Poster Presenter: Amir Rizkala

Contact Email: aaron.r.jacobson@healthpartners.com

Abstract Title: Trimalleolar Ankle Fractures; A Comparison of Surgical Techniques for Posterior Malleolus Fixation

Authors: Mueller B, Jacobson AR, Rizkala AR, Nelson ER, Cole PA

Collaborators: Department of Orthopaedic Surgery

Abstract:

Introduction: Operative management of displaced trimalleolar ankle fractures is indicated; however, controversy exists on the optimal strategy for the posterior malleolar (PM) fragment. Two common techniques for PM fixation include posterolateral buttress plating (PL) and fixation with anterior to posterior percutaneous lag screws (AP). To date no study has compared patient and surgical outcomes. Methods: Between October 2002 and January 2010, 45 patients sustained trimalleolar ankle fractures and underwent operative fixation of all three fragments. Twenty-five patients underwent PL plate fixation of the PM and 20 patients were treated with AP lag screws. These patients were asked to participate in an IRB approved study, in which they were recalled for functional and physical assessment. Results: Overall, study consent was successful for 29/45 (64%) patients at a mean duration of 45 months (range=15-99). The follow-up in the posterolateral (PL) group was 68% and AP lag screws was 60% (p=0.76). While the mean duration of follow-up was 54 months in the PL group and 32 months in the AP group (p=0.08). The PL cohort had significantly better scores for the SMFA bother index (p=0.05). There was also a trend toward improved outcomes for the PL cohort in the SMFA functional index (p=0.11), as well as, the mobility sub score (p=0.11). Conclusion: Both PL and AP fixation appears to be effective constructs for bony union; however, the PL technique resulted in a significantly better SMFA bother index score and a trend towards better SMFA functional index score and mobility sub score.
Abstract:

Study Objectives: Accidental hypothermia causes significant morbidity and mortality in cold climates. There is some controversy about how to best treat hypothermia mostly focused on the method of rewarming and the rate of rewarming. We sought to describe the experience at Regions Hospital where a unique option exists to immerse patients in a large bath of warm water. Methods: Research assistants reviewed the medical records of all patients age =18 seen at Regions Hospital from 2003-2012. Patient demographics, vital signs, method and rate of rewarming and other clinical parameters were gathered. Descriptive statistics were used. Results: 123 patients were included (81 male, 42 female). Median age was 51. 104 were outdoor exposures including 9 water immersions and 4 drownings while 14 were indoor exposures. Alcohol or drugs were known to be present in 74 patients. Median initial temperature was 32.8 (min=24.7, max=36.6). Most patients received external rewarming including warm lamps, warm blankets, warm IV fluids and warm air circulation (Bair Hugger). Internal catheter (Coolgard) was utilized in 12 patients and 17 patients were immersed in the hot water bath (Hubbard Tank). The rate of rewarming could be ascertained for 65 patients - median 1.47 °C/hour (min 0.38, max 5.81). The external rewarming rate was 1.2 °C/hour, the Coolgard Catheter was 1.90 °C/hour and the Hubbard Tank was 1.89 °C/hour (P<0.05). 26 patients died. Conclusion: More aggressive methods of rewarming patients with hypothermia led to statistically quicker rates of rewarming. The clinical significance of this is unclear.
Poster Presenter: Sandi Wewerka

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Abstract Title: On the Spot: Implementation of a Trauma Team Activation Timeout in a Level I Trauma Center

Authors: McGonigal MD, Forrest N, Guiton JB, Wewerka SS

Collaborators: Trauma Department, Emergency Department

Abstract:

Introduction/Purpose: Effective provider communication during care transitions is a key component of patient care. Handoffs between paramedics and emergency department staff during trauma cases can be particularly chaotic. This study examined provider perceptions of a new communication tool used during transfer of trauma patient care at an urban Level I Trauma Center. Methods: The local RTAC led the implementation of a new communication process called a Trauma Team Activation Timeout (TTA Timeout). Prior to implementation of this project, over 800 EMS providers completed training on the protocol. Paramedics were trained to deliver their report in the MIST format (mechanism, injuries, symptoms, treatments). Immediately following transfer of care, the lead paramedic and the trauma team leader completed a 7-item survey assessing their experience. Responses to survey questions were compared between EMS providers and trauma team leaders using rank sum correlation. Results: Data were collected from 51 paramedics (17 EMS agencies) and 45 team leaders between 3/01/13-4/30/13. Paramedics believed the benefit of the TTA timeout was higher to the EMS provider (100% v. 77%, p<0.001), patient (100% v. 75%, p<0.001), and team leader (100% v. 80%, p<0.001) than the trauma team leader's evaluation. Paramedics perceived the TTA Timeout to result in higher effectiveness in the transfer of the patient than trauma team leaders (Spearman's rho = -0.2; p = 0.04). Conclusion: Paramedics report greater benefit of the TTA Timeout process than the in-hospital trauma team leaders. In-hospital personnel may require more education about the importance of the EMS report with the critically-injured patient.
Poster Presenter: Chad House

Contact Email: chad.m.house@healthpartners.com

Abstract Title: Normalization of Left Ventricular Ejection Fraction is Associated with the Absence of Appropriate Anti-Tachycardia Therapy in Patients Receiving Implantable Defibrillators for the Primary Prevention of Sudden Death

Authors: House CM; Nguyen D, Nelson WB, Zhu DWX

Collaborators: Cardiology

Funding Agency: Cardiology Department

Abstract:

Background: Patients with severely depressed left ventricular ejection fractions (LVEF) receive implantable cardiac defibrillators (ICD) for the primary prevention of sudden death. Limited data are available on 1) the incidence of late recovery of LVEF in these patients and 2) the incidence of appropriate anti-tachycardia therapy including pacing and shock in patients with normalized LVEF. Methods: We retrospectively identified 154 consecutive patients with an ICD for primary prevention who had LVEF available at initial implantation and prior to generator replacement. The incidence of appropriate anti-tachycardia therapy after generator replacement was assessed. Results: Of the 154 patients (65 ± 14 years, females 25%), 19 (12%) had improvement in their LVEF from 26 ± 9% to = 55%. None of these individuals experienced any appropriate anti-tachycardia therapy during a follow-up period of 28 ± 18 months. Among the remaining 135 patients, with depressed LVEF (25 ± 7%), 30 individuals (22%) had at least one appropriate anti-tachycardia therapy during a follow-up period of 25 ± 18 months. The difference in appropriate anti-tachycardia therapy between the two groups was highly significant (p = 0.02). Compared to patients whose LVEF remained depressed, patients with normalized LVEF trended towards being female (37% vs. 24%, p =0.26), with a lower prevalence of ischemic cardiomyopathy (53% vs. 73%, p = 0.1). Conclusion: 12% of the patients with depressed LVEF, who received ICD initially for primary prevention of sudden death, had normalized LVEF at the time of generator replacement. None of these patients received appropriate anti-tachycardia therapy during a follow-up period of 28 ± 18 months. The practice of routine replacement of generator in these patients may need to be re-assessed on an individual basis. Longer follow-up in a larger population is needed to confirm these findings.
Poster Presenter: Joseph Walter

Contact Email: joseph.w.walter@healthpartners.com

Abstract Title: Morbidity and Mortality in Necrotizing Soft Tissue Infections: Hyperbaric Oxygen Versus Standard Therapy in Two Urban Hospitals

Authors: Westgard BC, Walter JW

Collaborators: Chris Anderson, Gabriela Vazquez-Benitez, Andy Nelson (the Institute)

Abstract:

Necrotizing soft tissue infections (NSTIs) encompass three primary diagnoses: Necrotizing Fasciitis, Fournier's Gangrene and Gas Gangrene. These soft tissue infections have previously been considered separately, but due to the similarity of underlying pathogens, treatment, and associated illness severity, they have more recently been studied together. NSTIs are rare and life-threatening, with mortality as high as 73%, but with an average reported mortality of 25-39%. Given the rapidity of tissue destruction as well as the frequent sepsis and multisystem organ failure, NSTIs morbidity and mortality is very time sensitive to interventions. Standard therapy has consisted of surgery, antibiotics, and intensive peri-operative care. However, over the last 30 years there has been increasing use of adjunctive hyperbaric oxygen therapy (HBOT) to improve mortality and morbidity outcomes in NSTI. We are proposing a two-center, retrospective, case-control study of NSTI patients presenting to Regions Hospital and Hennepin County Medical Center over the last 10 years. Both Regions and HCMC are level one trauma centers with burn units, and HCMC has the capacity to treat patients with HBOT. We are comparing patients with NSTI who receive standard therapy and HBOT to those who receive standard therapy alone to determine (1) if those patients have a lower odds of inpatient mortality and (2) if those patients differ from patients who receive standard therapy alone in (a) the number of debridements received, (b) the length of time spent in the ICU, and (c) their overall length of inpatient stay.
**Poster Presenter:** Amanda Cagan

**Contact Email:** amanda.b.cagan@healthpartners.com

**Abstract Title:** Lavender Essential Oil Improved Sleep in Residents of a Memory Care Assisted Living Facility

**Authors:** Hanson LR, Cagan AB, Rinehimer KM, Flottemesch TJ, Clairmont JM, Sackett-Lundeen LL, Haus E

**Collaborators:** HealthPartners Center for Memory and Aging, Saint Paul, MN, HealthPartners Institute for Education and Research, Minneapolis, MN, English Rose Suites, Wayzata, MN

**Funding Agency:** Pathway for Elders

**Abstract:**

**Background:** People with dementia often have problems with sleep including difficulties falling and staying asleep. Aromatherapy is a form of complementary medicine that uses fragrant oils extracted and distilled from plant material, known as essential oils, for altering mood or behavioral health. There is limited evidence that the use of lavender oil can improve sleep and behavioral symptoms in people with memory loss. The purpose of this study was to determine if lavender can be an effective tool to manage sleep disruption in patients residing in a memory care assisted living facility.

**Methods:** Twenty-two residents from memory care units in the Deer Crest assisted living facility (Red Wing, MN) were enrolled in this blinded, randomized-controlled cross-over trial of lavender oil versus placebo oil.

**Results:** The average participant was 85.7 yr, 29% male, with a Montreal Cognitive Assessment score of 7.0. As expected, there was considerable variation in sleeping patterns across subjects. The total minutes of sleep per night with placebo oil was 408 minutes (sd=86). This significantly increased (p=.01) by 41 minutes (95% CI: 44.7, 38.35) during the week they received lavender. There was not a significant effect of time or the order in which oils were applied.

**Conclusions:** The use of lavender shows promise as a non-pharmacologic alternative for management of sleep disturbance in people with memory loss.
**Poster Presenter:** RJ Frascone

**Contact Email:** ralph.j.frascone@healthpartners.com

**Abstract Title:** Intraosseous Pressure Tracings Mimic Arterial Pressure Tracings in Timing and Contour

**Authors:** Frascone RJ, Salzman JG, Bliss P, Adams AB, Wewerka SS, Dries DJ

**Collaborators:** Animal Care Facility

**Funding Agency:** Vidacare, Inc.

**Abstract:**

**Study Objectives:** Rapid access to the vascular system for fluid resuscitation and medication administration via an intraosseous (IO) line has become a common practice in emergency medicine. However, if vascular dynamics can be determined from the intramedullary space, additional monitoring information may be available. To investigate this possibility, we measured intraosseous (IO) pressures in a porcine model. **Methods:** Preparation involved surgical dissections for placement of a femoral arterial line and central venous pressure (CVP) catheter via jugular vein access. IO access was obtained by standard technique (EZ-IO®, Vidacare Corporation, San Antonio, TX) in the femur, humerus and tibia. Vascular pressure transducers were simultaneously calibrated and signals were transmitted to a data acquisition system (Dataq Instruments, Inc., Akron, OH). All pressures were centrally displayed for review, normalized to their maximum height, overlaid in Excel and analyzed using correlation coefficients for comparison to arterial and central venous pressures. **Results:** For the 6 animals studied, mean arterial pressure was 78.5 ± 6.5 mmHg and mean CVP was 6.6 ± 2.0 mmHg. IO pressures did not differ significantly between sites (humerus = 17.9 ± 3.5; femur = 17.1 ± 3.3; tibia = 14.8 ± 5.5 mmHg) and were 25% of arterial pressure. Correlation analysis (R²) between arterial pressure and humerus, femoral, and tibial pressures were .59, .74 and .82, respectively. A corresponding comparison found R² to be .07, .005 and .005 between central venous pressure and IO pressures. The timing and contour of IO pressures mimicked arterial pressure tracings (Figure 1). A sampling of IO blood gases revealed oxygenation levels of venous blood (PIO2 between 40-45 mmHg). IO pressure excursions were moderately dampened if the IO catheter was embedded in the bone cortex. **Conclusions:** This is the first investigation to report consistent data capture of intraosseous pressure tracings for potential use in monitoring hemodynamics. Each IO site evaluated displayed pressure excursions that mimicked arterial pressure tracings at 25% of the arterial pressure magnitude. Intraosseous blood gases reflect venous blood oxygenation levels.
Poster Presenter: Bjorn C. Westgard

Contact Email: bjorn.c.westgard@healthpartners.com

Abstract Title: Inter-Hospital Transfer Vectors and the De-Facto Regionalization of Specialty Care

Authors: Westgard B, Van Riper D, Borah J

Collaborators: Regions Hospital Emergency Medicine, HealthPartners Institute for Research and Education, Minnesota Population Center and Spatial U at the University of Minnesota

Abstract:

This pilot project aims to use EMS transport vectors and hospital specialty data to descriptively map the de-facto "regionalization" of specialty care in Minnesota, similar to our regionalized trauma system. Regionalization is the tiered organization of a system for the delivery of health care within a region to avoid costly duplication of services and to ensure the availability of essential services. We have begun by looking at those services other than trauma care that have been proposed for "regionalization" in the specialty literature or by the federal government. These include STEMI care, cath labs, neurologic care, neurosurgical care, pediatric care, PICU/NICU care, and adult critical care. We have mapped the static but historical component of the provision of specialty care in relation to population density using publicly-available, non-patient data from the US Census, the Minnesota Hospital Association, and the American Hospital Association. We have also applied for access to MNSTAR state EMS transfer data in order to map inter-relations between nodes in our de-facto regionalized system. To our knowledge no prior research has developed such a comprehensive map to inform policy and healthcare development either at a government level or between systems. Our aim is to provide a starting point for future policy and inter-system discussions about planned "regionalization," which will likely grow louder with the rise of accountable care organizations, health system consolidation, and other aspects of health reform associated with the Affordable Care Act.
Poster Presenter: James Fricton

Contact Email: frict001@umn.edu

Abstract Title: Integrating Medical and Dental Data to Improve Quality and Safety of Dental Care


Collaborators: HealthPartners Dental Group

Funding Agency: Agency of Healthcare Research and Quality

Abstract:

Clinical decision support (CDS) software in an integrated electronic health record can inform dentists when changes in clinical protocol are needed for patients with serious chronic medical conditions. To change clinical practice, active strategies for alerting clinicians have generally been found to be more successful than passive alerts but also create more resistance and alert fatigue. Thus, the primary goal of this study is to evaluate two different types of alert mechanisms for CDS and determine if an active or passive CDS improves quality and safety of care versus a usual-care control. The study design is a three-arm, 2-year prospective group-randomized clinical trial. The three arms include a passive alert CDS, an active alert CDS, and usual care with access to general guidelines through a Web link in the electronic dental record (EDR). The passive CDS utilizes dentist and staff reminders in the clinic schedule to encourage but not require reference to personalized guidelines in a linked web service. The active CDS utilizes a more obtrusive pop-up alert in the electronic dental record that requires the dentist to reference the personalized guidelines. Outcomes include how often the dentist reviews guidelines, whether they change their clinical protocols, and whether this reduces complications in patients. Patients’ electronic medical and dental records will be linked through the Minnesota’s Health Information Exchange Organization. This abstract will present the development of the clinical guidelines and how medical and dental data integrated into CDS tool. Preliminary results from focus groups show strong interest among dental providers to use the tool.
Poster Presenter: Ryan Bourdon

Contact Email: michael.d.zwank@healthpartners.com

Abstract Title: Increased Body Mass Index Among Women Correlates with Increased Rates of Urine Sample Contamination

Authors: Bourdon RB, Adibhatla RX, Zwank MD

Collaborators: Wewerka SS, Critical Care Research Center

Funding Agency: HealthPartners Institute for Education and Research

Abstract:

Study Objectives: The diagnosis of urinary tract infection (UTI) depends on an accurate urinalysis (UA). An accurate UA requires a clean catch urine sample without contamination. Obtaining this can be a challenging task, particularly for obese women. We sought to determine the rates of urine contamination using various body mass index cutoffs. Methods: We retrospectively analyzed a seven month convenience sample of urine culture results (Jan-Jul 2012). Inclusion criteria were: diagnosis of UTI, female gender, clean catch sample, urine culture obtained and body mass index (BMI) information available. Patients were excluded if they were known to be pregnant. Two researchers independently evaluated each culture to determine if the culture was consistent with the diagnosis of UTI and to determine if the culture showed evidence of contamination. Results: A total of 7,134 urine cultures met the inclusion criteria and were analyzed. 26.4% of cultures were consistent with the diagnosis of UTI and 50.1% showed contamination. 30.4% of the positive cultures had contamination. Rates of positive culture were stable regardless of BMI. A BMI greater than 35 was associated with more frequent contamination (Odds Ratio 1.41) and higher rates of UA markers used for diagnosing UTI including nitrites, white blood cells and bacteria when compared with patients with a BMI less than 35. Conclusion: There are significantly higher rates of urine culture contamination and UA markers for UTI among obese women. Clinicians should consider this when assessing for or diagnosing UTI as overdiagnosis can lead to overtreatment including inappropriate use of antibiotics.
Poster Presenters: Kyle Abben & Shelby Hyllengren

Contact Email: kyle.w.abben@healthpartners.com

Abstract Title: In-Office Distal Symes Lesser Toe Amputation - A Safe, Reliable, and Cost-Effective Treatment for Diabetes-Related Tip of Toe Ulcers Complicated by Osteomyelitis

Authors: Boffeli TJ; Abben KW; Hyllengren SB

Abstract:

Introduction: Diabetes-related tip of lesser toe ulcers are typically associated with underlying hammertoe contracture and peripheral neuropathy. The combination of digital deformity and neuropathy commonly results in non-healing, deep sores that frequently become complicated by osteomyelitis. This condition can rapidly progress to limb threatening infection requiring costly treatment and potential limb loss. We report on a well-known, but poorly reported, technique for surgical management of non-healing tip of lesser toe ulcers.

Methods: After approval by the IRB, a retrospective review was performed on patients that underwent office-based distal Symes toe amputation for a non-healing tip of lesser toe ulcer over the past 6 years (2007-2012). A variety of clinical, laboratory, and radiographic data were collected. Results: Thirty four patients were identified for inclusion in the study. The average age was 64.35 years. All patients had ulcers at the time of surgery and no patient had re-ulceration of the involved digit postoperatively. 30/34 patients had hammertoe deformity preop. 22/34 (65%) had positive probe-to-bone and 19 of these had culture positive osteomyelitis. No patients had an MRI preoperatively. 79% of patients had positive bone cultures, 62% had positive pathology demonstrating osteomyelitis, and 100% had clean margins. Methicillin-resistant Staphylococcus epidermidis (MRSE) was the most common pathogen (32%). One patient required revision surgery with a repeat distal Symes amputation due to dorsal flap necrosis, but they went on to heal the revision surgery without incident. No patient required additional amputation related to the operative digit. The average follow-up was 29.53 months. Conclusion: In-office distal Symes lesser toe amputation is a safe, reliable, and cost-effective treatment for non-healing tip of lesser toe ulcers complicated by osteomyelitis. The procedure allows bone biopsy diagnosis, removes the non-healing ulcer, confirms clear margin regarding osteomyelitis, and addresses the underlying toe deformity to minimize the chance of re-ulceration.
Abstract:

This study examined restoration rates to determine the impact of an incentive system implemented at a large, multi-clinic dental group targeting remineralization in low risk patients. **Methods:** All newly diagnosed early stage caries and co-occurring findings for 35 providers from the years 2008 and 2009 were identified. Findings were classified into three treatment categories based upon treatment codes occurring within six months of the initial finding date: Fluoride, Remineralization, and Restoration. There were a large number of findings without identifiable treatments, but rates of unidentified treatment did not differ by study year (p=.35) and were dropped. Generalized linear models adjusting for clinic and patient factors compared restoration rates and provider-specific change from 2008 to 2009 coinciding with implementation of the incentive system. **Results:** 14,367 and 16,752 early stage caries were identified in 2008 and 2009, respectively. Overall, use of restorations dropped 15.8% (74.3%-2008, 62.6%-2009; p<.01). There was considerable variation across providers. 29 providers reduced their use of restorations with the largest reduction being 56.7% (86.1%-2008, 35.9%-2009; p<.01). The remaining six providers increased their use of restorations with the largest increase being 4.5% (63.8%-2008, 67.7%-2009; p=.11). Across all 35 providers, 2008 restorations rates were negatively correlated with the change in restoration rate (r=-.19) indicating providers with the highest baseline use of restorations tended to have the largest change in their use of restorations. **Conclusions:** Incentive programs promoting non-invasive treatment of early caries appear effective at changing care in a desired direction. Design of these programs must account for provider-specific baseline patterns of care and potential for individual improvement.
Poster Presenter: Jessie Nelson

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Abstract Title: Trauma Education: The Next Generation (of Continuing Education)

Authors: Nelson JN, McGonigal MD, Altamirano HM, Taft SA, Ankel FA, Robb KA, Murphy AL, Hoagberg SM, McCauley PL, Dries DJ

Collaborators: Regions Emergency Medicine Department; Regions Trauma Program, HealthPartners Institute for Education and Research, Regions EMS; Hudson Hospital; Regions Hospital

Abstract:

Introduction: In response to the changing face of health professional education, we updated the format of the Emergency Medicine & Trauma Update: Beyond the Golden Hour and created Trauma Education: The Next Generation. Methods: Prior conference evaluations and local market analysis informed the planning committee's decision to radically change this long-standing continuing education conference. Changes in format (TED talk-style lectures with interspersed HP-produced videos), length of conference (from 8 hours to 4 hours), delivery (live, with remote viewing sites and ability to have viewers watch live from anywhere with internet connection) and fee structure (nominal charge for CME/CEU, otherwise free with ability to donate money) were undertaken. We also engaged learners via social media and encouraged interaction before, during, and after the conference via Facebook and Twitter. Results: Pending at the time of this abstract, conference occurs 9/5/13.
**Poster Presenter:** Juliana Tillema

**Contact Email:** juliana.o.tillema@healthpartners.com

**Abstract Title:** How to Engage Patients and Clinicians as Research Partners, and Have Fun, Too

**Authors:** Tillema JO, Solberg LI, Norton CK, Norris M, Shapland C, Fontaine PL, Crain AL, Whitebird RR, Flottemesch TJ, Maes-Voreis M, Butler JC, Asche SE, Hedblom BD, Hanson AM, Vinz C

**Collaborators:** Minnesota Departments of Health and Human Services; Institute for Clinical Services Improvement; HealthPartners Medical Group; Minnesota Community Measurement; Members of the PIONEER Study Patient and Clinician Advisory Boards.

**Funding Agency:** Patient Centered Outcomes Research Institute (PCORI) and Agency for Healthcare Research & Quality (AHRQ)

**Abstract:**

**Introduction:** Health research funders are increasingly requiring engagement of patient and clinician stakeholders in research operations; however little is known about how best to do that. We have engaged patients and clinicians as research partners in two studies - TransforMN and PIONEER. **Methods:** We relied on extended networks of relationships with individuals in collaborator organizations (e.g., MDH, ICSI, HPMG) to help identify patients and clinicians willing to serve as advisers and co-investigators. In some cases, these individuals' were first recruited as study subjects and participated in research interviews, which provided them insight into the study goals and content. In other cases, they were recruited directly by the PI because of their knowledge and interest in the research topics. In all cases, direct, personal contact was necessary to successfully develop and maintain relationships. **Results:** Nearly all TransforMN Study clinician and patient advisors agreed that participation was a good use of their time; however fewer would be willing to serve on such an Advisory Board again. Achieving sustained, meaningful engagement without overburdening advisers is challenging. Payment for time is very important to patient advisers and somewhat important to clinic advisers. A good communications plan and multiple communications modes (phone, email, in-person, individual and group communications) are key. Dedicated study resources are required to manage these relationships. **Discussion/Conclusions:** Successfully engaging patients and clinicians as research partners requires a deliberate approach and plan, a budget to support their contributions, and time and resources to develop relationships.
Poster Presenter: Marcella de la Torre

Contact Email: Marcella.x.Delatorre@HealthPartners.com

Abstract Title: Faculty Development - Quality Improvement Training

Authors: delaTorre MX, Zinkel AR, Oyewo AO, Kim KS, Mahr RG, Curran DM, O'Neal JT, Collins GB

Collaborators: HealthPartners Institute for Education and Research, Emergency Medicine Department, Occupational Medicine, Internal Medicine, Surgery

Abstract:

In 2008 the GME office, along with program directors and residents, created curricula to address the Accreditation Council for Graduate Medical Education (ACGME) core competencies of Systems Based Practice and Practice Based Learning and Improvement. Materials such as presentations, videos and reading materials were created to deliver quality improvement education. In addition, residents worked on QI projects in their respective residency programs. To compliment this education, the Institute created its own and first Institute for Healthcare Improvement (IHI) Open School Chapter in Minnesota. Residents gained access to online tools and coaching in a very flexible environment and had access to the chapter faculty and leader. Residents reported to have learned from the QI curricula and tools, but felt they needed more mentors and coaches on-site, thus creating a need to train faculty.
Poster Presenter: Linda Sackett-Lundeen

Contact Email: Linda.L.SackettLundeen@HealthPartners.com

Abstract Title: Expression of Melatonin Receptors in Triple Negative Breast Cancer (TNBC) in Different Age Groups of African American and Caucasian Women and in Relation to Survival


Collaborators: HealthPartners Institute for Education and Research/Department of Pathology, Regions Hospital/Department of Laboratory Medicine and Pathology, University of Minnesota, St. Paul, MN; Department Pathology, Emory University School of Medicine, Emory University and Winship Cancer Institute, Atlanta, GA; HealthPartners Institute for Education and Research/Department of Pathology, Regions Hospital, St. Paul, MN; Biostatistics and Bioinformatics Department, Winship Cancer Institute, Atlanta, GA; Department of Surgery, Emory University School of Medicine, Atlanta, GA; Division of Pulmonary and Critical Care Medicine, Harvard Pulmonary and Critical Care Medicine, Boston, MA; Department of Pathology, Emory University School of Medicine, Atlanta, GA

Funding Agency: Emory University School of Medicine, Atlanta, GA; and Supported by the HealthPartners Institute for Education and Research and the Department of Pathology, Regions Hospital, St. Paul, MN

Abstract:

Melatonin counteracts tumor occurrence and tumor cell progression in vivo and in vitro in animal and human breast cancer cell cultures. The action occurs predominantly through its Melatonin MT1 Receptor. This study examined the presence or absence of the MT1 Melatonin Receptors in 167 Triple Negative [TNBC (ER, PR, and Her-2/neu phenotype negative)] Human Breast Carcinomas. The MT1 receptor immunostain was evaluated semiquantitatively as staining intensity (0, 1, 2, 3), percentage of stained cells and the weighted index (WI - staining intensity times percentage of stained cells). A score of WI < 60 was regarded as “negative”. There was a statistically significant difference in incidence of MT1 positivity and staining intensity between carcinomas in African American (AA) and Caucasian (C) women. The AA showed a higher incidence of MT1 negative tumors (48.8% in AA compared to 11.8% in C) and a lower average WI. In both groups of women the younger age group (<50 yrs of age at diagnosis) had a lower average WI (in <50 yr olds 69.1 in AA, 138.5 in C; in >50 yr olds of 75.3 in AA, 170.6 in C). In multivariate survival analysis, MT1 negative TNBC in all cases regardless of race showed a significantly higher hazard ratio for disease progression, shorter progression free survival, disease related death, and overall survival. These results suggest that melatonin or a melatonin receptor agonist may be useful biologic additions in the treatment of some forms of TNBC, especially in AA women who show a more aggressive disease course.
**Poster Presenter:** Jared M. Fine

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**Abstract Title:** Detection of Deferoxamine using Liquid Chromatography/ Mass Spectrometry with Electrospray Ionization

**Authors:** Fine JM, Svitak AL, Frey WH, Hanson LH

**Funding Agency:** Center for Memory and Aging

**Abstract:**

Intranasally administered deferoxamine (DFO) is being developed by our laboratory for the treatment of several neurodegenerative diseases. A big weakness as we try to obtain FDA-approval for clinical trials is the lack of pharmacokinetic data due to the absence of a method to quantify DFO. In this study, we will first develop a method to quantify DFO using liquid chromatography/mass spectrometry (LC/MS), which can detect compounds with very high sensitivity and specificity, and then use it to answer questions about drug distribution in a rat model. Thus far, manual injections of DFO into the LCQ1 ion trap MS with electrospray ionization (Thermo Scientific, West Palm Beach, FL), have shown that even without optimization, the instrument can detect DFO at incredibly low concentrations (0.5 pg). Further, DFO yields a specific ionization pattern that can allow it to be properly identified in complex matrices like homogenized animal tissue. Similar analysis combining LC/MS using a QTRAP 5500 (AB Sciex, Framingham, MA), a more advanced model that uses multiple reaction monitoring, has also shown a retention time of 3.3 min, a molecular ion at 561.3 m/z, and specific fragments at 201, 242, 319, and 361 m/z. Given the success thus far with the initial experiments, it seems likely that LC/MS will be a great method to quantify DFO and allow us to answer basic pharmacokinetic questions in rat tissue, furthering our cause to get this drug to market for treating patients with neurodegenerative disease.
Abstract:
Dentists tend to develop practice patterns based on the training they received in dental school. While their training was current at their graduation, over time, more recent research holds the potential to improve dental care. The aim of this study is to provide simulated complex dental cases to educate dentists with the latest evidence based approaches to practice. The Dental SimCare interactive simulation tool was designed in a highly stable environment, using technology stack, J2EE, oracle. In order to enhance realism and engage the dentist, game theory was used throughout. A simulated electronic dental record was constructed to allow the dentist to review dental case data and also to provide treatment plan based on patient's dental issues. A feedback engine platform compares the dentist's treatment plan for each case to the related Dental SimCare evidence-based recommendations. The Case Author module allows project staff to enter specifics of each case such as learning objectives, demographics, x-rays, tooth chart and medications. The case author also determines which elements of the dentist's answers (treatment plan) will be evaluated and given feedback. For user convenience the Dental SimCare system can be run on any browser and is well-supported for tablet use. And yes there will be an app for this.
**Poster Presenter:** Josh Salzman

**Contact Email:** joshua.g.salzman@healthpartners.com

**Abstract Title:** Decreasing Intraosseous Pressure and Increasing Respiratory Variability Track Fluid Volume Reduction in a Porcine Hypovolemia Model.

**Authors:** Frascone RJ, Salzman JG, Bliss P, Adams AB, Wewerka SS, Dries DJ

**Collaborators:** Animal Care Facility

**Funding Agency:** Vidacare, Inc.

**Abstract:**

**Study Objectives:** Central venous pressure (CVP) provides an invasive and imprecise but accepted method for estimating fluid volume status. Intraosseous (IO) pressure monitoring may provide an alternative to CVP for estimating changes in fluid volume status. To investigate this possibility, we measured intraosseous pressure changes in a porcine model during a hemorrhagic shock protocol. **Methods:** Our preparation included placement of femoral artery and central venous pressure lines. IO access was obtained by standard technique (EZ-IO, Vidacare Corporation, San Antonio, TX) to monitor pressures in the femur, humerus and tibia. All pressure signals were transmitted to a data acquisition system (Dataq Instruments, Inc., Akron, OH). To create vascular fluid volume changes, 17% of each pig's estimated total blood volume was bled every 10 minutes until physiologic signs of hemorrhagic shock were recorded (mean arterial pressure <50 mmHg and tachycardia >150/min). To estimate fluid volume status, we tracked changes in absolute arterial, venous and IO pressures. As increasing respiratory variability is an accepted indicator of developing hypovolemia, we evaluated pressure variability due to respiration in all pressures after each 10 minute bleed period using the following formula: systolic pressure/pulse pressure. **Results:** A hypotensive state was achieved in all six animals after bleeding each animal to 66.1±11.7% (1706.57±210 ml) of their estimated baseline fluid volume. Arterial, CVP and all IO mean pressures decreased at a constant rate during the bleeding sessions. The proportional decrease pre/post bleed (mmHg) was not statistically different among all pressures: arterial 78.5 34.0 (-57%), humerus 17.9  6.5 (-64%), femur 17.1  9.8 (-43%), tibia 14.8  8.4 (-43%), CVP 6.6 -0.9. The respiratory variability ratio increased in arterial, CVP and IO pressures to a similar extent and rate from 0.2 to 0.8 as the hypovolemic state developed. **Conclusions:** IO pressure decreased consistently at each IO site during a controlled hemorrhagic shock protocol, indicating IO pressures can be tracked as indicators of change in fluid volume status. Increasing variability in IO pressure during the respiratory cycle was also associated with decreasing vascular fluid volume. IO pressure appears to be accessible and equivalent to CVP as an indicator of fluid volume status.
Abstract:

Introduction  Recent studies have shown that prophylactic use of intra-wound vancomycin in posterior instrumented spine surgery substantially decreases the incidence of wound infections requiring repeat surgery; significant cost savings are thought to be associated with the use of vancomycin in this setting. The aim of this project is to elucidate cost savings associated with the use of intra-wound vancomycin in posterior spinal surgeries using a budget-impact model. **Methods:** Data from a matched cohort of 300 patients, 150 with prophylactic vancomycin and 150 without, who underwent posterior spinal surgery (instrumented and non-instrumented) over 2 years were analyzed. We then retrospectively reviewed the cost of return surgery for treatment of surgical site infection. The total reimbursement received by the healthcare facility was used to model the costs associated with repeat surgery, and this cost was compared with the cost of a single local application of vancomycin costing about $12. **Results:** Of the 150 patients in the treatment group, the return-to-surgery rate for surgical site infection was zero. In the group without vancomycin, 7 patients required a total of 13 procedures. The mean cost per episode of surgery based on the reimbursement received by the healthcare facility was $41,251 (range, $14,459-$114,763). A total of $536,267 was spent on 4% of the 150 patient cohort without vancomycin, whereas a total of $1,800 ($12 x 150 patients) was spent on the cohort treated with vancomycin. **Conclusion:** This study shows a significant reduction in surgical site infections requiring a return to surgery, with large cost savings also associated with use of intra-wound vancomycin powder. In our study population, the cost savings totaled more than half a million dollars.
Poster Presenter: Aaron Burnett

Contact Email: Aaron.m.burnett@healthpartners.com

Abstract Title: Comparison of Success Rates between Two Video Laryngoscope Systems Used in a Prehospital Clinical Trial

Authors: Burnett AM, Wewerka SS, Kealy SE, Evens ZN, Griffith KR, Salzman JG, Frascone RJ

Collaborators: Regions Hospital Emergency Medical Services, Regions Hospital Critical Care Research Center, Saint Paul Fire Department, Oakdale Fire Department, Lakeview Ambulance, White Bear Lake Fire Department

Funding Agency: Metropolitan Emergency Services Board

Abstract:

Objectives: The primary aims of this study were to compare paramedic success rates and complications of two different video laryngoscopes in a prehospital clinical study. Methods: This study was a multi-agency, prospective, non-randomized, cross over trial involving paramedics from four different EMS agencies. Six Karl Storz CMAC video laryngoscopes and six King Vision (KV) video laryngoscopes were divided between agencies and placed into service for 6 months. Inclusion criteria were patients = 18 years old who required advanced airway management. After 6 months the devices were crossed over. First attempt success, overall success, and success by attempt, were compared between treatment groups using exact logistic regression. Results: Over 12 months, 107 patients (66 CMAC, 41 KV) were enrolled. The CMAC had a significantly higher likelihood of first attempt success (OR = 2.59; 95% CI 1.14-5.85), overall success (OR = 3.54; 95% CI 1.51-8.28), and success by attempt (OR = 3.11; 95% CI 1.59-6.1) compared to KV. Providers reverted to direct laryngoscopy in 80% (27/34) of the video laryngoscope failure cases, with the remaining patients having their airways successfully managed with a supraglottic airway in 3 cases and bag-valve mask in 4 cases. The provider-reported complications were similar and none were statistically different between treatment groups. Complication rates were not statistically different between devices. Conclusion: The CMAC had a higher likelihood of successful intubation compared to the King VISION. Complication rates were not statistically different between groups. Video laryngoscope placement success rates were not higher than our historical direct laryngoscopy controls.
Abstract Title: Combined Interview Day --University of Minnesota Medical Students Interview for the Hennepin County Medical Center (HCMC) and Regions Hospital Emergency Medicine Residency Programs in One Day

Authors: Hegarty CB, Barrett LJ, Gray RO, Hirschboeck MP, Hart DE, Anderson PK

Collaborators: Regions Hospital Emergency Medicine, Hennepin County Medical Center Emergency Medicine, University of Minnesota Department of Emergency Medicine

Abstract:

Introduction/Background: Medical Students applying to Emergency Medicine (EM) Residency Programs have a challenging interview season, juggling clinical rotations, interview days, and interview travel time. Historically students from the University of Minnesota (UMN) Medical School that applied to the HCMC and Regions EM Residency programs had to spend a full day interviewing at each program.

Educational Objectives: In order to save the students one full interview day, two local residencies combined interview days. Design: The UMN Medical School is located between the two residency sites and is the only medical school in the Twin Cities. Medical students applying to both HCMC and Regions EM residencies, that had rotated at both sites for EM student clerkships, were invited to participate in a combined interview day conducted at UMN. Impact/Effectiveness: Feedback from faculty and medical students is positive. 47/48 applicants surveyed recommended we continue our collaborative interviews for future UMN students. Qualitative comments included “I was so grateful to be able to get two interviews done in one afternoon! I didn't feel that I was missing out on anything and found the information provided during the interviews supplemented my existing knowledge of the program well. It was also wonderful to see the cooperation between the residency programs.” In conclusion, we have successfully combined interview days from two local EM residency programs into one day, thereby freeing up one extra day during interview season for busy medical students. This may serve as a model for other cities with multiple EM residencies.
Objective: Regular physical activity plays an important role in the amelioration of several mental health disorders; however its relationship with burnout has not yet been clarified. The objective was to determine the association between achievement of national physical activity guidelines and burnout in internal medicine resident physicians. Methods: A cross-sectional, web-based survey of internal medicine resident physicians at the University of Minnesota and Hennepin County Medical Center was conducted from September to October 2012. The survey measures included the Maslach Burnout Inventory as well as the short form of the International Physical Activity Questionnaire. Results: Of 149 eligible residents, 76 (51.0%) completed surveys. Burnout prevalence was 53.9%. Prevalence of failure to achieve physical activity guidelines was 40.8%, with 80% of residents reporting that their level of physical activity has decreased since beginning medical training. Residents who failed to meet physical activity guidelines were more likely to be burned out than their fellow residents (67.7% vs. 44.4%, p=0.045). Burned out residents had a higher BMI (p=0.040), and reported more hours worked per week (p=0.043). Residents who were unable to meet physical activity guidelines reported more hours worked per week (p=0.025). Conclusion: Despite potentially serious consequences of burnout, understanding of its relationship with physical activity in resident physicians is lacking. Though limitations of this cross-sectional study are recognized, among internal medicine resident physicians, achievement of national physical activity guidelines appears to be inversely associated with burnout. Given the high national prevalence of burnout and inactivity, further investigation into their relationship appears warranted.
Poster Presenter: Jane Duncan

Contact Email: jane.e.duncan@healthpartners.com

Abstract Title: The Midwest Research Network - Partnerships Focused on Improving the Health Outcomes, Experience and Affordability of Health Care in the Region

Authors: Duncan JE

Collaborators: HealthPartners Institute, Park Nicollet Institute, Essentia Institute of Rural Health, Medica Research Institute, ICSI, Stratis Health, University of Minnesota CTSI

Abstract:

Mission: To provide a space for the health care community to collaborate in the development, implementation, and application of research that improves the health outcomes, experience, and affordability of health care for all of the people in our region.

2011-13 Projects

- CMS Innovation Challenge: Higher Quality Care and Lower Costs for CMS Beneficiaries with High CV Risk (Patrick O'Connor, MD MPH MS, HealthPartners Institute for Education and Research)
  - Partners: Park Nicollet Clinics, CentraCare Clinics, Essentia Health, Minnesota Community Measurement, Medica Research Institute
- AHRQ: Empowering Patients through Public Reporting (Thom Flottemesch, PhD, HealthPartners Institute for Education & Research & Jim Chase, MHA, Minnesota Community Measurement)
  - Partners: Medica Research Institute, Mayo Health Services Research, Penn State
- AHRQ: Developing Infrastructure to Investigate Diversity in Comparative Effectiveness (Caroline Carlin, PhD, Medica Research Institute)
  - Partners: Essentia Institute of Rural Health, Park Nicollet Institute, HealthPartners Institute for Education & Research, HealthEast, Allina, Fairview, University of Minnesota School of Public Health, ICSI
- PCORI: Reducing Hospital Readmissions for Patients with Mental Illness (Leif Solberg, MD, HealthPartners Institute)
  - Partners: ICSI, Allina, Park Nicollet, CentraCare, Medica, UCare, MN Dept. of Human Services, various advisory stakeholders

Special Interest Groups:

- Informatics Group: Investigating Data Sharing Protocols
- Mental Health Interest Group
- Regional Clinical Decision Support Group
- Aging Interest Group

Active Participants

University of MN - Family Medicine; Psychiatry; School of Public Health; Center on Aging; Children's Hospitals and Clinics; Fairview Health Services; Allina Health; Mayo Clinic HealthEast; Hennepin County Medical Center; Park Nicollet Institute; Center for Chronic Disease Outcomes Research (the VA); UCare; MDH - Health Information Technology; Healthcare Homes; Infectious Disease; Quality Measurement; Health Promotion & Chronic Disease; MN Department of Human Services - Mental Health; Aging & Disabilities; MN Board on Aging; Community Health Information Collaborative (Health Information Exchange); Essentia Institute of Rural Health; Medica Research Institute; Institute for Clinical Systems Improvement (ICSI); Minnesota Community Measurement (MNCM); Stratis Health; HealthPartners Institute for Education and Research
Abstract Title: Association Between Healthy Food Availability and Emergency Department Presentations for Diet-Related Illness

Authors: Dahl E, Westgard B, Anderson C, Thomas A, Van Riper D, Borah J

Collaborators: Regions Hospital Emergency Medicine, HealthPartners Institute for Research and Education, Spatial U at the University of Minnesota

Abstract:

Public policy and health research increasingly recognize the impact of diet, nutrition, and place upon the health of individuals and communities. Glaring examples have been found in rural and urban areas where it is difficult to affordably obtain foods needed to maintain a healthy diet. Life in these “food deserts” has been correlated with poorer nutrition and a higher prevalence of hunger. Researchers have also suggested that exposure to food deserts contributes to the development and exacerbation of chronic problems like diabetes, hypertension, dyslipidemia, and vascular disease. However, few studies have explicitly examined this connection. Understanding the link between food availability and diet-related illness may help explain certain health disparities and point to contributing modifiable environmental factors. Our study aims to examine if there are correlations between emergency department (ED) presentations for diet-related complaints and living in a “food desert”. We plan to use geographic information systems (GIS) to analyze food outlet data from St. Paul-Ramsey County Public Health and the Minnesota Department of Health in order to define local “food desert” areas by US Census tract block groups. We will then analyze data from Regions Hospital ED visits using GIS to similarly map patient's presentations for diet-related complaints (malnutrition, diabetes, and hypertension). Finally, we will use spatial regression analysis to look for associations between these two geographic models of ED presentations for diet-related illness and “food desert” areas of low healthy food availability as mapped by block group, while controlling for multiple covariates derived from US Census 2010 data.
Access to primary health care in the U.S. is an ongoing problem for poorly insured patients, leading many to seek care in discontinuous ways through the Emergency Department (ED). While most ED visits are appropriate, many may be "prevented" by timely and potentially less costly ambulatory care. Several definitions of potentially avoidable ED visits have therefore been developed as measures of primary care access, quality, and cost. Particularly for publicly-insured patients, many healthcare organizations use individual case management, triggered by “preventable” ED visits, to attempt better patient outcomes and lower costs. But this actuarial approach often ignores the contextual determinants of health. We therefore propose using geographic information systems to augment individual risk assessment with spatial epidemiology to identify the characteristics of patient and neighborhood “hotspots” of risk for potentially avoidable ED utilization. Our study will determine: (1) what patient characteristics, including neighborhood, are associated with risk of potentially avoidable ED visits; (2) among patients with potentially avoidable ED visits, what patient characteristics, including neighborhood, are associated with the risk of higher total cost of care for those visits; (3) what neighborhood characteristics are associated with risk of having potentially avoidable ED visits, and (4) given 1-3, what are the particular patient demographics, neighborhoods, and conditions that, on qualitative assessment, appear most likely to benefit from patient-centered educational, primary care, or alternative healthcare resource interventions to reduce potentially avoidable ED visits and their costs? Partnering with Regions Hospital administration, we will use the information generated to identify patient and neighborhood center interventions to achieve the triple aim of better quality care and lower costs through improvements public health.
Effectively recruiting a representative patient sample is a critical step in health services and clinical research. In a common recruitment protocol, patients are first identified administratively as potential subjects, mail contact is made (giving patients the option to proactively opt-in or opt-out by calling the Data Collection Center) and additional telephone screening is conducted. This process not only is resource intensive, but can introduce bias due to telephone noncontact in an era of increased caller ID and call screening. A seemingly attractive alternative is the use of the internet for study screening and recruitment. However, this method is hamstrung by the lack of access to patient email addresses. In an attempt to overcome this hurdle and explore the utility of the internet for study recruitment, the BRINK (BRain IN Kidney Disease) Memory Study embedded a weblink in the initial postal mail contact to potential participants. This enabled us to observe the preference for web recruitment compared to inbound and outbound telephone contact. We also compared the demographic composition of those selecting each of the three modes. In total, we recruited 153 patients. Of these, 23 (15%) completed screening at the study website, 107 (70%) via inbound calls and 23 (15%) via outbound calls. While the average age of the recruited sample did not differ across modes, the gender distribution of those recruited through internet screening more closely matched the underlying population distribution. Given that internet recruitment requires significantly less resources, and given its positive impact on sample representativeness, this practice holds promise for future studies.
**Poster Presenter:** Deepika Appana

**Contact Email:** Deepika.X.Appana@HealthPartners.com

**Abstract Title:** Application Development Team

**Authors:** Appana D, Pasumarthi P

**Collaborators:** Olga Godlevsky, Gopi Kunisetty, Sam OBlenes, Lucas Ovans, Prasad Pasumarthi, Vijay Thirumalai

**Abstract:**

The RIIS Application Team has extensive expertise in designing and developing various web based and client server applications. Our experience includes building simulations, modeling disease states, natural language processing, custom survey platforms, decision support systems that are integrated into the EMRs etc. We have a record of successfully delivering numerous customer-facing websites with functionality ranging from simple recruitment and participation to complex gaming/simulations. We are a group of individuals with a strong background in design, system architecture, data modeling, various flavors of UI (user interfaces), latest web technologies. With a motto of passion for excellence in everything we do, the application team aims to support the Institute with cutting edge technologies to enhance the quality of research.
Abstract:

**Problem Statement:** Diabetes prevalence has increased significantly. Optimal glycemic control is found in only 35% of diabetes patients (NHANES 1999-2000). Diabetes prevalence continues to increase suggesting additional methods are needed for screening patients at risk for the disease as well as those who are undiagnosed or whose disease is poorly managed. **Purpose:** The purpose of this study was to assess the feasibility of blood glucose screening in dental practices in the National Dental Practice-Based Research Network (NationalDentalPBRN) and was comprised of community dental practices across 5 regions: Alabama/Mississippi; Florida/Georgia; Minnesota; Permanente Dental Associates in cooperation with Kaiser Permanente NW Research Foundation; and Scandinavia (Denmark, Norway, Sweden). **Methods:** Dental practitioners and/or staff were trained in how to use a handheld glucometer (FreeStyle Freedom Lite, Abbott Diabetes Care). Consecutive patients ≥19 years of age with one or more risk factor for diabetes were enrolled until 15 qualified and consented in each practice. Barriers and benefits to glucose testing in dental practice were reported using patient and dentist/staff questionnaires. **Results:** Dental practitioners and staff (n=67) in community-based dental practice settings (n=28) enrolled patients (n=498) into the study according to National Dental PBRN developed protocol. Most dentists considered glucose testing necessary (93%), agreed that testing was beneficial (85%), and agreed that testing may help identify patients at risk for periodontal disease (75%). Among dentist identified barriers to use, 22% perceived testing as time-consuming (58% disagreed); 5% expressed cost would be a barrier (51% disagreed) and 5% thought that testing will open practices to liability (72% disagreed). Among patient-respondents, most (83%) thought glucose testing in dental practice was a good idea (2% disagreed). Also most patients (85%) reported that testing was easy (2% disagreed) and 62% said the test made them more likely to recommend other patients to the practice because glucose testing was conducted. **Conclusion:** Glucose testing was generally well-received by both patients and dental practitioners and their staff. Results should dispel beliefs that glucose testing is time consuming, cost-prohibitive, and poorly accepted by dental patients. Funding for this project was provided by NIDCR: DE-16746, DE-16747, U19-DE022516
Abstract:

Background: CV Wizard provides clinical decision support to reduce cardiovascular (CV) risk. We seek to determine realistic expectations for frequency of CV Wizard use and to identify patient attributes associated with use. Methods: EPIC data was used to calculate use frequency. Random chart audits were conducted of 40 HealthPartners encounters with high CV risk patients. Patient attributes (age, gender, smoking status) and appropriateness of CV risk discussion were assessed. Results: Out of 12,274 eligible visits (age 18-75 with a BP entered) in June 2013, CV Wizard was recommended at 2156 (17%) due to high reversible CV risk or suboptimal diabetes or cardiovascular goal measures. CV Wizard was printed in 44% of these high risk situations. Of patients with CV wizard used, 15/20 (75%) were men and 13/20 (65%) were smokers. Of high risk patients without CV Wizard use, 8/20 (40%) were men and 6/20 (30%) were smokers. Documentation of smoking counseling was found in 32% of smokers and did not increase with CV Wizard use. A discussion about CV risk reduction was considered potentially appropriate at 34/40 encounters (85%), and inappropriate at 6/40 encounters (15%) due to more serious acute medical problems. Conclusion: The study goal of 80% CV Wizard use is a reasonable. Data suggests a gender disparity (p=.03), and additional analysis is warranted to evaluate the possibility of gender bias with regard to using CV Wizard. CV Wizard is used more often in smokers (p=.03) and future analysis will determine if rates of smoking cessation improve.
**Abstract:** Accurate measurement of blood pressure (BP) is fundamental to monitoring and diagnosing many health conditions. Methods for measuring BP vary. Last year, HealthPartners Medical Group (HPMG) chose to implement an automatic oscillometric method (Omron device) across care delivery in place of the previously existing manual sphygmomanometer method. **Aims:** To compare accuracy of BP measures in HPMG clinics at two time points: prior to implementation of Omron devices across care delivery and post-implementation. **Methods:** We collected paired BP readings from patients presenting to three HPMG clinics during each time point. For each patient, one BP was taken by a nurse at the clinic visit (manual BP pre-Omron, Omron BP post-Omron) and the other was taken by a researcher (Omron BP both time points). Mean BPs were calculated for each time point and mean of within-person differences was calculated to compare methods at each time point. **Results:** BPs were collected from 118 patients pre-Omron and 159 patients post-Omron. Average pre-Omron Clinic BP was 120/73 mmHg and average pre-Omron Research BP was 127/75 mmHg. Mean pre-Omron within-person difference was 6/2 mmHg. Average post-Omron Clinic BP was 125/75 mmHg, and average post-Omron Research BP was 120/71 mmHg. Mean post-Omron within-person difference was -5/-3 mmHg. **Conclusions:** We observed differences between methods at each time point. Direction of findings is unexpected, but plausible. Strong terminal digit preference in manual BPs suggests systematic measurement error in pre-Omron period, and supports evidence that the Omron device is accurate despite observed increase in mean clinic blood pressures.
Poster Presenter: Teri DeFor

Contact Email: Terese.A.DeFor@HealthPartners.com

Abstract Title: Research Informatics: Bringing Value to Your Research

Authors: DeFor TA, Adibhatla RX, Amundson JH, Aumer SM, Becker MT, Butani AL, Hanson AM, Hedblom BD, Kane SM, Molitor BA, Olsen AY, Trower NK

Abstract:

The RIIS Research Informatics Team partners with researchers to explore and provide information to answer their research questions. Research Programmer Analysts assist with proposal development and use a variety of tools and technologies to extract and combine data from different sources to create a comprehensive record for research. Analysts are an integral part of project teams throughout the project life cycle providing actionable information, educating team members on data availability and interpretation, and assisting in the paper publication process. They take active roles in health services and clinical care studies researching a variety of topics including but not limited to cancer, vaccine and drug safety and efficacy, chronic disease, dental, health care utilization, pharmacoepidemiology, maternal-child health, obesity, disease prevention, and healthy living. The Research Informatics Team has extensive expertise in SAS, SQL query, tracking database development, data integration, project and data management, multi-site collaboration, benchmarking, reporting, statistical analyses, and consultation. Analysts are knowledgeable on many different data sources including health claims, benefit, electronic medical record, electronic dental record, tumor registry, chronic disease registries, birth and death registries, health risk assessment, and microsegmentation. Much of this data is brought together into a Research Data Warehouse (RDW) and Virtual Data Warehouse (VDW) for efficient access to data pertinent to Institute research. Some of the tools analysts use include: SAS, Qlikview, ESRI ArcGIS, REDCap, and distributed query tools. A live demonstration of the HMORNnet query tool will be given allowing conference attendees to submit their own queries.
Abstract:

Background: Pertussis (whooping cough) is a nationally-notifiable disease. In 2012, Minnesota reported an incidence of pertussis higher than the national incidence of 13.4/100,000 persons. The CDC recommends a single dose of Tetanus-diphtheria-acellular pertussis (Tdap) vaccine to all healthcare workers who have not received Tdap previously. Tdap protects against pertussis and reduces the transmission of the disease to others. Objectives: To describe (1) the rates of Tdap vaccination; comparing rates by self-report of vaccination to administrative records of vaccination; (2) the beliefs and attitudes about pertussis concerning the vaccine; (3) the associations between the likelihood of vaccination and the workers beliefs and attitudes about pertussis and the vaccine. Methods: The data reported in the study are derived from a self-administered, internet-based survey to nurses employed at Regions Hospital, St. Paul, Minnesota. Results: There was a response rate of 22%. Of the 68% who self-reported receiving the vaccine, administrative records confirmed only 36% received the vaccine. There was a statistically significant relationship between age and vaccination status with vaccination rates being highest in the younger age groups. A poor agreement of 8% was seen for nurses self-report of receiving Tdap and administrative record of vaccination status. Among those who self-reported not receiving the vaccine, 66.2% expressed interest in receiving the vaccine, 22.5% were neutral towards Tdap vaccination. Conclusion: Based on the available administrative records, the survey seems to demonstrate an important difference in self-described use of the Tdap and administrative records of Tdap vaccination, with nurses over-reporting their use of the vaccine.
Abstract Title: Comparative Effectiveness of Bariatric Surgery vs. Nonsurgical Treatment of Type 2 Diabetes among Severely Obese Adults

Authors: Becker MT, Sherwood NE, O'Connor PJ, Arterburn D, Bogart A, Coleman KJ, Haneuse S, Selby JV, Sidney S, Theis MK, Campos GM, McCulloch D

Collaborators: HealthPartners Institute for Education and Research, Minneapolis, Minnesota; Group Health Research Institute, Seattle, Washington; Kaiser Permanente Northern California, Oakland, California; Kaiser Permanente Southern California, Pasadena, California; University of Wisconsin School of Medicine and Public Health, Madison, Wisconsin; Harvard School of Public Health, Boston, Massachusetts

Funding Agency: KPNC/AHRQ

Abstract:

Although all weight-loss approaches may improve insulin sensitivity in type 2 diabetes, bariatric surgery is believed to be the only reliable means of achieving diabetes remission. We conducted a retrospective cohort study to compare rates of diabetes remission, relapse and all-cause mortality among severely obese individuals with diabetes who underwent bariatric surgery vs. nonsurgically treated individuals. Severely obese adults with uncontrolled or medication-controlled diabetes who underwent bariatric surgery or received usual medical care from 2005 to 2008 in three health care delivery systems in the United States were eligible. Diabetes status was identified using pharmacy, laboratory, and diagnosis information from electronic medical records. A propensity approach and exclusion criteria identified 1395 adults with diabetes who had bariatric surgery and 62,322 who did not. Most procedures were Roux-en-Y gastric bypass (72.0% laparoscopic; 8.2% open); 4.4% were gastric banding, 2.4% sleeve gastrectomy, and 13.2% were other procedures. At two years, bariatric subjects experienced significantly higher diabetes remission rates [73.7% (95% CI: 70.6, 76.5)] compared to nonsurgical subjects [6.9% (95% CI: 6.9, 7.1)]. Age, site, duration of diabetes, hemoglobin A1c level, and intensity of diabetes medication treatment were significantly associated with remission. Bariatric subjects also experienced lower relapse rates than nonsurgical subjects (adjusted HR: 0.19; 95% CI: 0.15–0.23) with no higher risk of death (adjusted HR: 0.54; 95% CI: 0.22–1.30). We conclude that bariatric surgery can effectively induce remission of diabetes among most severely obese adults, and this treatment approach appears to be superior to nonsurgical treatment in inducing diabetes remission.
Individual genetic differences influence drug efficacy and adverse events. Pain management involves empiric medication adjustments based on observed clinical outcomes. The CYP2D6 enzyme system metabolizes one-fourth of all prescription drugs, including many used for chronic pain (e.g., opiates, selective serotonin reuptake inhibitors, tricyclic antidepressants). Approximately 7-14% of people are slow metabolizers, 7% ultra-rapid metabolizers, and 35% carriers of a non-functional CYP2D6 allele, elevating the risk of adverse events when individuals receive multiple drugs metabolized by this system. Translating pharmacogenomic testing into clinical practice requires identification of genetic loci and evaluation of a predictive test in clinical situations. We conducted a pilot cross-sectional study on 78 patients with chronic orofacial pain to determine the prevalence of genetic variation of inherited polymorphisms in CYP2D6. The study sample was part of NIDCR's TMJ Registry and Repository. Patients were evaluated and outcomes analyzed for adverse events and symptom severity. Genotyping was conducted on blood samples using the Sequenom iPLEX® ADME PGx panel of SNPs to identify CYP2D6 variations. The prevalence of CYP2D6 polymorphisms in the study population was similar to the general population. The majority of pain patients (54%) were normal and extensive metabolizers or intermediate metabolizers (22%), 15% rapid metabolizers, and 7% poor metabolizers. Poor metabolizers tended towards high scores on the adverse events checklist and fast metabolizers had high average pain levels. These preliminary results suggest patient care may be improved by genotyping to increase proper drug selection, dose optimization and minimization of adverse drug reactions to improve patient outcomes and safety.
Poster Presenter: Heidi Ekstrom

Contact Email: amanda.r.fraser@healthpartners.com

Abstract Title: Personalized Physician Learning Intervention to Improve Hypertension Control: Randomized Trial Comparing Two Methods of Physician Profiling


Collaborators: HealthPartners Institute for Education and Research, Minneapolis, Minnesota; Kaiser Permanente Institute for Health and Research, Denver, Colorado; University of Minnesota, Carlson School of Management, Minneapolis, MN

Funding Agency: NIH/DHHS

Abstract:

Purpose: Assess the impact of personalized physician learning (PPL) interventions using simulated learning cases to improve control of hypertension and dyslipidemias in primary care settings. Methods: 132 primary care physicians (PCP), with their 6,307 patients with uncontrolled HT and their 20,030 patients with uncontrolled dyslipidemia were cluster randomized to receive: (a) no intervention, (b) PPL-EMR intervention (PCP assigned cases based on patterns of care in the EMR), or (c) PPL-ASSESS intervention (PCP assigned cases based on 4 assessment cases). General and generalized linear mixed models were used to account for clustering and model differences in outcomes across study arms. Results: Among those with uncontrolled HT at baseline, 49.1%, 46.6% and 47.3% (p=0.43) achieved BP targets at follow-up, and among those with uncontrolled dyslipidemia at baseline, 37.5%, 37.3% and 38.1% (p=0.72) achieved LDL targets at follow-up in PPL-EMR, PPL-ASSESS, and the control group, respectively. Although both SBP (p<.001) and lipid (p<.001) values significantly improved during the study period, the group x time interaction term showed no significant differential change in SBP values (p=0.51) or lipid values (p=0.61) across the 3 study arms. No difference in intervention effect was noted when comparing PPL-EMR and the PPL-ASSESS interventions (p=0.47). Conclusion: Two PPL interventions tested in this study did not lead to improved control of hypertension or dyslipidemia in primary care clinics during a mean 14 month follow-up period. This null result may have been due in part to substantial improvement in BP and lipid control in study site patients during the study period.
**Poster Presenter:** Donald Nixdorf  

**Contact Email:** Donald.R.Nixdorf@HealthPartners.com  

**Abstract Title:** Initial Orthograde Root Canal Therapy Reduces the Patient’s Pain: A NDPBRN Study  

**Authors:** Nixdorf DR, Law AS, Rabinowitz I, Reams GJ, Smith JA, Torres AV, Harris DR for the NDBPRN Collaborative Group  

**Collaborators:** Division of TMD and Orofacial Pain, School of Dentistry, University of Minnesota, Minneapolis, MN; Department of Neurology, Medical School, University of Minnesota, Minneapolis, MN; HealthPartners Institute for Education and Research, Bloomington, MN; Private Practice, The Dental Specialists, Lake Elmo, MN; Division of Endodontics, School of Dentistry, University of Minnesota, Minneapolis, MN; Private Practice, Park Dental, Saint Louis Park, MN; PDA Permanente Dental Associates, Tigard, OR; Private Practice, Birmingham, AL; Private Practice, Smile Crafters, Clermont, FL; Westat, Rockville, MD; includes practitioner-investigators, faculty investigators, and staff investigators who contributed to this activity. A complete list is at http://nationaldentalpbrn.org/  

**Funding Agency:** K12-RR023247, U01-DE016747 and U19-DE022516 through NIDCR  

**Abstract:**  

**Introduction:** Although often used to effectively treat dentoalveolar pathosis, there is insufficient information about whether initial orthograde root canal therapy (RCT) adequately reduces multiple dimensions of pain. A prospective observational study assessing pain intensity, duration, and its interference with activities among RCT patients was conducted. **Method:** Sixty-two practitioners (46 general dentists, 16 endodontists) in the National Dental Practice-Based Research Network enrolled patients requiring RCT. Patient reported data were collected before, immediately following, and one week after treatment. Pain intensity and related interference were measured using the Graded Chronic Pain Scale. **Results:** Over a 6-month period 708 patients were enrolled. Prior to treatment patients reported a mean (±standard deviation) worst pain intensity of 5.3±3.8 (0-10 scale), 50% had “severe” pain (=7), and mean days in pain and days pain interfered with activities were 3.6±2.7 and 0.5±1.2, respectively. Following treatment, patients reported a mean worst pain intensity of 3.0±3.2, 19% had “severe” pain, and mean days in pain and days with pain interference were 2.1±2.4 and 0.4±1.1, respectively. All changes were statistically significant (p<0.0001). **Conclusions:** There was a significant reduction in pain intensity, duration, and pain-related interference following treatment, but 19% of patients still reported “severe” pain during the post-operative week.
**Poster Presenter:** Karen Margolis  
**Contact Email:** anna.r.bergdall@healthpartners.com  
**Abstract Title:** Improved Self-Efficacy and Satisfaction with Care among Hyperlink Intervention Patients  
**Authors:** Margolis KM, Asche SE, Bergdall AB, Dehmer SP, Maciosek MV, O'Connor PJ, Pritchard RA, Sekenski JL, Sperl-Hillen JM, Trower NK  
**Collaborators:** HealthPartners Pharmacy Department, AMC Health, Inc.  
**Funding Agency:** NHLBI

**Abstract:**

**Background:** Practical, effective, and sustainable models are needed to improve BP management. **Aims:** Hyperlink is a clinic-randomized trial testing an intervention combining home BP telemonitoring with pharmacist case management in patients with uncontrolled hypertension. **Methods:** We enrolled 450 patients with uncontrolled BP from 16 primary care clinics, 8 randomized to usual care (UC, 222 patients) and 8 to telemonitoring intervention (TI, 228 patients). TI patients received home telemonitors and pharmacists met with them by phone, adjusting drug therapy based on home BP data. Patients were followed through 18 months to observe durability of effects on BP control. Satisfaction with care was measured using six questions rating patients' health care and providers on a 5 point scale (1 low, 5 high). Five self-efficacy questions rated patients' communication with providers and skills like taking medicine and monitoring their own BP. **Results:** Enrollees were 45% female, 82% white, and mean age was 61 years. Mean baseline BP was 148/85 mm Hg in both groups. BP results reported elsewhere. Mean overall rating of satisfaction with care at baseline was 4.3 among both groups and did not change. Several other satisfaction and self-efficacy measures showed positive, statistically significant changes only in TI patients during the first 6 months. Self-efficacy for measuring blood pressure in one’s home was the only item showing positive change in TI patients at both 6 and 12 months. **Conclusions:** Home telemonitoring with pharmacist case management as a combined intervention improved some aspects of patient satisfaction with care and self-efficacy.
Abstract:

**Background:** Documenting the gap between what is occurring in clinical practice and what published research suggests would be most appropriate is an important step toward improving care. This study quantified concordance between clinical practice and published evidence across preventive, diagnostic and treatment procedures among a sample of dentists in the National Dental Practice-Based Research Network.

**Methods:** Network dentists completed one questionnaire about their demographic characteristics and another about how they treat patients across 12 scenarios/clinical practice behaviors. Responses to each clinical practice were coded as consistent (i.e., ‘1’) or inconsistent (i.e., ‘0’) with published evidence, summed, and divided by the number of all non-missing to create an overall ‘concordance’ score, calculated as the mean percent of responses that were consistent with published evidence. **Results:** Analyses were limited to participants in the United States (N = 591). Mean concordance at the practitioner level was 62% (SD = 18); procedure-specific concordance ranged from 8-100%. Affiliation with a large group practice, being a female practitioner, and receiving a dental degree before 1990 were independently associated with high concordance (=75%). **Conclusions**. Dentists reported a medium-range concordance between practice and evidence. **Clinical Implications**: Efforts to bring research findings into routine practice are needed.
Poster Presenter: Teri DeFor

Contact Email: terese.a.defor@healthpartners.com

Abstract Title: A Multisite Study of Long-Term Remission and Relapse of Type 2 Diabetes Mellitus Following Gastric Bypass


Collaborators: HealthPartners Institute for Education and Research, Minneapolis, Minnesota; Group Health Research Institute, Seattle, Washington; Kaiser Permanente Northern California, Oakland, California; Kaiser Permanente Southern California, Pasadena, California; University of Wisconsin, Madison, Wisconsin; Harvard School of Public Health, Boston, Massachusetts; Patient Centered Outcomes Research Institute, Washington, D.C.

Funding Agency: National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS

Abstract:

**Background:** Gastric bypass has profound effects on glycemic control in adults with type 2 diabetes mellitus. This study examined the long-term rates and clinical predictors of diabetes remission and relapse among patients undergoing gastric bypass. **Methods:** A retrospective cohort study of adults with uncontrolled or medication-controlled type 2 diabetes who underwent gastric bypass from 1995 to 2008 in three integrated health care delivery systems in the USA. Remission and relapse events were defined by diabetes medication use and clinical laboratory measures of glycemic control. We identified 4,434 adults with uncontrolled or medication-controlled type 2 diabetes who had gastric bypass. **Results:** Overall, 68.2 % (95 % confidence interval [CI], 66 and 70 %) experienced an initial complete diabetes remission within 5 years after surgery. Among these, 35.1 % (95 % CI, 32 and 38 %) redeveloped diabetes within 5 years. The median duration of remission was 8.3 years. Significant predictors of complete remission and relapse were poor preoperative glycemic control, insulin use, and longer diabetes duration. Weight trajectories after surgery were significantly different for never remitters, relapsers, and durable remitters (p = 0.03). **Conclusions:** Gastric bypass surgery is associated with durable remission of type 2 diabetes in many but not all severely obese diabetic adults, and about one third experience a relapse within 5 years of initial remission. More research is needed to understand the mechanisms of diabetes relapse, the optimal timing of surgery in effecting a durable remission, and the relationship between remission duration and incident microvascular and macrovascular events.
**Poster Presenter:** Elisabeth Seburg

**Contact Email:** Nancy.E.Sherwood@HealthPartners.com

**Abstract Title:** Healthy Homes/Healthy Kids 5-10: Results from Baseline Analyses


**Collaborators:** HealthPartners Medical Group-PediatricsSchool of Social Work, University of WashingtonDivision of Epidemiology and Community Health, School of Public Health, University of Minnesota

**Funding Agency:** National Institute of Diabetes and Digestive and Kidney Diseases

**Abstract:**

Developing effective strategies to prevent childhood obesity is a public healthy priority. Opportunities for early intervention are important, and pediatric primary care is an appealing setting in which to base these efforts, given primary care providers’ connection to children and families early in life. However, there is limited evidence to support the effectiveness of primary-care based prevention approaches; relatively few obesity prevention programs have been set in primary care and few have been rigorously evaluated. Healthy Homes/Healthy Kids (HHHK 5-10) is a randomized controlled trial developed to evaluate a primary-care based obesity prevention intervention. Four hundred and twenty one children (ages 5-10 years, mean=6.6) with BMI percentiles ranging from 70 to 95 (mean=84.8) and their parents were recruited from HealthPartners pediatric clinics. The intervention is ongoing, but we are using baseline data to investigate many questions of interest, and we are developing methods to assess intervention quality and delivery. Results from analyses on the following topics will be presented: 1) Parental styles and domain-specific practices as predictors of physical activity and sedentary behavior; 2) The relationship between parental concerns about child weight and family weight-related behaviors and characteristics; 3) Household variables and family behavior patterns associated with children meeting recommended guidelines for physical activity, fruit/vegetable intake, TV viewing, and avoidance of sugar-sweetened beverage; and 4) The fidelity and style of the HHHK intervention delivery. Results from these analyses will inform our understanding of factors that influence obesity, and this knowledge will be used to improve future interventions.
Abstract:

Objectives: To introduce and promote Regions Hospital Medical Library services and the National Library of Medicine online resources with an exhibit at local continuing medical education conferences.

Methods: Setting: Multiple conferences hosted by HealthPartners' Institute for Medical Education (IME) in the Minneapolis-St. Paul metropolitan area. The medical library exhibit was part of the commercial exhibit space. Participants: HealthPartners plus outstate physicians, residents, physician assistants, advanced nurse practitioners, nurses, and other health care professionals. Each conference had 70-150 attendees.

Program: Regions Hospital Medical Library received a technology award from the National Network of Libraries of Medicine, Greater Midwest Region, to purchase a laptop and monitor to demonstrate and display resources. Other components of the exhibit included National Library of Medicine (NLM) brochures, bookmarks, pens, NIH MedlinePlus magazine, and subscription resources available to employees through the library's intranet site. Attendees had access to exhibit area for approximately for two twenty-minute breaks each day. A total of twelve conferences were attended.

Results: Typical interactions with the conference attendees included questions about using library services, searching PubMed and subscription databases, accessing online journals, or finding and using MedlinePlus and other NLM and NIH consumer health websites. Attendees with no medical library access at their institutions were appreciative of the materials from the NLM. Conclusions: The librarians felt the project was worthwhile. It exposed many new people to library services and NLM resources. Current patrons were pleased to see the librarian's role expanded outside the library and into the medical education community.
Abstract:

Objective: Comparative effectiveness research methods are used to compare the effect of four distinct glucose-control strategies on subsequent myocardial infarction and nephropathy in type 2 diabetes. 

Research Design and Methods: A total of 58,000 adults with type 2 diabetes and A1C <7% (53 mmol/mol) while taking two or more oral agents or basal insulin had subsequent A1C =7% (53 mmol/mol) to 8.5% (69 mmol/mol). Follow-up started on date of first A1C =7% and ended on date of a specific clinical event, death, disenrollment, or study end. Glucose-control strategies were defined as first intensification of glucose-lowering therapy at A1C =7, =7.5, =8, or =8.5% with subsequent control for treatment adherence. Logistic marginal structural models were fitted to assess the discrete-time hazards for each dynamic glucose-control strategy, adjusting for baseline and time-dependent confounding and selection bias through inverse probability weighting.

Results: After adjustment for age, sex, race/ethnicity, comorbidities, blood pressure, lipids, BMI, and other covariates, progressively more aggressive glucose-control strategies were associated with reduced onset or progression of albuminuria but not associated with significant reduction in occurrence of myocardial infarction or preserved renal function based on estimated glomerular filtration rate over 4 years of follow-up.

Conclusions: In a large representative cohort of adults with type 2 diabetes, more aggressive glucose-control strategies have mixed short-term effects on microvascular complications and do not reduce the myocardial infarction rate over 4 years of follow-up. These findings are consistent with the results of recent clinical trials, but confirmation over longer periods of observation is needed.
Poster Presenter: Renuka Adibhatla

Contact Email: renuka.x.adibhatla@healthpartners.com

Abstract Title: Creation and Implementation of an Analytic Dataset for a Multi-Site Surveillance Study using Electronic Health Records (EHR) and Medical Claims Data

Authors: Adibhatla R, VazquezBenitez G, Becker M, Butani A, O'Connor PJ

Collaborators: Supreme-DM Project Team

Abstract:

SAS® code is utilized for research projects of the Health Maintenance Organization Research Network (HMORN). The HMORN is a consortium of 18 health care delivery organizations with integrated research divisions with over 15 million patients. Multi-site research is conducted by utilizing the HMORN Virtual Data Warehouse (HMORN VDW), a distributed data network where each site locally stores their data in standardized data structures, in this case as SAS datasets. HMORN VDW is an excellent source of data for surveillance and observational studies of chronic conditions such as diabetes and cardiovascular disease. SAS programs are shared among HMORN project sites in order to extract site-specific data from each site which is then combined to represent the overall HMORN patient population and results. This paper focuses on the various programming techniques, including some borrowed from previous SAS conference papers, and lessons learned from an ongoing HMORN multi-site project involving 11 HMORN research centers. These methods were applied to produce a clean analytic dataset with extensive use of PROC SQL, arrays, and macros. The paper clearly demonstrates the advantages of utilizing distributed SAS code for extracting data, the benefits from an HMORN VDW for multi-site research, and the required organization of the SAS datasets and programs. The paper also discusses the challenges presented with data volumes and storage. SAS 9.2 was used on both Windows and UNIX environments. The paper is intended for beginner to intermediate level SAS programmers, preferably with minimal knowledge in EHR and claims data.
**Poster Presenter:** Emily D. Parker

**Contact Email:** Cynthia.A.Stephenson@healthpartners.com

**Abstract Title:** Prehypertension and Hypertension in Community-Based Pediatric Practice

**Authors:** Parker ED, Lo JC, Sinaiko A, Chandra M, Daley MF, Greenspan LC, Kharbanda EO, Margolis KL, Adams K, Prineas R, Magid D, O’Connor PJ

**Collaborators:** HealthPartners Institute for Education and Research, Minneapolis, MN; Division of Research, Kaiser Permanente Northern California, Oakland, CA; Department of Pediatrics, University of Minnesota, Minneapolis, MN; Institute for Health Research, Kaiser Permanente Colorado, Denver, CO; Department of Pediatrics, Kaiser Permanente San Francisco, San Francisco, CA; Division of Public Health Sciences, Wake Forest University School of Medicine, Winston-Salem, NC

**Funding Agency:** NIH/DHHS

**Abstract:**

**Objective:** Examine the prevalence of prehypertension and hypertension among children receiving well-child care in community-based practices. **Methods:** Children aged 3 to 17 years with measurements of height, weight, and blood pressure (BP) obtained at an initial (index) well-child visit between July 2007 and December 2009 were included in this retrospective cohort study across 3 large, integrated health care delivery systems. Index BP classification was based on the Fourth Report on the Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents: normal BP, <90th percentile; prehypertension, 90th to 94th percentile; hypertension, 3 BP measurements =95th percentile (index and 2 subsequent consecutive visits).

**Results:** The cohort included 199,513 children (24.3% aged 3-5 years, 34.5% aged 6-11 years, and 41.2% aged 12-17 years) with substantial racial/ethnic diversity (35.9% white, 7.8% black, 17.6% Hispanic, 11.7% Asian/Pacific Islander, and 27.0% other/unknown race). At the index visit, 81.9% of participants were normotensive, 12.7% had prehypertension, and 5.4% had a BP in the hypertension range (=95th percentile). Of the 10,848 children with an index hypertensive BP level, 3.8% of those with a follow-up BP measurement had confirmed hypertension (estimated 0.3% prevalence). Increasing age and BMI were significantly associated with prehypertension and confirmed hypertension (P < .001 for trend).

**Conclusions:** The prevalence of hypertension in this community-based study is lower than previously reported from school-based studies. With the size and diversity of this cohort, these results suggest the prevalence of hypertension in children may actually be lower than previously reported.
**Poster Presenter:** Amy Butani

**Contact Email:** Amy.L.Butani@HealthPartners.com

**Abstract Title:** VDW Data Sources: HealthPartners Institute for Education and Research

**Authors:** Butani AL, Aumer SA

**Collaborators:** HealthPartners Institute for Education and Research, HMO Research Network

**Abstract:**

The Virtual Data Warehouse (VDW) was created as a mechanism for producing comparable data across sites for purposes of proposing and conducting research. It is “virtual” in the sense that the data remain at the local sites; there is no multi-site physical database at a centralized data coordinating center. At the core of the VDW are a series of standardized file definitions. Content areas and data elements that are commonly required for research studies are identified, and data dictionaries are created for each of the content areas, specifying a common format for each of the elements --variable name, label, description, code values, and value labels. Local site programmers have mapped the data elements from their HMO's data systems into this standardized set of variable definitions, names, and codes, as well as onto standardized SAS file formats. This common structure of the VDW files enables a SAS analyst at one site to write one program to extract and/or analyze data at all participating sites. The VDW at HealthPartners Institute for Education and Research provides an easily employed unified central repository of data from all available source files. This resource enables the sharing of compatible data in multi-site studies, and also improves programming efficiency, accuracy, and completeness for local single site studies by expending resources to link these legacy systems only once.
Abstract:

Background: Patients with heart and lung disease participate in cardiopulmonary rehabilitation programs to improve or regain the stamina lost due to sedentary lifestyles and exacerbating events. Though beneficial, exercise can be unpleasant. Music, as a form of distraction, has been used to make the activity more enjoyable. Adherence to regular exercise is related to enjoyment. This study examined the effect of favorite music on the exercise experience of cardiopulmonary rehab patients. Methods: In a crossover trial, 45 patients from cardiopulmonary rehabilitation programs were randomized to a sequence of three music and three control sessions during exercise once per week over a period of six-weeks. The primary outcome measure was MET-minutes of exercise and secondary outcome was enjoyment measured by a visual analog scale. Percent target heart rate, rates of perceived exertion and perceived dyspnea, and steps per minute were also measured. General well-being was assessed prior to exercise sessions. Results: Mixed-effects model showed no statistical difference in MET-minutes for music and control sessions (p=0.199). Music had a significant positive effect on enjoyment of exercise (p <.0001) and percent target heart rate (p=0.02). Perceived exertion and dyspnea were not significantly different (p =0.08 and p=0.16 respectively) for music versus control sessions. There was no association between steps per minute of exercise and music tempi. Feelings of general well-being were positively associated with enjoyment. Conclusions: Listening to favorite music resulted in higher levels of exercise enjoyment and target heart rate but did not show significant difference in MET-minutes, perceived exertion or dyspnea.
Abstract:

Objective: Our goal was to assess perceptions of acceptability and feasibility of implementing an “integrated” approach to worker health that coordinates health promotion and occupational health and safety. Methods: We identified decision-makers for employee health programming within small-to-medium-sized businesses (SMBs) in greater Minneapolis and conducted semi-structured interviews to assess awareness, perceived benefits and barriers, and capacity for implementing an “integrated” approach. Results: Worker health was widely valued by respondents. They reported strong management support for efforts to improve health and safety for employees. Most respondents indicated that their company was open to making changes in their approach to worker health; however, cost and staffing considerations were frequently perceived as barriers to action. Conclusion: There are opportunities for implementing integrated worksite health programs in SMBs that are based upon existing resources and values, however challenges exist.
Poster Presenter: Scott A. Oakman

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Abstract Title: Addiction Psychiatry in PGY-3: Use of the Intensive Outpatient Treatment Setting to Train Senior Residents

Authors: Oakman SA

Collaborators: Regions Alcohol and Drug Addiction Program (ADAP), Hennepin-Regions Psychiatry Training Program

Abstract:

ACGME Program Requirements mandate that residents complete a one-month experience focused on substance abuse and dependence, including dual-diagnosis. Although notable efforts have been described designed to integrate addiction training throughout the residency years (Ianucci, et al, 2009), interest in Addiction Psychiatry has not increased markedly, and physician attitudes to patients who abuse substances remain negative. One contributing reason, identified in a national survey of general psychiatry residents (Renner, et al, 2009), may be perceived over-exposure to patients in acute and detoxification settings early in training, and an under-exposure to long-term outcomes of treatment in outpatient settings. This abstract describes an effort to train residents in Addiction Psychiatry in a recovery-oriented outpatient setting. Residents were surveyed before (at start of academic year) and after (approximately 1 month following completion) the rotation regarding their attitudes and expectations toward the treatment of patients with chemical dependency. Narrative evaluations were also obtained from non-MD counseling staff regarding resident role and performance as well. Resident responses indicated trends toward greater confidence in their ability to identify and manage addictive disorders with co-morbid psychiatric conditions. Treatment center staff appreciated having easier access to psychiatric services for dual-diagnosis clients. Frequently addressed problems included depression, adjustment concerns, insomnia, and anxiety. Psychosis and cognitive disorders were less frequently seen in this population.
Abstract Title: Declining Rates of Major Cardiovascular Events in Adults with and without Diabetes: 2005-2011


Collaborators: HealthPartners Institute for Education and Research, Minneapolis, Minnesota; Division of Research, Kaiser Permanente Northern California, Oakland, California; Kaiser Permanente Colorado Institute for Health Research, Denver, Colorado; University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences, Aurora, Colorado; Kaiser Permanente Center for Health Research, Portland, Oregon; Department of Research & Evaluation, Kaiser Permanente Southern California, Pasadena, California; Geisinger Health System, Danville, Pennsylvania; Kaiser Permanente Georgia Center for Health Research-Southeast, Atlanta, Georgia; GroupHealth Research Institute, Seattle, Washington; Marshfield Clinic, Department of Endocrinology, Marshfield, Wisconsin; Geisinger Health System, Danville, Pennsylvania

Funding Agency: AHRQ

Abstract:

Background: A major goal of diabetes care is the prevention of major cardiovascular events (CVE). Its success can be measured by quantifying trends over time in major CVE in adults with and without diabetes. Objective: To quantify trends in occurrence of major CVE in adults with and without diabetes who received care at 11 U.S. managed care organizations from 2005 to 2011. Methods: Study subjects included 2.4 million diabetes and non-diabetes subjects, frequency matched by age and gender (10,000,000 person-years). Clinical and demographic data were extracted from EMR at each site. Major CV events were identified based on primary discharge diagnoses from inpatient encounters for myocardial infarction/acute coronary syndrome (MI/ACS), stroke, and chronic heart failure (CHF). Age and sex-adjusted to the 2010 US census population even rates over time were computed. Generalized linear models were used to evaluate the significance of observed differences CVE trends in defined groups of subjects. Results: Mean age at cohort entry was 59 years (SD=14), 48% female, and 46% Whites. Rates per 1000 of CVE in 2010 for diabetes subjects were (MI/ACS: 4.4, stroke 4.0, CHF 6.9); event rates were more than twice the rate of non-diabetes subjects. A 5-year decline of 32% was observed in diabetes subjects and 27% in non-diabetes subjects for MI/ACS. Similar decline was observed by gender and age groups. Conclusions: Between 2005 and 2011, rates of major cardiovascular events (CVE) declined significantly among adults with diabetes. Decline was greater in patients with diabetes, likely associated with improvements in diabetes care.
Poster Presenter: Lauren Janes

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Abstract Title: SSRI Usage Associated with Tooth and Restoration Fracture via Bruxism and other Movement Disorders: Could Mouthguard Protect the Teeth of SSRI Users?

Authors: Janes LE, Asche SE, Johnson NJ, Kane SM, Rush WA

Collaborators: University of Minnesota School of Dentistry Summer Fellowship Program, HealthPartners Institute for Education, Research Dental Group

Funding Agency: Supported by the UMSOD Summer Fellowship Program, and the HealthPartners Dental Group Student Summer Research Award

Abstract:

Background: The association between movement disorders and tooth or restoration fractures has been described by dental literature. Conversely, medical literature has discussed the development of movement disorders in patients taking selective serotonin reuptake inhibitors (SSRIs). The aim of this study was to determine whether there is an association between taking SSRIs and the increased incidence of tooth or restoration fracture as mediated by movement disorders. This study further investigates whether mouthguards may act as a moderator of the model. Methods: A retrospective study was performed regarding individuals who had prescription coverage and at least one dental encounter between 2008 and 2012. Exclusion of research opt outs, minors and adults over the age of 85 yielded a cohort of 105,949 individuals. Results: Within our cohort, 19.6% of the population took SSRIs at some point between 2008 and 2012. Based on p-values and odds ratios from mediation analysis, movement disorders including bruxism, clenching and temporomandibular muscle disorders (TMDs) of the muscle and joint were positively and significantly associated with SSRIs and the increased prevalence of tooth or restoration fractures when controlling for age, gender and depression. Tests of the protective nature of a mouthguard proved inconclusive, possibly due to the small sample size of mouthguard users. Conclusions: A positive and significant association exists between SSRIs and the increased prevalence of tooth or restoration fracture as based on the mediation of movement disorders. Implications suggest fostering more attune monitoring practices among dentists for the development of movement disorders and subsequent fractures in patients taking SSRIs.
Poster Presenter: Kim Johnson

Contact Email: Kimberly.S.Johnson@HealthPartners.com

Abstract Title: The National Dental Practice-Based Research Network: An Introduction to the Nation's Network

Authors: Johnson KS

Collaborators: The National Dental Practice-Based Research Network Collaborative Group

Funding Agency: NIDCR

Abstract:

The National Dental PBRN is a consortium of practices and clinics devoted principally to the oral health care of patients, but whose members investigate research questions with practical impact that will improve the quality of dental care. The goals of the nation's network are to conduct national oral health studies on topics of importance to practitioners and their patients, to provide evidence to improve routine dental care, and to facilitate movement of the latest evidence into routine clinical practice. A key objective will be to conduct studies that will improve the knowledge base for clinical decision-making. Practice-based research is "practical science" done about, in, and for the benefit of "real world" everyday clinical practice. Benefits of enrolling include enhanced communication with patients and improved quality of dental care by contributing to the scientific basis of the profession. Practitioners are engaged at every step of the research process: generating ideas for studies, developing study design, designing data collection forms, feasibility testing, pilot testing, data collection and analysis, presentations and manuscript preparation. Studies in the pipeline include a cracked teeth registry, isolation methods used during root canal therapy, suspicious occlusal caries, human papilloma virus and oral cancer, patients satisfaction with dental treatment, smoking cessation study, TMJS treatment methods, social network and communication patterns analysis, dentinal hypersensitivity and prognostic factors for pain following root canal therapy.
Heterotopic ossification (HO) formation is a relatively common yet overlooked cause of re-ulceration following previous partial foot amputation. Excessive bone growth at partial metatarsal ray resection sites has the potential to create unwanted prominences on the weight-bearing surface of the foot, placing the neuropathic patient at higher risk for re-ulceration and limb-loss. The goal of this study was to assess the efficacy of radiation therapy in preventing recurrent HO. A retrospective chart and radiographic review was performed on patients with a history of partial metatarsal amputation who subsequently developed HO and underwent additional surgery for resection of the HO with prophylactic radiation therapy. A staging system was developed to assess the radiographic severity of HO formation and associated clinical manifestations. Six-week postop radiographic recurrence rate and corresponding staging were assessed independently by a foot and ankle surgeon and resident. Twelve consecutive patients met the criteria for inclusion. One patient exhibited low-grade (Grade 1a) heterotopic bone re-growth with no associated ulceration at six weeks postoperatively for a recurrence rate of 8%. Ten patients (83%) exhibited HO-related ulceration preoperatively while no patients exhibited ulcer recurrence postoperatively. Inter-rater reliability between investigators exhibited 100% agreement in HO presence and staging (κ=1). The role of HO formation in neuropathic ulcer pathogenesis is a relatively common yet frequently overlooked finding despite its potential for significant adverse effects. Based on our findings, radiation therapy provides an efficacious option for the prevention of HO formation as an adjunct to standard diabetic limb salvage techniques.
Abstract Title: Patient Satisfaction Variability by Chief Complaint in an Urban Community Emergency Department

Authors: Isenberger KM, Salzman JG

Abstract:

Study Objective: Due to the limited treatment options available to emergency medicine physicians to treat certain chief complaints, providers anecdotally report the perception that these patients may rate their satisfaction lower. This study aimed to determine if patients presenting with 4 chief complaints with limited emergency department treatment options (abdominal pain, dental pain, low back pain, and headache) reported lower patient satisfaction scores. Methods: This is a retrospective observational study of patient satisfaction data from patients seen at a single, urban, community-based Level 1 Adult and Pediatric Trauma Center with an emergency medicine residency program. As part of a performance improvement initiative, a 3rd party vendor specializing in emergency medicine patient satisfaction assessment made up to 3 telephone attempts to contact each patient discharged from the emergency department (ED) between September 1, 2011, and March 31st, 2012. Patients were administered a standardized survey assessing satisfaction with their overall ED experience. Unadjusted ordinal logistic regression was used to compare overall ED satisfaction (1=Worst; 5=Best) for patients presenting with abdominal pain, dental pain, low back pain, and headache against patient satisfaction scores for all other chief complaints combined. Results: During the study period, 28,021 patients were discharged from our emergency department and contacted by the survey vendor. Fifty-two percent (14,503) were reached and completed the survey. Overall patient satisfaction was distributed as follows: 5 = 61.7%; 4 = 24.5%; 3 = 9.1%; 2 = 2.5%; 1 = 2.1%. Compared to the combined group of all other chief complaints, patients with dental pain were 52% more likely to report higher satisfaction (OR=1.52; 95% CI 1.21-1.91), and patients with abdominal pain were 12% less likely to report higher satisfaction (OR 0.88; 95% CI 0.79 - 0.99). Satisfaction scores for patients with low back pain and headache were not different from satisfaction scores for the comparison group. Conclusion: In this urban community emergency department, patients experiencing abdominal pain reported lower satisfaction scores, which appears to support provider perception. However, patients with dental pain, low back pain, and headache were more or equally satisfied with the comparison group.
Poster Presenter: Ruth J. Barta

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Abstract Title: Operative and Literature Review of the Calcaneal Osteocutaneous Filet Foot Flap

Authors: Barta RJ, Hill BW, Cole PA, Fletcher JW

Collaborators: Department of Plastic and Hand Surgery, Department of Orthopedic Surgery

Abstract:

Introduction: The goal of a below-knee amputation (BKA) is to have a sturdy, sensate, pain free stump, with as much length as possible to allow for prosthetic fitting. The filet of foot flap provides adequate soft tissue stump coverage for BKA. Recently the calcaneus has been included in the new calcaneal osteocutaneous filet foot flap (COFFF). This provides additional tibial length and permits salvage of a BKA that may initially have inadequate tibial stump length for traditional BKA and prosthetic fitting. Here we describe a detailed surgical approach to performing a pedicled COFFF as well as a surgical variation of incorporating the tibialis anterior vessels. We also summarize the literature published to-date discussing the COFFF and include some examples of our experience with it. Results: There are 15 published studies to-date describing use of the COFFF. All studies show a majority of COFFF are sensate with good stump coverage and successful prosthetic fitting. Our study contains 4 successful flaps in 5 patients. All were sensate, and mean time to prosthetic fitting was just under 3 months. Conclusion: The COFFF is a good alternative to traditional BKA and stump coverage. It provides sensate, soft tissue, coverage, and additional tibial stump length. This allows prosthetic fitting in patients who otherwise would be unable to do so.