformly lower for those with arthritis. This is a major public health problem, as they are at a higher risk of morbidity and mortality due to inactivity alone. This results in an increase in obesity rates and a decrease in functional independence. Barriers include arthritis-specific factors such as fear of pain and lack of tailored exercise programs.

Research Question: Do pain anxiety and pain acceptance correlate to levels of physical activity in patients with arthritis?

Methods: Participants were recruited from patients attending the West Winds Primary Health Centre. This included all patients with self-reported arthritis that has been diagnosed by a physician. Ethics approval was obtained from the Behavioural Research Ethics Board at the University of Saskatchewan. Participants were invited to complete a written questionnaire, which included subscales measuring exercise behavior, pain intensity, pain acceptance, and pain anxiety.

Results: A total of 25 participants completed the survey. Pain acceptance scores had moderate positive correlation to levels of physical activity ($r(23) = 0.370$, $p = 0.158$), and pain anxiety had moderate negative correlation to levels of physical activity ($r(15) = -0.250$, $p = 0.333$) in a primary care population with self-reported arthritis.

Discussion: Those who are more accepting of pain are more likely to continue with usual activities in spite of their pain, including physical activity. Conversely, pain anxiety can interfere with an individual's overall function. This suggested that in spite of generally low pain anxiety and high pain acceptance, physical activity was still rare. This suggests that there must be other important factors that influence exercise frequency for individuals with arthritis.

Conclusion: For patients with arthritis, those with low pain anxiety and increased pain acceptance were most likely to be physically active.

Recommendations: Future studies should examine the factors influencing pain acceptance and pain anxiety. It would be worthwhile to investigate if pain acceptance and anxiety related to pain could be modified. If so, interventions to improve pain acceptance and pain anxiety could be undertaken in order to increase physical activity levels in those with arthritis pain.

References:

1. Der Ananian C, Wilcox S, Watkins K, Saunders R, Evans AE. Factors associated with exercise participation in adults with arthritis. *J Aging Phys Act.* 2008 Apr;16(2):125-43.
2. Knittle KP, De Gucht V, Hurkmans EJ, Vlieland TP, Peeters AJ, Runday HK, Maes S. Effect of self-efficacy and physical activity goal achievement on arthritis pain and quality of life in patients with rheumatoid arthritis. *Arthritis Care Res (Hoboken).* 2011 Nov;63(11):1613-9.
3. Nelson ME, Rejeski WJ, Blair SN, Duncan PW, Judge JO, King AC, Macera CA, Castaneda-Sceppa C. Physical activity and public health in older adults: recommendation from the American College of Sports Medicine and the American Heart Association. *Med Sci Sports Exerc.* 2007 Aug;39(8):1435-45.
4. van den Berg MH, de Boer IG, le Cessie S, Breedveld FC, Vliet Vlieland TP. Are patients with rheumatoid arthritis less physically active than the general population? *J Clin Rheumatol.* 2007 Aug;13(4):181-6.
5. Brittain DR, Gyurcsik NC, McElroy M, Hillard SA. General and arthritis-specific barriers to moderate physical activity in women with arthritis. *Womens Health Issues.* 2011 Jan-Feb;21(1):57-63.
6. Gyurcsik NC, Brawley LR, Spink KS, Brittain DR, Fuller DL, Chad K. Physical activity in women with arthritis: examining perceived barriers and self-regulatory efficacy to cope. *Arthritis Rheum.* 2009 Aug 15;61(8):1087-94.
7. McCracken LM, Zayfert C, Gross RT. The pain anxiety symptoms scale: development and validation of a scale to measure fear of pain. *Pain.* 1992 Jul;50(1):67-73.
8. McCracken LM, Dhingra L. A short version of the pain anxiety symptoms scale (PASS-20): preliminary development and validity. *Pain Res Manag.* 2002 Spring;7(1):45-50.
9. McCracken LM. Learning to live with the pain: acceptance of pain predicts adjustment in persons with chronic pain. *Pain.* 1998 Jan;74(1):21-7.
10. Lorig K, Chastain RL, Ung E, Shoor S, Holman HR. Development and evaluation of a scale to measure perceived self-efficacy in people with arthritis. *Arthritis Rheum.* 1989 Jan;32(1):37-44.
11. Gyurcsik NC, Brawley LR, Spink KS, Glazebrook KE, Anderson TJ. Is level of pain acceptance differentially related to social cognitions and behavior? The case of active women with arthritis. *J Health Psychol.* 2011 Apr;16(3):530-9.
12. Strahl C, Kleinknecht RA, Dinnel DL. The role of pain anxiety, coping, and pain self-efficacy in rheumatoid arthritis patient functioning. *Behav Res Ther.* 2000 Sep;38(9):863-73.
13. Maly MR, Costigan PA, Olney SJ. Self-efficacy mediates walking performance in older adults with knee osteoarthritis. *J Gerontol A Biol Sci Med Sci.* 2007 Oct;62(10):1142-6.
14. Geiser DS. A comparison of acceptance-focused and control-focused psychological treatments in a chronic pain treatment centre. Reno, NV: University of Nevada; 1992.
15. McCracken LM, Vowles KE, Eccleston C. Acceptance of chronic pain: component analysis and a revised assessment method. *Pain.* 2004 Jan;107(1-2):159-66.
16. Wicksell RK, Olsson GL, Melin L. The Chronic Pain Acceptance Questionnaire (CPAQ)-further validation including a confirmatory factor analysis and a comparison with the Tampa Scale of Kinesiophobia. *Eur J Pain.* 2009 Aug;13(7):760-8.
17. Reneman MF, Dijkstra A, Geertzen JH, Dijkstra PU. Psychometric properties of Chronic Pain Acceptance Questionnaires: a systematic review. *Eur J Pain.* 2010 May;14(5):457-65.
18. Coons MJ, Hadjistavropoulos HD, Asmundson GJ. Factor structure and psychometric

- properties of the Pain Anxiety Symptoms Scale-20 in a community physiotherapy clinic sample. *Eur J Pain*. 2004 Dec;8(6):511-6.
19. Burckhardt CS, Jones KD. Adult measures of pain: The McGill Pain Questionnaire (MPQ), Rheumatoid Arthritis Pain Scale (RAPS), Short-Form McGill Pain Questionnaire (SF-MPQ), Verbal Descriptive Scale (VDS), Visual Analog Scale (VAS), and West Haven-Yale Multidisciplinary Pain Inventory (WHYMPI). *Arthritis Rheum*. 2003;49(S5):S96-S104.
 20. Hadjistavropoulos T, Herr K, Turk DC, Fine PG, Dworkin RH, Helme R, Jackson K, Parmelee PA, Rudy TE, Lynn Beattie B, Chibnall JT, Craig KD, Ferrell B, Ferrell B, Fillingim RB, Gagliese L, Gallagher R, Gibson SJ, Harrison EL, Katz B, Keefe FJ, Lieber SJ, Lussier D, Schmader KE, Tait RC, Weiner DK, Williams J. An interdisciplinary expert consensus statement on assessment of pain in older persons. *Clin J Pain*. 2007 Jan;23(1):S1-43.
 21. Public Health Agency of Canada (PHAC). Tips to Get Active: Physical Activity Tips for Older Adults (65 years and Older) [Internet]. 2008 [Cited 2012 Dec 16]. Available from: <http://www.phac-aspc.gc.ca/hp-ps/hl-mvs/pa-ap/assets/pdfs/08paap-eng.pdf>.
 22. Public Health Agency of Canada (PHAC), Centre for Chronic Disease Prevention and Control, & Chronic Disease Surveillance Division. Life with Arthritis in Canada: A Personal and Public Health Challenge [Internet]. 2010 [Cited 2012 Dec 16]. Available from: <http://www.phac-aspc.gc.ca/cd-mc/arthritis-arthritis/lwaic-vaaac-10/pdf/arthritis-2010-eng.pdf>.
 23. Centre for Disease Control and Prevention. How much Physical Activity do Older Adults Need [Internet]. 2011 [Cited 2012 Dec 16]. Available from: <http://www.cdc.gov/physicalactivity/everyone/guidelines/olderadults.html>.
 24. Godin G, Shephard RJ. Godin Leisure-Time Exercise Questionnaire. *Med Sci Sports Exerc*. 1997 June;29(6):S36-S38.
 25. Wetherell JL, Afari N, Rutledge T, Sorrell JT, Stoddard JA, Petkus AJ, Solomon BC, Lehman DH, Liu L, Lang AJ, Atkinson JH. A randomized, controlled trial of acceptance and commitment therapy and cognitive-behavioral therapy for chronic pain. *Pain*. 2011 Sep;152(9):2098-107.
 26. McCracken LM, Vowles KE. Acceptance of chronic pain. *Curr Pain Headache Rep*. 2006 Apr;10(2):90-4.
 27. Vowles KE, McCracken LM. Acceptance and values-based action in chronic pain: a study of treatment effectiveness and process. *J Consult Clin Psychol*. 2008 Jun;76(3):397-407.
 28. Wright LJ. Adaptation to early knee osteoarthritis (PhD thesis). Tempe, AZ: Arizona State University; 2008 Oct [Cited 2012 Dec 16]. 100 p. Available from: <http://gradworks.umi.com/33/19/3319512.html>.
 29. Hays LM, Clark DO. Correlates of physical activity in a sample of older adults with type 2 diabetes. *Diabetes Care*. 1999 May;22(5):706-12.
 30. Gyurcsik NC, Brawley LR, Spink KS, Sessford JD. Meeting physical activity recommendations: self-regulatory efficacy characterizes differential adherence during arthritis flares. *Rehabil Psychol*. 2013 Feb;58(1):43-50

Can a Cost Effective Alternative to Physical Restraints be Developed for Elderly in Long-Term Care Facilities?

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ABSTRACT

Background: Physical restraints have been used to manage confused or combative patients in an attempt to prevent falls in the elderly. An alternative to physical restraints is needed, as restraints have not been shown to prevent falls. Risks associated with use of physical restraints include loss of dignity, accidental strangulation, impact on psychological well-being and decreased mobility. Psychotropic medications have been used to manage behaviours secondary to dementia, with considerable side effects. In addition, the efficacy of this class of medication for management of problem behaviours is not well established.

Research Question: Can a cost effective alternative to physical restraints be developed for elderly in long-term care facilities?

Methods/Methodology: A transmitter unit consisting of two motion sensors fastened to the patient's abdomen and thigh and a bed sensor transmitted wireless signals about the patient's position to the nursing station wireless receiver. A software program interpreted the information into visible diagrams displaying patient position. The device was tested using a randomized script of one hundred positions at fifteen-second intervals over twenty-five minutes and monitored through video recording. Temperature of the transmitter unit, battery life and the range of data transmission between sensors were also assessed.

Results/Findings: The device recorded the position of the patient with 100% accuracy. The maximum temperature of the transmitter unit over a four-hour period was 35.2°C. The maximum detectable distance from the base station was 41.5 meters. The battery life exceeded 24 hours after full charge.

Discussion: A motion detection device to prevent falls has the potential to avoid adverse affects of restraints including psychological distress and accidental injury while allowing the patient to maintain mobility. By avoiding medications used for behaviour management fall risk can be decreased.

Conclusions: A cost effective alternative to physical and chemical restraints in the elderly using motion sensors was created. The device was found to be 100% accurate in recording the position of a simulated patient.

Recommendations: Further testing is needed to assess the real time accuracy and usability of the device in a clinical setting. Modifications can be made to increase durability, assess more than one transmitter unit and monitor other patient factors such as vital signs and location.

References:

1. McClure R J, Turner C, Peel N, Spinks A, Eakin E, Hughes K. Population-based interventions for the prevention of fall-related injuries in older people. *Cochrane Database of Systematic Reviews*; 2005;1:CD004441.
2. Frank C, Hodgetts G, Puxty J. Safety and efficacy of physical restraints for the elderly. Review of the evidence. *Can Fam Physician*. 1996 Dec;42(12):2402-9.
3. Mohler R, Richter T, Kopke S, Meyer G. Interventions for preventing and reducing the use of physical restraints in long-term geriatric care - a Cochrane review. *J Clin Nurs*. 2012 Nov;21(21-22):3070-81.
4. Berry S, Kiel D. Prevention of falls in nursing care facilities and the hospital setting [Internet]. UpToDate 2013 Jun 3. Available from: <http://www.uptodate.com/contents/prevention-of-falls-in-nursing-care-facilities-and-the-hospital-setting>.
5. Berry S, Miller RR. Falls: epidemiology, pathophysiology, and the relationship to fracture. *Curr Osteoporos Rep*. 2008;6(4):149-54.
6. Berry S, Samelson EJ, Ngo L, Bordes M, Broe KE, Kiel DP. Subsequent fracture in nursing home residents with a hip fracture: a competing risks approach. *J Am Geriatr Soc*. 2008;56(10):1887-92.
7. Evans LK, Strumpf NE. Tying down the elderly. A review of the literature on physical restraint. *J Am Geriatr Soc*. 1989 Jan;37(1):65-74.
8. Mattison M, Marcantonio E. Hospital management of older adults [Internet]. UpToDate April 18 2013. Available from: <http://www.uptodate.com/contents/hospital-management-of-older-adults>.
9. Mattison M, Rudolph JL, Kiely DK, Marcantonio ER. Nursing home patients in the intensive care unit: risk factors for mortality. *Crit Care Med*. 2006;34(10):2583-7.
10. Tan KM, Austin B, Shaughnassy M, Higgins C, McDonald M, Mulkerrin EC, O'Keeffe ST. Falls in an acute hospital and their relationship to restraint use. *Ir J Med Sci*. 2005 Jul-Sep;174(3):28-31.
11. Tilly J, Reed P. Falls, Wandering, and Physical Restraints: Interventions for Residents with Dementia in Assisted Living and Nursing Home [Internet]. Alzheimer's Association August 2006. Available from: http://www.alz.org/national/documents/fallsrestraints_litereview_ii.pdf.
12. Francis J. Prevention and Treatment of Delirium and Confusional States [Internet]. UpToDate May 17 2012. Available from: <http://www.uptodate.com/contents/prevention-and-treatment-of-delirium-and-confusional-states>.
13. Francis J. Delirium in older patients. *J Am Geriatr Soc*. 1992;40(2):829-38.
14. Gurvich T, Cunningham JA. Appropriate use of psychotropic drugs in nursing homes. *Am Fam Physician*. 2000 Mar 1;61(5):1437-46.
15. Press D, Alexander M. Treatment of Behavioural Symptoms Related to Dementia [Internet]. UpToDate. [updated 19 Mar 2014; cited 9 May, 2014]. Available from: <http://www.uptodate.com/contents/treatment-of-behavioral-symptoms-related-to-dementia>.

What You See is What You Get: Physician Characteristics and How They Affect Patient Confidence in Care

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ABSTRACT

Background: The College of Family Physicians of Canada states that “the patient-physician relationship is central to the role of the family physician.” Physician features such as gender, dress and obesity can influence interpersonal interactions with patients. We are interested in exploring how these factors, in addition to physician age, affect a patient’s confidence in their care.

Research Question: Do the characteristics of a physician including: age, sex, dress and level of fitness affect the patient’s confidence in the care they receive?

Methods/Methodology: Ethics was approved by the University of Saskatchewan Behavioural Research Ethics Board. A qualitative cross-sectional study was conducted with participants completing a short interview exploring the influence of physician features on their confidence in their care. A purposive sample was obtained from a local clinic. Participants were all over the age of 18 and were classified according to sex and age. Coding of responses and analysis of emergent themes was undertaken.

Findings/Discussion: Three themes emerged from the data. *Physician physical characteristics do not affect confidence in the care they receive:* A frequent comment was “a doctor is a doctor” and that competence in the position was more valued. *Physician physical characteristics do affect confidence in the care they receive:* In terms of age, older physicians were felt to be more experienced yet less up-to-date with knowledge and technology while the opposite was perceived for younger physicians. While confidence did not seem to be affected by physician sex, preference and comfort for a same-sex physician was a common theme. *Other non-physical factors were important in patient care:* These factors included physician personality traits and elements of the physician-patient relationship. In addition to being knowledgeable, it was important to patients that physicians were compassionate, caring, honest and friendly and had a good bedside manner. Subthemes around the physician-patient relationship placed value on a relationship based on understanding, communication and mutual decision-making.

Conclusions: While physical characteristics were deemed important to some, others felt that age, sex, weight and manner of dress did not affect confidence. Physician personality traits, good communication and a solid physician-patient relationship were of more importance to the patients. These findings reinforce the value of the behavioural medicine aspects of our Family Medicine training and support the traditional Family Medicine model of continuity of care and longitudinal physician-patient partnerships.

References:

1. College of Family Physicians of Canada. Principles: Four Principles of Family Medicine: About CFPC [Internet]. Ottawa, ON: College of Family Physicians of Canada; 2012; 2012 Sep [cited 2012 Sep 19]; [about 2 screens]. Available from: <http://www.cfpc.ca/Principles/>.
2. Roter DL, Hall JA. How physician gender shapes the communication and evaluation of medical care. *Mayo Clin Proc.* 2001 Jul;76(7):673-6.
3. Schmittdiel J, Grumbach K, Selby JV, Quesenberry CP, Jr. Effect of physician and patient gender concordance on patient satisfaction and preventive care practices. *J Gen Intern Med.* 2000 Nov;15(11):761-9.
4. Bond L, Clamp PJ, Gray K, Van Dam V. Patients' perceptions of doctors' clothing: should we really be 'bare below the elbow'? *J Laryngol Otol.* 2010 Sep;124(9):963-6.
5. Rehman SU, Nietert PJ, Cope DW, Kilpatrick AO. What to wear today? effect of doctor's attire on the trust and confidence of patients. *Am J Med.* 2005;118(11):1279-86.
6. Nome Eikhom M, Torsaeter M, Wik G. Psychiatric patients: views on psychiatrists' dress and address. *Nord J Psychiatry.* 2006;60(4):270-4.
7. Kurihara H, Maeno T, Maeno T. Importance of physicians' attire: factors influencing the impression it makes on patients, a cross-sectional study. *Asia Pac Fam Med.* 2014;13(1):2.
8. Landry M, Dornelles AC, Hayek G, Deichmann RE. Patient preferences for doctor attire: the white coat's place in the medical profession. *Ochsner J.* 2013;13(3):334-42.
9. Collins AM, Connaughton J, Ridgway PF. Bare below the elbows: a comparative study of a tertiary and district general hospital. *Ir Med J.* 2013;106(9):272-5.
10. Cha A, Hecht BR, Nelson K, Hopkins MP. Resident physician attire: does it make a difference to our patients? *Am J Obstet Gynecol.* 2004;190(5):1484-8.
11. Bianchi MT. Desiderata or dogma: what the evidence reveals about physician attire. *J Gen Intern Med.* 2008;23(5):641-3.
12. Poston WS, Foreyt JP. Successful management of the obese patient. *Am Fam Physician.* 2000;61(12):3615-22.
13. Hash RB, Munna RK, Vogel RL, Bason JJ. Does physician weight affect perception of health advice? *Prev Med.* 2003;36(1):41-4.
14. Bleich S, Bennett WL, Gudzone KA, Cooper LA. Impact of physician BMI on obesity care and beliefs. *Obesity.* 2012;20(5):999-1005.

Participation in a Saskatoon Community-Based Program for People at Risk for Developing Diabetes: Who is Attending and Having Success?

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ABSTRACT

Background: The community-based Building Resistance (BR) to Diabetes program, offered by the Saskatoon Health Region for people at high risk for type 2 diabetes, educates participants about diet, exercise, and helps participants set goals towards lifestyle change.

Hypotheses: (1) There is both a lower referral rate and under-participation rate to the BR program for people living in Saskatoon's deprived neighbourhoods versus the affluent ones. (2) There is an age difference between BR program participants and non-participants. (3) There are differences between BR program participants who made positive lifestyle changes following participation in the BR course and those who did not.

Methodology: Review of 512 BR patient charts over the period January 2011 to January 2013 was undertaken. Demographic and participation data were analyzed using SPSS v.20 software.

Results: For 440 urban referrals, the more deprived Saskatoon neighborhoods had fewer (33.9%) and the more affluent had more (46.3%) referrals than expected based on the Saskatoon population distribution (40.6% and 41.4%). Neighborhood deprivation was not associated with program attendance. Attendees had a mean age of 56.6 years (SD=11.8); non-attendees: 52.5 years (SD=12.5) $p = 0.001$. Between 58% and 69% of program participants self-reported positive change; no study variables were significantly different between those who made change and those who did not. Objective measures indicated that participants did make positive change overall: around 40% had favourable Physical Activity scores and 60% maintained or lost weight.

Discussion: Only 48.1% of Saskatoon family physicians made referrals, which may play a role in the deprivation index-based referral patterns that were observed. Factors contributing to program participant success were not identified, which may have been in part due to low follow-up numbers; lack of standardized documentation of follow-up contacts likely contributed.

Conclusions: There was a lower referral rate but not an under-participation rate for those people living in the deprived neighbourhoods of Saskatoon. Program attendees were older than non-attendees. No study variables were associated with participants making positive change

Recommendations: (1) Standardized EMR templates should be used to capture data more consistently. (2) Marketing strategies should target physicians and at-risk individuals in deprived neighbourhoods. (3) Invest in increasing engagement of younger individuals in the BR program.

References:

1. P.C. Zubkow Consulting. Building resistance to diabetes & heart disease program and upstream screening for prediabetes. Saskatoon, SK: Saskatoon Health Region; 2010 November.
2. Lemstra M, Neudorf C. Health disparity in Saskatoon: analysis to intervention. Saskatoon, SK: Saskatoon Health Region; 2008.
3. Marko J, Whitehead S, Clarke A, Ugolini C, Muhammad A. Medical health officer report: diabetes in Saskatoon Health Region. Saskatoon, SK: Saskatoon Health Region; 2011.
4. Glew R. Diabetes health care equity audit. Saskatoon, SK: Saskatoon Health Region; 2011 Apr 8.
5. Gamache P, Pampalon R, Hamel D. The material and social deprivation index: a summary [Internet]. Quebec City, QC: Institut national de santé publique Quebec; 2010 Sep [cited 2014 Mar 15]. .7 p. Available from: http://www2.inspq.qc.ca/santescope/documents/Guide_Metho_Indice_defavo_Sept_2010_A.pdf.
6. Pampalon R, Raymond G. A deprivation index for health and welfare planning in Quebec. *Chronic Dis Can.* 2000;21(3):104-13.
7. Statistics Canada. Dissemination area (DA) [Internet]. Ottawa, ON: Statistics Canada; 2013 May 13 [cited 2014 Mar 15]. 3p. Available from: <http://www.statcan.gc.ca/pub/92-195-x/2011001/geo/da-ad/da-ad-eng.htm>.
8. Creighton T. Using the deprivation index. Saskatoon, SK: Saskatoon Health Region; 2011.
9. Stangroom J. Social Science Statistics: Chi-square calculator [Internet]... Saskatoon, SK: Social Science Statistics; [Cited 2014 Mar 15] Available from: <http://www.socscistatistics.com/tests/chisquare/Default2.aspx>.
10. Taylor-Piliae R, Fair J, Haskell W, Varady A, Iribarren C, Hlatky M, Go A, Fortmann S. Validation of a new brief physical activity survey among men and women aged 60 to 69 years. *Am J Epidemiol.* 2006 Sept 15;164(6):598-606.

Intimate Partner Violence Screening in an Academic Family Medicine Training Centre

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ABSTRACT

Background: Intimate partner violence (IPV) is defined as physical, sexual, or emotional abuse between intimate partners. In Canada, 7% of women and 6% of men reported IPV in the last 5 years. IPV can lead to negative health outcomes and increased economic burden. Risk factors include age less than 36, low SES, mental illness, pregnancy, and substance abuse. Various IPV screening tools, including the Woman Abuse Screening Tool (WAST), are available for healthcare professionals.

Research Question: Are academic family medicine training centres adequately identifying patients at risk for intimate partner violence?

Methods/Methodology: Women and men attending an academic family medicine primary care centre for a health related visit self-completed a WAST to assess for intimate partner violence. All participants with a positive screen were counselled and a referral was left to the discretion of the treating physician and patient. A follow up chart audit was completed on all positive screened participants to assess for a previously documented history of IPV.

Results/Findings: A total of 86 WAST questionnaires were completed over a six week period, 23 were completed by men and 63 by women. Two participants screened positive for IPV and they were both women. Follow up chart audits revealed that neither of the participants had a documented history of IPV in their EMR's or paper charts.

Conclusion/Recommendations: This study was unable to adequately comment on IPV screening practices in an academic family practice due to low sample size secondary to time constraints. Recommendations for future research include further evaluating screening frequency in academic family medicine centres, and examining IPV screening in heterosexual men.

References:

1. Saltzman LE, Fanslow JL, McMahon PM, Shelley GA. Intimate partner violence surveillance: uniform definitions and recommended data elements. Version 1.0. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; 1999.
2. Coker AL, Davis KE, Arias I, Desai S, Sanderson M, Brandt HM, Smith PH. Physical and mental health effects of intimate partner violence for men and women. *Am J Prev Med*. 2002 Nov;23(4):260-8.
3. Coker AL, Smith PH, Fadden MK. Intimate partner violence and disabilities among women attending family practice clinics. *J Womens Health*. 2005 Nov;14(9):829-38.
4. Tjaden P, Thoennes N. Prevalence and consequences of male-to-female intimate partner violence as measure by the national violence against women survey. *Violence Against Women*. 2000 Feb;6(2):142-61.
5. Ellsberg M, Jansen HA, Heise L, Watts CH, Garcia-Moreno C. Intimate partner violence and women's physical and mental health in the WHO multi-country study on women's health and domestic violence: an observational study. *Lancet*. 2008 April;371(9619):1165-72.
6. Brown DS, Finkelstein EA, Mercy JA. Methods for estimating medical expenditures attributable to intimate partner violence. *J Interpers Violence*. 2008 Dec;23(12):1747-66.
7. Wisner CL, Gilmer TP, Saltzman LE, Zink TM. Intimate partner violence against women: do victims cost health plans more? *J Fam Pract*. 1999 Jun;48(6):439-43.
8. Ramsay J, Richardson J, Carter YH, Davidson LL, Feder G. Should health professionals screen women for domestic violence? Systematic review. *BMJ*. 2002;325(7359):1-13.
9. Statistics Canada. Family violence in Canada: a statistical profile. Ottawa, ON: Canada Centre for Justice Statistics; 2011 Jan. 51 p. Report No.: 85-224-X.
10. Zink T, Putnam F. Intimate partner violence research in the health care setting: what are appropriate and feasible methodological standards? *J Interpers Violence*. 2005 Apr;20(4):365-72.
11. Alpert EJ. Violence in intimate relationships and the practicing internist: new "disease" or new agenda? *Ann Intern Med*. 1995;123(10):774-81.
12. McCauley J, Kern DE, Kolodner K, Dill L, Schroeder AF, DeChant HK, Ryden J, Bass EB, Derogatis LR. The "battering syndrome": prevalence and clinical characteristics of domestic violence in primary care internal medicine practices. *Ann Intern Med*. 1995 Nov 15;123(10):737-46.
13. Walton-Moss BJ, Manganello J, Frye V, Campbell JC. Risk factors for intimate partner violence and associated injury among urban women. *J Community Health*. 2005;30(5):377-89.
14. Kyriacou DN, Anglin D, Taliaferro E, Stone S, Tubb T, Linden JA, Muelleman R, Barton E, Kraus JF. Risk factors for injury to women from domestic violence. *New Engl J Med*. 1999;341(25):1892-8.
15. Gerber MR, Ganz ML, Lichter E, Williams CM, McCloskey LA. Adverse health behaviors and the detection of partner violence by clinicians. *Arch Intern Med*. 2005 May 9;165(9):1016-21.
16. Brown JB, Lent B, Schmidt G, Sas S. Application of the woman abuse screening tool (WAST) and WAST-short in the family practice setting. *J Fam Pract*. 2000

- Oct;49(10):896-903.
17. McClosky LA, Willaims CM, Lichter E, Gerber M, Ganz ML, Sege R. Abused women disclose partner interference with health care: an unrecognized form of battering. *J Gen Intern Med.* 2007;22(8):1067-72.
 18. Eberhard-Gran M, Schei B, Eskild A. Somatic symptoms and diseases are more common in women exposed to violence. *J Gen Intern Med.* 2007;22(12):1668-73.
 19. Hegarty K, Gunn J, Chondros P, Small R. Association between depression and abuse by partners of women attending general practice: descriptive, cross sectional survey. *BMJ.* 2004;328(7440):621-4.
 20. Svavarsdottir EK, Orlygsdottir B. Intimate partner abuse factors associated with women's health: a general population study. *J Adv Nurs.* 2009 July;65(7):1452-62.
 21. Commission on Chronic Illness. Chronic illness in the United States: Volume 1. Prevention of chronic illness. Cambridge, MA: Harvard University Press; 1957. p.45.
 22. Rabin RF, Jennings JM, Campbell JC, Bair-Merritt MH. Intimate partner violence screening tools: a systematic review. *Am J Prev Med.* 2009;36(5):439-45.
 23. Wathen CN, MacMillan HL. Prevention of violence against women: recommendation statement from the Canadian Task Force on Preventive Health Care. *CMAJ.* 2003;169(6):582-4.
 24. Brown JB, Lent B, Brett PJ, Sas G, Pederson LL. Development of the Woman Abuse Screening Tool for use in family practice. *Fam Med.* 1996;28(6):422-8.
 25. Borowsky IW, Ireland M. Parental screening for intimate partner violence by pediatricians and family physicians. *Pediatrics.* 2002 Sept 1;110(3):509-16.
 26. Gerbert B, Gansky SA, Tang JW, McPhee SJ, Carlton R, Herzig K, Danley D, Caspers N. Domestic violence compared to other health risks. *Am J Prev Med.* 2002 Aug;23(2):82-90.
 27. Stayton CD, Duncan MM. Mutable influences on intimate partner abuse screening in health care settings: a synthesis of the literature. *Trauma Violence Abus.* 2005 Oct 10;6(4):271-85.
 28. Wong SL, Wester F, Mol SS, Largo-Janssen TL. Increased awareness of intimate partner abuse after training: a randomized controlled trial. *Br J Gen Pract.* 2006 April 1;56(525):249-57.
 29. Alpert EJ, Tonkin AE, Seeherman AM, Holtz HA. Family violence curricula in U.S. medical schools. *Am J Prev Med.* 1998 May;14(4):273-82.
 30. Chan E, Cavacuiti C. Gay abuse screening protocol (GASP): screening for abuse in gay male relationships. *J Homosex.* 2008;54(4):423-38.

An Investigation of Post-Call Fatigue in University of Saskatchewan Third and Fourth Year Medical Students

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ABSTRACT

Background: Most of the research as to the adverse effects of fatigue on the practice of medicine has been with resident physicians. Such research has failed to identify the consequences of fatigue due to excessive work hours on undergraduate medical students such as Junior Undergraduate Rotating Student Interns (JURSI), who often work consecutive hours in excess of resident physicians.

Research Question: What are the effects of 24 hour in-house call shifts on University of Saskatchewan JURSI medical students?

Methods/Methodology: University of Saskatchewan College of Medicine undergraduate students in their 3rd and 4th years of training were invited to participate anonymously and voluntarily in the study by e-mail sent out via the College of Medicine office. Surveys were to be filled out pertaining to how the learner felt post-call regarding 24 hour in-house call shifts that they had completed within the past month, demographics, responses to the effects of call on decision making, ability to fall asleep post call, sleep pattern, patient safety, education, as well as questions relevant to assessment on the Epworth Sleepiness Scale.

Results/Findings: A total of 27 participants (17 female, 10 male) responded to the survey, with a mean age of 25.22 years. Learners, averaged 3.2 hours of sleep per night on call; the average maximum number of hours awake on call during a 24 hour in-house call shift was 22.4 hours. Opinions were split pertaining to any difficulty in falling asleep the day after a call shift, perceived patient danger, and whether or not the learner's education was negatively affected.

Discussion: The results of this study suggest that, much like resident learners, undergraduate learners are often not getting sufficient sleep on call and are often greatly fatigued post call. Consistent with previous research involving medical residents, opinions pertaining to the benefits and risks of 24 hour in-house call varied widely, but the results show that as a group, undergraduate learners in this study are extremely fatigued post call.

Conclusion: Reducing the number of sequential working hours or potentially implementing a system that would allow the learner to choose between 24 hour in-house call and shorter more frequent call shifts could provide numerous benefits, including a decrease in medical errors, an increase in patient safety, and potentially lead to an increase in quality of medical education.

References:

1. West CP, Tan AD, Habermann TM, Sloan JA, Shanafelt TD. Association of resident fatigue and distress with perceived medical errors. *JAMA*. 2009;302(12):1294-1300.
2. Coverdill JE, Bittner JG, Park MA, Pipkin WL, Mellinger JD. Fatigue as impairment or educational necessity? Insight into surgical culture. *Acad Med*. 2011;86(10):S69-S71.
3. Clancy C. More work is needed to protect medical residents from fatigue and potential errors, IOM report finds. *Am J Med Qual*. 2009;24(3):259-61.
4. Landrigan CP, Czeisler CA, Barger LK, Ayas NT, Rothschild JM, Lockley S W. Effective implementation of work-hour limits and systemic improvements. *Comm Qual Patient Saf*. 2007;33(11):19-29.
5. DeMaria EJ, McBride CL, Broderick TJ, Kaplan BJ. Night call does not impair learning of laparoscopic skills. *Surg Innov*. 2005;12(2):145-9.
6. Feddock CA, Hoellein AR, Wilson JF, Caudill TS, Griffith CH. Do pressure and fatigue influence resident job performance? *Med Teach*. 2007;29(5):495-7.
7. Kahol K, Leyba M, Deka M, Deka V, Mayes S, Smith M, Ferrara JJ, Panchanathan S. Effect of fatigue on psychomotor and cognitive skills. *Amer J Surg*. 2008;195(2):195-204.
8. Cull WL, Mulvey HJ, Jewett EA, Zalneraitis EL, Allen CE, Pan RJ. Pediatric residency duty hours before and after limitations. *Pediatrics*. 2006;118(6):e1805-11.
9. Rose M, Manser T, Catesby Ware J. Effects of call on sleep and mood in internal medicine residents. *Behav Sleep Med*. 2008;6(2):75-88.
10. Fisman DN, Harris AD, Rubin M, Sorock GS, Mittleman MA. Fatigue increases the risk of injury from sharp devices in medical trainees: results from a case crossover study. *Infect Control Hosp Epidemiol*. 2006;28(1):11-17.
11. Gerdes JG, Kahol K, Smith M, Leyba MJ, Ferrara JJ. Jack Barney award: the effect of fatigue on cognitive and psychomotor skills of trauma residents and attending surgeons. *Am J Surg*. 2008;196(6):813-20.
12. Mountain SA, Quon BS, Dodek P, Sharpe R, Ayas NT. The impact of housestaff fatigue on occupational and patient safety. *Lung*. 2007;185(4):203-9.
13. Lockley SW, Landrigan CP, Barger LK, Czeisler CA; Harvard Work Hours Health and Safety Group. When policy meets physiology: the challenge of reducing resident work hours. *Clin Orthop Relat Res*. 2006;449:116-27.
14. Barger LK, Cade BE, Ayas NT, Cronin JW, Rosner B, Speizer FE, Czeisler CA. Extended work shifts and the risk of motor vehicle crashes among interns. *New Engl J Med*. 2005;352(2):125-34.
15. Miulli DE, Valcore JC. Methods and implications of limiting resident duty hours. *J Am Osteopath Assoc*. 2010 Jul;110(7):385-95.
16. Liu CC, Wissow L. How post-call resident doctors perform, feel and are perceived in out-patient clinics. *Med Educ*. 2011;45(7):669-77.
17. Kiernan M, Civetta J, Bartus C, Walsh S. 24 Hours on-call and acute fatigue no longer worsen resident mood under the 80-hour work week regulations. *Curr Surg*. 2006 May-Jun;63(3):237-41.
18. Papp KK, Stoller EP, Sage P, Aikens JE, Owens J, Avidan A, Phillips B, Rosen R, Strohl KP. The effects of sleep loss and fatigue on resident-physicians: a multi-institutional, mixed-method study. *Acad Med*. 2004;79(5):394-406.