

Publications & Presentations 2015



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HealthPartners Institute



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Journal Articles

Abrams JY; Weintraub ES; Baggs JM; McCarthy NL; Schonberger LB; Lee GM; Klein NP; Belongia EA; Jackson ML; Naleway AL; **Nordin JD**; Hambidge SJ; Belay ED. Childhood vaccines and Kawasaki disease, Vaccine Safety Datalink, 1996-2006. *Vaccine*. 2015 Jan 3;33(2):382-7.

BACKGROUND: Kawasaki disease is a childhood vascular disorder of unknown etiology. Concerns have been raised about vaccinations being a potential risk factor for Kawasaki disease. **METHODS:** Data from the Vaccine Safety Datalink were collected on children aged 0-6 years at seven managed care organizations across the United States. Defining exposure as one of several time periods up to 42 days after vaccination, we conducted Poisson regressions controlling for age, sex, season, and managed care organization to determine if rates of physician-diagnosed and verified Kawasaki disease were elevated following vaccination compared to rates during all unexposed periods. We also performed case-crossover analyses to control for unmeasured confounding. **RESULTS:** A total of 1,721,186 children aged 0-6 years from seven managed care organizations were followed for a combined 4,417,766 person-years. The rate of verified Kawasaki disease was significantly lower during the 1-42 days after vaccination (rate ratio=0.50, 95% CL=0.27-0.92) and 8-42 days after vaccination (rate ratio=0.45, 95% CL=0.22-0.90) compared to rates during unexposed periods. Breaking down the analysis by vaccination category did not identify a subset of vaccines which was solely responsible for this association. The case-crossover analyses revealed that children with Kawasaki disease had lower rates of vaccination in the 42 days prior to symptom onset for both physician-diagnosed Kawasaki disease (rate ratio=0.79, 95% CL=0.64-0.97) and verified Kawasaki disease (rate ratio=0.38, 95% CL=0.20-0.75). **CONCLUSIONS:** Childhood vaccinations' studied did not increase the risk of Kawasaki disease; conversely, vaccination was associated with a transient decrease in Kawasaki disease incidence. Verifying and understanding this potential protective effect could yield clues to the underlying etiology of Kawasaki disease.

Ackard DM; Cronemeyer CL; Richter SA; Egan AM. Do symptom-specific stages of change predict eating disorder treatment outcome? *Eat Weight Disord*. 2015 Mar;20(1):49-62.

PURPOSE: Interview methods to assess stages of change (SOC) in eating disorders (ED) indicate that SOC are positively correlated with symptom improvement over time. However, interviews require significant time and staff training and global measures of SOC do not capture varying levels of motivation across ED symptoms. This study used a self-report, ED symptom-specific SOC measure to determine prevalence of stages across symptoms and identify if SOC predict treatment outcome. **METHODS:** Participants [N = 182; age 13-58 years; 92% Caucasian; 96% female; average BMI 21.7 (SD = 5.9); 50% ED not otherwise specified (EDNOS), 30.8% bulimia nervosa (BN), 19.2% anorexia nervosa (AN)] seeking ED treatment at a diverse-milieu multi-disciplinary facility in the United States completed stages of change, behavioral (ED symptom use and frequency) and psychological (ED concerns, anxiety, depression) measures at intake assessment and at 3, 6 and 12 months thereafter. Descriptive summaries were generated using ANOVA or Kruskal-Wallis (continuous) and chi (2) (categorical) tests. Repeated measures linear regression models with autoregressive correlation structure predicted treatment outcome. **RESULTS:** At intake assessment, 53.3% of AN, 34.0% of BN and 18.1% of EDNOS patients were in Preparation/Action. Readiness to change specific symptoms was highest for binge-eating (57.8%) and vomiting (56.5%). Frequency of fasting and restricting behaviors, and

scores on all eating disorder and psychological measures improved over time regardless of SOC at intake assessment. Symptom-specific SOC did not predict reductions in ED symptom frequency. Overall SOC predicted neither improvement in Eating Disorder Examination Questionnaire (EDE-Q) scores nor reduction in depression or trait anxiety; however, higher overall SOC predicted lower state anxiety across follow-up. CONCLUSIONS: Readiness to change ED behaviors varies considerably. Most patients reduced eating disorder behaviors and increased psychological functioning regardless of stages of change, indicating the benefits of treatment and effectiveness of treatment-as-usual for overall psychiatric improvement.

Adams KF; Johnson EA; Chubak J; Kamineni A; Doubeni CA; Buist DS; Williams AE; Weinmann S; Doria-Rose VP; Rutter CM. Development of an algorithm to classify colonoscopy Indication from coded health care data. *EGEMS (Wash DC)*. 2015;3(1):1171. PMCID: PMC4537082. Project Number: A10-117.

INTRODUCTION: Electronic health data are potentially valuable resources for evaluating colonoscopy screening utilization and effectiveness. The ability to distinguish screening colonoscopies from exams performed for other purposes is critical for research that examines factors related to screening uptake and adherence, and the impact of screening on patient outcomes, but distinguishing between these indications in secondary health data proves challenging. The objective of this study is to develop a new and more accurate algorithm for identification of screening colonoscopies using electronic health data. METHODS: Data from a case-control study of colorectal cancer with adjudicated colonoscopy indication was used to develop logistic regression-based algorithms. The proposed algorithms predict the probability that a colonoscopy was indicated for screening, with variables selected for inclusion in the models using the Least Absolute Shrinkage and Selection Operator (LASSO). RESULTS: The algorithms had excellent classification accuracy in internal validation. The primary, restricted model had AUC= 0.94, sensitivity=0.91, and specificity=0.82. The secondary, extended model had AUC=0.96, sensitivity=0.88, and specificity=0.90. DISCUSSION: The LASSO approach enabled estimation of parsimonious algorithms that identified screening colonoscopies with high accuracy in our study population. External validation is needed to replicate these results and to explore the performance of these algorithms in other settings.

Ahmedani BK; **Solberg LI**; Copeland LA; Fang-Hollingsworth Y; Stewart C; Hu J; Nerenz DR; Williams LK; Cassidy-Bushrow AE; Waxmonsky J; Lu CY; Waitzfelder BE; Owen-Smith AA; Coleman KJ; Lynch FL; Ahmed AT; Beck AL; **Rossom RC**; Simon GE. Psychiatric comorbidity and 30-day readmissions after hospitalization for heart failure, AML, and pneumonia. *Psychiatr Serv*. 2015 Feb 1;66(2):134-40. PMCID: PMC4315504.

OBJECTIVE: In 2012, the Centers for Medicare and Medicaid Services implemented a policy that penalizes hospitals for "excessive" all-cause hospital readmissions within 30 days after discharge from an index hospitalization for heart failure (HF), acute myocardial infarction (AMI), and pneumonia. The aim of this study was to investigate the influence of psychiatric comorbidities on 30-day all-cause readmissions following hospitalizations for HF, AMI, and pneumonia. METHODS: Data from 2009-2011 were derived from the HMO Research Network Virtual Data Warehouse of 11 health systems affiliated with the Mental Health Research Network. All index inpatient hospitalizations for HF, AMI, and pneumonia were captured (N=160,169). Psychiatric diagnoses for the year prior to admission were measured. All-cause readmissions within 30 days of discharge were the outcome variable. RESULTS: Approximately 18% of all individuals with index inpatient hospitalizations for HF, AMI, and pneumonia were readmitted within 30 days. The rate of readmission was 5% greater for individuals with a psychiatric comorbidity compared with those without a

psychiatric comorbidity (21.7% and 16.5%, respectively, $p < .001$). Depression, anxiety, and dementia were associated with more readmissions of persons with index hospitalizations for each general medical condition and for all the conditions combined ($p < .05$). Substance use and bipolar disorders were linked with higher readmissions for those with initial hospitalizations for HF and pneumonia ($p < .05$). Readmission rates declined overall from 2009 to 2011. **CONCLUSIONS:** Individuals with HF, AMI, and pneumonia experience high rates of readmission, but psychiatric comorbidities appear to increase that risk. Future interventions to reduce readmission should consider adding mental health components.

Ahmedani BK; Stewart C; Simon GE; Lynch F; Lu CY; Waitzfelder BE; **Solberg LI**; Owen-Smith AA; Beck AL; Copeland LA; Hunkeler EM; **Rossom RC**; Williams K. Racial/ethnic differences in health care visits made before suicide attempt across the United States. *Med Care*. 2015 May;53(5):430-5. PMID: PMC4397662. Project Number: A10-003 MHRN Infrastructure.

BACKGROUND: Suicide is a public health concern, but little is known about the patterns of health care visits made before a suicide attempt, and whether those patterns differ by race/ethnicity. **OBJECTIVES:** To examine racial/ethnic variation in the types of health care visits made before a suicide attempt, when those visits occur, and whether mental health or substance use diagnoses were documented. **RESEARCH DESIGN:** Retrospective, longitudinal study, 2009-2011. **PARTICIPANTS:** 22,387 individuals who attempted suicide and were enrolled in the health plan across 10 health systems in the Mental Health Research Network. **MEASURES:** Cumulative percentage of different types of health care visits made in the 52 weeks before a suicide attempt, by self-reported racial/ethnicity and diagnosis. Data were from the Virtual Data Warehouse at each site. **RESULTS:** Over 38% of the individuals made any health care visit within the week before their suicide attempt and approximately 95% within the preceding year; these percentages varied across racial/ethnic groups ($P < 0.001$). White individuals had the highest percentage of visits ($>41\%$) within 1 week of suicide attempt. Asian Americans were the least likely to make visits within 52 weeks. Hawaiian/Pacific Islanders had proportionally the most inpatient and emergency visits before an attempt, but were least likely to have a recorded mental health or substance use diagnosis. Overall, visits were most common in primary care and outpatient general medical settings. **CONCLUSIONS:** This study provides temporal evidence of racial/ethnic differences in health care visits made before suicide attempt. Health care systems can use this information to help focus the design and implementation of their suicide prevention initiatives.

Andersen CR; Schmidt AH; Fitzgerald CB; Tintle LS; Helgeson MM; Lehman LR; Davila CJ; Potter BK; Burns MT; **Swiontkowski MF**; Ficke CJ. Extremity War Injuries IX: reducing disability within the military. *J Am Acad Orthop Surg*. 2015 Aug;23(8):e13-26.

Abstract: Extremity War Injury Symposium IX focused on reducing disability within the military, centering on cartilage defects, amputations, and spinal cord injury. Many areas of upper and lower extremity trauma and disability were discussed, including segmental nerve injuries, upper extremity allotransplantation, and the importance of patient-reported functional outcomes compared with the traditionally reported measures. Strategic planning addressed progression toward clinical solutions by setting clear objectives and goals and outlining pathways to address the "translation gap" that often prevents bridging of basic science to clinical application.

Anderson JP; Horsburgh CR Jr; Williams PL; Tchetgen EJ; Nunes D; Cotton D; Seage GR 3rd. CD4 recovery on antiretroviral therapy is associated with decreased progression to liver disease among hepatitis C virus-infected injecting drug users. *Open Forum Infect Dis*. 2015 Jan;2(1):ofv019.

Background. Human immunodeficiency virus (HIV) coinfection accelerates liver disease progression in individuals with chronic hepatitis C. We evaluated the associations of CD4, HIV RNA, and antiretroviral therapy (ART)-induced CD4 recovery with liver diagnoses in a prospective cohort of injecting drug users (IDUs). **Methods:** We evaluated 383 coinfecting IDUs in the Boston area, prospectively observed for a median of 1.8 years. Liver disease progression included the first occurrence of hepatocellular carcinoma, variceal bleeding, ascites, encephalopathy, or death due to hepatic failure. Multivariable-adjusted extended Cox models were specified to estimate hazard ratios (HRs) for comparisons of CD4, change in CD4 (from nadir), and HIV RNA with respect to liver disease progression events. **Results:** Twenty-four persons experienced a liver disease progression event over 1155 person-years (2.1 per 100 person-years), including 20 deaths attributed to end-stage liver disease (1.7 per 100 person-years). CD4 at baseline and over follow-up strongly predicted liver disease progression (baseline CD4 <200 vs \geq 200: HR = 5.23, 95% confidence interval [CI], 2.30-11.92; time-updated CD4 <200 vs \geq 200: HR = 11.79, 95% CI, 4.47-31.07). Nadir CD4 was also a strong indicator (<100 vs \geq 100: HR = 3.52, 95% CI, 1.54-8.06). A lack of CD4 recovery (failure to increase 100 cells over nadir) among ART initiators was associated with increased risk (HR = 7.69; 95% CI, 2.60-22.69). Human immunodeficiency virus RNA was not significantly associated with liver disease progression. **Conclusions:** Impaired immune function was highly predictive of liver disease progression in this cohort of IDUs, and a lack of CD4 recovery on ART was associated with increased risk of progression to HCV-associated liver disease.

Annett RD; Hile S; Bedrick E; **Kunin-Batson AS**; Krull KR; Embry L; MacLean WE Jr; Noll RB. Neuropsychological functioning of children treated for acute lymphoblastic leukemia: impact of whole brain radiation therapy. *Psychooncology*. 2015 Feb;24(2):181-9.

OBJECTIVES: To provide one of the first prospective reports examining neuropsychological outcomes for children treated with 1800 cGy whole brain radiotherapy (WBRT) and prophylactic chemotherapy versus prophylactic chemotherapy alone for acute lymphoblastic leukemia (ALL). Acute and long-term neuropsychological toxicities associated with WBRT are compared. **METHODS:** This multisite study included 188 children, ages 4-21 years at enrollment, who were assessed with standardized neuropsychological tests at 9, 21, and 48 months after diagnosis with intermediate risk ALL. All participating children were receiving treatment on a parent study CCG105. **RESULTS:** Verbal intelligence (VIQ) scores for children receiving WBRT was significantly lower than VIQ for prophylactic chemotherapy at the 48-month time point ($p < 0.05$). A significant cross-level interaction between time since diagnosis and treatment condition was observed ($p < 0.05$). WBRT did not result in differences in PIQ; both groups of children demonstrated comparable increases in PIQ. Neuropsychological findings at 48 months after diagnosis indicated diminished performance in neuromotor, visual-motor coordination, and executive functioning for children receiving WBRT. Academic achievement was unaffected by WBRT at 4 years after diagnosis. **CONCLUSIONS:** The measurement of verbal and performance IQ as a primary endpoint in ALL clinical trials is critical to characterizing neuropsychological late effects. A trajectory of decline in neuropsychological functioning, specifically verbal IQ, was observed. Missing data within the trial occurred at random and did not impact results observed. The impact of WBRT becomes evident at 48 months after diagnosis, suggesting the need for long-term follow-up beyond the time frame typically used in Phase III trials.

Augustine EF; Perez A; Dhall R; Umeh CC; Videnovic A; Cambi F; Wills AM; Elm JJ; Zweig RM; Shulman LM; **Nance MA**; Bainbridge J; Suchowersky O. Sex differences in clinical features of early, treated Parkinson's disease. *PLoS One*. 2015 Jul 14;10(7):e0133002. PMID: PMC4501841.

INTRODUCTION: To improve our understanding of sex differences in the clinical characteristics of Parkinson's Disease, we sought to examine differences in the clinical features and disease severity of men and women with early treated Parkinson's Disease (PD) enrolled in a large-scale clinical trial. **METHODS:** Analysis was performed of baseline data from the National Institutes of Health Exploratory Trials in Parkinson's Disease (NET-PD) Long-term Study-1, a randomized, multi-center, double-blind, placebo-controlled study of 10 grams of oral creatine/day in individuals with early, treated PD. We compared mean age at symptom onset, age at PD diagnosis, and age at randomization between men and women using t-test statistics. Sex differences in clinical features were evaluated, including: symptoms at diagnosis (motor) and symptoms at randomization (motor, non-motor, and daily functioning). **RESULTS:** 1,741 participants were enrolled (62.5% male). No differences were detected in mean age at PD onset, age at PD diagnosis, age at randomization, motor symptoms, or daily functioning between men and women. Differences in non-motor symptoms were observed, with women demonstrating better performance compared to men on SCOPA-COG ($Z = 5.064$, $p < 0.0001$) and Symbol Digit Modality measures ($Z = 5.221$, $p < 0.0001$). **CONCLUSIONS:** Overall, men and women did not demonstrate differences in clinical motor features early in the course of PD. However, the differences observed in non-motor cognitive symptoms suggests further assessment of the influence of sex on non-motor symptoms in later stages of PD is warranted.

Aziz Z; Absetz P; Oldroyd J; **Pronk NP**; Oldenburg B. A systematic review of real-world diabetes prevention programs: learnings from the last 15 years [review article]. *Implement Sci*. 2015 Dec 15;10(1):172. PMID: PMC4681022.

BACKGROUND: The evidence base for the prevention of type 2 diabetes mellitus (T2DM) has progressed rapidly from efficacy trials to real-world translational studies and practical implementation trials over the last 15 years. However, evidence for the effective implementation and translation of diabetes programs and their population impact needs to be established in ways that are different from measuring program effectiveness. We report the findings of a systematic review that focuses on identifying the critical success factors for implementing diabetes prevention programs in real-world settings. **METHODS:** A systematic review of programs aimed at diabetes prevention was undertaken in order to evaluate their outcomes using the penetration, implementation, participation, and effectiveness (PIPE) impact metric. A search for relevant articles was carried out using PubMed (March 2015) and Web of Science, MEDLINE, CENTRAL, and EMBASE. A quality coding system was developed and included studies were rated independently by three researchers. **RESULTS:** Thirty eight studies were included in the review. Almost all (92 %) provided details on participation; however, only 18 % reported the coverage of their target population (penetration). Program intensity or implementation-as measured by frequency of contacts during first year and intervention duration-was identified in all of the reported studies, and 84 % of the studies also reported implementation fidelity; however, only 18 % of studies employed quality assurance measures to assess the extent to which the program was delivered as planned. Sixteen and 26 % of studies reported 'highly' or 'moderately' positive changes (effectiveness) respectively, based on weight loss. Six (16 %) studies reported 'high' diabetes risk reduction but 'low' to 'moderate' weight loss only. **CONCLUSION:** Our findings identify that program

intensity plays a major role in weight loss outcomes. However, programs that have high uptake-both in terms of good coverage of invitees and their willingness to accept the invitation-can still have considerable impact in lowering diabetes risk in a population, even with a low intensity intervention that only leads to low or moderate weight loss. From a public health perspective, this is an important finding, especially for resource constrained settings. More use of the PIPE framework components will facilitate increased uptake of T2DM prevention programs around the world.

Bates GP; Dorsey R; Gusella JF; Hayden MR; Kay C; Leavitt BR; **Nance MA**; Ross CA; Scahill RI; Wetzel R; Wild EJ; Tabrizi SJ. Huntington disease. *Nat Rev Dis Primers*. 2015 Apr 23;1:15005.

Abstract: Huntington disease is devastating to patients and their families - with autosomal dominant inheritance, onset typically in the prime of adult life, progressive course, and a combination of motor, cognitive and behavioural features. The disease is caused by an expanded CAG trinucleotide repeat (of variable length) in HTT, the gene that encodes the protein huntingtin. In mutation carriers, huntingtin is produced with abnormally long polyglutamine sequences that confer toxic gains of function and predispose the protein to fragmentation, resulting in neuronal dysfunction and death. In this Primer, we review the epidemiology of Huntington disease, noting that prevalence is higher than previously thought, geographically variable and increasing. We describe the relationship between CAG repeat length and clinical phenotype, as well as the concept of genetic modifiers of the disease. We discuss normal huntingtin protein function, evidence for differential toxicity of mutant huntingtin variants, theories of huntingtin aggregation and the many different mechanisms of Huntington disease pathogenesis. We describe the genetic and clinical diagnosis of the condition, its clinical assessment and the multidisciplinary management of symptoms, given the absence of effective disease-modifying therapies. We review past and present clinical trials and therapeutic strategies under investigation, including impending trials of targeted huntingtin-lowering drugs and the progress in development of biomarkers that will support the next generation of trials.

Bejan A; Parker DL; Brosseau LM; Xi M; Skan M. Two-year follow-up of the Collision Auto Repair Safety Study (CARSS). *Ann Occup Hyg*. 2015 Jun;59(5):534-46. PMID: PMC4542724.

Abstract: This paper presents an evaluation of the sustainability of health and safety improvements in small auto collision shops 1 year after the implementation of a year-long targeted intervention. During the first year (active phase), owners received quarterly phone calls, written reminders, safety newsletters, and access to online services and in-person assistance with creating safety programs and respirator fit testing. During the second year (passive phase), owners received up to three postcard reminders regarding the availability of free health and safety resources. Forty-five shops received an evaluation at baseline and at the end of the first year (Y1). Of these, 33 were evaluated at the end of the second year (Y2), using the same 92-item assessment tool. At Y1, investigators found that between 70 and 81% of the evaluated items were adequate in each business (mean = 73% items, SD = 11%). At Y2, between 63 and 89% of items were deemed adequate (mean = 73% items, SD = 9.5%). Three safety areas demonstrated statistically significant ($P < 0.05$) changes: compressed gasses (8% improvement), personal protective equipment (7% improvement), and respiratory protection (6% decline). The number of postcard reminders sent to each business did not affect the degree to which shops maintained safety improvements made during the first year of the intervention. However, businesses that received more postcards were more likely to request assistance services than those

receiving fewer.

Benzo R; Wetzstein M; **Neuenfeldt PJ; McEvoy, CE.** Implementation of physical activity programs after COPD hospitalizations: lessons from a randomized study. *Chron Respir Dis.* 2015 Feb;12(1):5-10.

Abstract: Pulmonary rehabilitation (PR), following an acute exacerbation of chronic obstructive pulmonary disease (COPD), has been found effective in some studies in reducing readmission rates as and has recently been recommended by the PR guidelines. However, very recent reports suggested that PR is not feasible after a hospital admission for a COPD exacerbation. The objective of this study is to investigate the knowledge gap on the underlying reasons for nonparticipation in PR in the posthospitalization period. We qualitatively analyzed the responses of 531 patients hospitalized for a COPD exacerbation who were not interested in participating in either PR (home or center based) or physical activity monitoring program after being discharged from the hospital. The responses were coded thematically, and independent reviewers compiled the raw data into themes. The characteristics of the 531 subjects (45% male) who declined the intervention are as follows: age was 70 +/- 10 years, mean forced expiratory volume in one second (FEV1%) predicted 40 +/- 16, and age, dyspnea, and airflow obstruction index 6.0 +/- 1.6 (scale 0-10). The themes for not attending include lack of interest (39%), the perception of "being too ill or frail or disabled" (24%), the perception of being "too busy or having too much to do" (11%), distance or the need of travel (11%), commitment issues (7%), comorbidities (6%), and lack of social support (2%). We identified barriers for PR or just physical activity programs after a hospitalization that may affect implementation of such programs. Implementing post-hospitalizations program in COPD may require patient engagement and mindful and compassionate professionals who may individualize program components to focus specific deficits and particularly patients' preferences.

Beran MS; Craft CE. Medicare annual wellness visits. Understanding the patient and physician perspective. *Minn Med.* 2015 Mar;98(3):38-41.

Abstract: Since 2011, Medicare has covered annual wellness visits (AWVs), yet few who are eligible for this benefit take advantage of it. To better understand why, we interviewed physicians and patients within our St. Louis Park-based health system. The interview questions were designed to identify physicians' and patients' perceptions of the value of the AWV and reasons people don't take advantage of this Medicare benefit. This article presents the results of this qualitative study and offers strategies health care organizations can adopt to promote more effective, consistent use of AWVs. These strategies include standardizing policies regarding the AWV across the organization and incorporating them into team care.

Bergenstal RM. Glycemic variability and diabetes complications: does it matter? Simply put, there are better glycemic markers! *Diabetes Care.* 2015 Aug;38(8):1615-21.

Abstract: There is no argument that improving mean levels of glycemic control as judged by assays for glycated hemoglobin (HbA1c) reduces the risks of microvascular complications and cardiovascular disease events in patients with type 1 and type 2 diabetes. However, observations in some trials have suggested that targeting HbA1c to suggested targets may not always result in improved outcomes for people with long-standing type 2 diabetes. The reasons why the glycemic control strategies that primarily use HbA1c in these studies did not have predicted outcomes are not clear. Thus, controversy remains as to whether there are

glycemic metrics beyond HbA1c that can be defined as effective measures that can be used in addition to HbA1c to help in assessing the risk of an individual developing diabetes complications. In this regard, the concept of "glycemic variability" (GV) is one metric that has attracted a lot of attention. GV can be simply defined as the degree to which a patient's blood glucose level fluctuates between high (peaks) and low (nadir) levels. The best and most precise way to assess GV is also one that is still debated. Thus, while there is universal agreement that HbA1c is the current gold standard for the primary clinical target, there is no consensus as to whether other proposed glycemic metrics hold promise to provide additional clinical data or whether there should be additional targets beyond HbA1c. Therefore, given the current controversy, we provide a Point-Counterpoint debate on this issue. In the preceding point narrative, Dr. Hirsch provides his argument that fluctuations in blood glucose as assessed by GV metrics are deleterious and control of GV should be a primary treatment target. In the counterpoint narrative below, Dr. Bergenstal argues that there are better markers to assess the risk of diabetes than GV and provides his consideration of other concepts.

Bergenstal RM; Strock ES; Peremislav DP; Gibney MA; Parvu V; Hirsch LJ. Safety and efficacy of insulin therapy delivered via a 4mm pen needle in obese patients with diabetes. *Mayo Clin Proc.* 2015 Mar;90(3):329-38.

OBJECTIVE: To determine whether insulin delivered via a 4-mm x 32-gauge pen needle (PN) provides equivalent glycemic control as 8-mm x 31-gauge and 12.7-mm x 29-gauge PNs in obese (body mass index ≥ 30) patients with diabetes. **PATIENTS AND METHODS:** This prospective, multicenter, randomized, open-label, 2-period, crossover, equivalence, home-based study was conducted from October 26, 2010, through May 31, 2012. After a 3-week wash-in period, eligible patients aged 18 to 80 years with a hemoglobin A1c (HbA1c) level of 5.5% to 9.5% (37-80 mmol/mol) were randomized to compare either 4- vs 8-mm PNs or 4- vs 12.7-mm PNs, using each of the 2 assigned PNs for 12 weeks in random order. The primary outcome was change in HbA1c level, with equivalence limits of $\pm 0.4\%$. **RESULTS:** The 274 patients randomized (mean \pm SD age, 56.7 \pm 11.0 years) had a mean \pm SD body mass index of 37.0 \pm 6.1 (range, 29.1-59.9) and took up to 350 U of insulin daily; 226 patients were included in the modified intention-to-treat analysis. Mean (95% CI) changes in HbA1c levels with the 4-mm PN were -0.08% (-0.21 to 0.06) and -0.10% (-0.19 to 0.00) vs the 8- and 12.7-mm PNs, respectively, within equivalence margins. The 4-mm PN was less painful than the larger PNs ($P < .05$), with similar leakage rates reported (4.1%-4.3%). Patients preferred the 4-mm PN over the 12.7-mm PN ($P < .05$) but not significantly vs the 8-mm PN. There were no differences between PNs in insulin doses and hypoglycemic or hyperglycemic adverse event rates. **CONCLUSION:** The 4-mm x 32-gauge PN provides equivalent glycemic control as 8- and 12.7-mm PNs in obese patients with diabetes, with less pain and no increase in leakage. Shorter PNs should be considered in all insulin-requiring patients with diabetes, including those who are obese.

Blaes AH; Rehman A; Vock DM; Luo X; **Menge MR;** Yee D; Missov E; Duprez D. Utility of high-sensitivity cardiac troponin T in patients receiving anthracycline chemotherapy. *Vasc Health Risk Manag.* 2015 Nov 24;11:591-4. PMID: PMC4664531.

BACKGROUND: Anthracycline chemotherapy remains an integral part of the care for curative intent chemotherapy in breast cancer and non-Hodgkin lymphoma patients. Better tools need to be identified to predict cardiac complications of anthracycline chemotherapy. **MATERIALS AND METHODS:** We investigated the utility of high-sensitivity cardiac troponin T (hs-cTnT), N-terminal pro-B-type natriuretic peptide, cardiac

troponin T and I, and creatine kinase (CK)-MB in cancer patients receiving anthracycline-based chemotherapy, in order to determine whether baseline levels or changes in these biomarkers may help predict the onset of congestive heart failure. **RESULTS:** Eighteen consecutive patients with a pathologic diagnosis of breast cancer or non-Hodgkin lymphoma were enrolled. The median dose of doxorubicin exposure was 240 mg/m² (range 240-400 mg/m²). After treatment with doxorubicin, the hscTnT increased to 19.1 pg/mL ($P<0.001$). CKMB and N-terminal pro-B-type natriuretic peptide levels increased to 1.1 ng/mL and 88.3 pg/mL, respectively ($P=0.02$). When subjects who had a decline in left ventricular ejection fraction (LVEF) by equilibrium radionuclide ventriculography were compared to those who did not have a change in LVEF, there was a suggestion that those subjects with an elevated baseline hscTnT were more likely to have a decline in LVEF (2.7 pg/mL and 0.1 pg/mL, respectively; $P=0.07$). Spearman correlation demonstrated that patients with higher baseline hscTnT and CKMB tended to have a greater decline in LVEF (Spearman correlation -0.54, 95% confidence interval -0.80 to -0.08 [$P=0.02$], and -0.49, 95% confidence interval -0.77 to -0.01 [$P=0.04$], respectively). **CONCLUSION:** Elevations in baseline hscTnT levels are suggestive of an oncology subgroup at high risk of developing cardiac complications from their chemotherapy. Early detection by oncologists with the use of baseline biomarkers may be clinically important in designing interventions to prevent serious anthracycline-based chemotherapy complications.

Bochicchio GV; Hipszer BR; Magee MF; **Bergental RM**; Furnary AP; Gulino AM; Higgins MJ; Simpson PC; Joseph JI. Multicenter observational study of the first-generation intravenous blood glucose monitoring system in hospitalized patients. *J Diabetes Sci Technol*. 2015 Jul;9(4):739-50. PMID: PMC4525650.

BACKGROUND: Current methods of blood glucose (BG) monitoring and insulin delivery are labor intensive and commonly fail to achieve the desired level of BG control. There is great clinical need in the hospital for a user-friendly bedside device that can automatically monitor the concentration of BG safely, accurately, frequently, and reliably. **METHODS:** A 100-patient observation study was conducted at 6 US hospitals to evaluate the first generation of the Intravenous Blood Glucose (IVBG) System (Edwards Lifesciences LLC & Dexcom Inc). Device safety, accuracy, and reliability were assessed. A research nurse sampled blood from a vascular catheter every 4 hours for ≤ 72 hours and BG concentration was measured using the YSI 2300 STAT Plus Analyzer (YSI Life Sciences). The IVBG measurements were compared to YSI measurements to calculate point accuracy. **RESULTS:** The IVBG systems logged more than 5500 hours of operation in 100 critical care patients without causing infection or inflammation of a vein. A total of 44135 IVBG measurements were performed in 100 patients with 30231 measurements from the subset of 75 patients used for accuracy analysis. In all, 996 IVBG measurements were time-matched with reference YSI measurements. These pairs had a mean absolute difference (MAD) of 11.61 mg/dl, a mean absolute relative difference (MARD) of 8.23%, 93% met 15/20% accuracy defined by International Organization for Standardization 15197:2003 standard, and 93.2% were in zone A of the Clarke error grid. The IVBG sensors were exposed to more than 200 different medications with no observable effect on accuracy. **CONCLUSIONS:** The IVBG system is an automated and user-friendly glucose monitoring system that provides accurate and frequent BG measurements with great potential to improve the safety and efficacy of insulin therapy and BG control in the hospital, potentially leading to improved clinical outcomes.

Boffeli TJ; Abben KW. Double calcaneal osteotomy with percutaneous Steinmann pin fixation as part of treatment for flexible flatfoot deformity: a review of consecutive cases highlighting our experience with pin fixation. *J Foot Ankle Surg.* 2015 May-Jun;54(3):478-82.

Abstract: Surgical correction of flexible flatfoot deformity and posterior tibial tendon dysfunction has been extensively reported in published studies. When appropriate, calcaneal osteotomies for flatfoot correction have been a favorite of foot and ankle surgeons because of the corrective power achieved without the need to fuse any rearfoot joints. The medial displacement calcaneal osteotomy and Evans calcaneal osteotomy, together termed the double calcaneal osteotomy, have been reported several times by various investigators with a wide variety of fixation options. We undertook an institutional review board-approved retrospective review of 9 consecutive patients (11 feet), who had undergone double calcaneal osteotomy with 2 percutaneous Steinmann pin fixation for the correction of flexible flatfoot deformity, with or without posterior tibial tendon dysfunction. All patients had radiographic evidence of bone healing of the posterior calcaneal osteotomy and incorporation of the Evans osteotomy bone graft at 6 weeks and demonstrated clinical healing at 6 weeks. All patients had 2 percutaneous Steinmann pins placed through both osteotomies, and these were removed an average of 6 weeks postoperatively. No patient developed pin site complications. The only complication noted was sural neuritis, which was likely incision related. No patients had delayed union or nonunion, and we did not identify any graft shifting postoperatively. The present retrospective series highlights our experience with 2 percutaneous Steinmann pin fixation, demonstrating equal or better results than many previous published fixation methods for double calcaneal osteotomy. It is cost-effective and minimizes the potential risk of iatrogenic Achilles pathologic features associated with screw fixation.

Boffeli TJ; Collier RC. Lateral stress dorsiflexion view: a case series demonstrating clinical utility in midterm hallux limitus. *J Foot Ankle Surg.* 2015 Jul-Aug;54(4):739-46.

Abstract: The lateral hallux stress dorsiflexion view is part of our standard workup for midterm hallux limitus (HL)/hallux rigidus (HR). It provides a functional radiographic examination of the first metatarsal phalangeal joint. Midterm HL primarily involves degenerative changes in the upper one third of the metatarsal phalangeal joint involving formation of bone spurs, dorsal bone impingement, joint space narrowing with cartilage degeneration, and fragmentation of the bone spurs. The lateral hallux stress dorsiflexion view provides diagnostic information not visible on a standard weightbearing lateral view in patients with midterm HL/HR, including joint space narrowing on the dorsal third of the joint despite intact cartilage through the center one third of the joint, the extent of maximum first metatarsal phalangeal joint dorsiflexion, and direct visualization of dorsal bone spur impingement. This functional radiographic examination also appears to provide improved patient understanding regarding why their joint is stiff and painful. Improved patient understanding of their condition positively influences the shared decision making regarding the treatment objectives and options. The cases of 5 patients with stage II or III HL/HR are presented to depict the utility of this radiographic view, including objective measurement of maximum first metatarsal phalangeal joint dorsiflexion, confirmation of a bony block at the end range of dorsiflexion, the presence or absence of joint space narrowing at the dorsal third of the joint, evaluation of the excursion of the sesamoid apparatus, a tool to help the patient understand, an intraoperative assessment of procedure effectiveness, and a comparison of maximum dorsiflexion before and after surgery.

Boffeli TJ; Collier RC. Surgical treatment guidelines for digital deformity associated with intrinsic muscle spasticity (intrinsic plus foot) in adults with cerebral palsy. *J Foot Ankle Surg.* 2015 Sep-Oct;54(5):985-93.

Abstract: Intrinsic plus foot deformity has primarily been associated with cerebral palsy and involves spastic contracture of the intrinsic musculature with resultant toe deformities. Digital deformity is caused by a dynamic imbalance between the intrinsic muscles in the foot and extrinsic muscles in the lower leg. Spastic contracture of the toes frequently involves curling under of the lesser digits or contracture of the hallux into valgus or plantarflexion deformity. Patients often present with associated pressure ulcers, deformed toenails, shoe or brace fitting challenges, and pain with ambulation or transfers. Four different patterns of intrinsic plus foot deformity have been observed by the authors that likely relate to the different patterns of muscle involvement. Case examples are provided of the 4 patterns of intrinsic plus foot deformity observed, including global intrinsic plus lesser toe deformity, isolated intrinsic plus lesser toe deformity, intrinsic plus hallux valgus deformity, and intrinsic plus hallux flexus deformity. These case examples are presented to demonstrate each type of deformity and our approach for surgical management according to the contracture pattern. The surgical approach has typically involved tenotomy, capsulotomy, or isolated joint fusion. The main goals of surgical treatment are to relieve pain and reduce pressure points through digital realignment in an effort to decrease the risk of pressure sores and allow more effective bracing to ultimately improve the patient's mobility.

Boffeli TJ; Hyllengren SB. Unilobed rotational flap for plantar hallux interphalangeal joint ulceration complicated by osteomyelitis. *J Foot Ankle Surg.* 2015 Nov-Dec;54(6):1166-71.

Abstract: Diabetes-related neuropathic ulcers located at the plantar aspect of the hallux interphalangeal joint are often chronic or recurrent and frequently become complicated by osteomyelitis. Once infected, treatment will typically involve hallux amputation. Although intended as a definitive procedure, amputation of the first toe is not desirable from a cosmetic or functional standpoint and often leads to transfer ulcers at adjacent locations of the foot. Reconstructive wound surgery, combined with limited bone resection, is possible if the infection is caught early before the local tissue and bone have become necrotic. In addition to neuropathy, biomechanical issues, including ankle equinus, hallux limitus, hallux extensus, and hallux valgus, predispose patients with diabetes mellitus to developing plantar hallux ulcers. We commonly employ a proximal based unilobed plantar rotational flap combined with hallux interphalangeal joint arthroplasty as an alternative to hallux amputation. We present a typical case with long-term follow-up to highlight our flap protocol, including patient selection criteria, flap design, surgical technique, bone resection and biopsy pearls, staging timeline, and a typical postoperative course. Periodic follow-up during the next 72 months for unrelated conditions allowed long-term monitoring with no recurrence of osteomyelitis or subsequent amputation. The foot remained ulcer free 6 years later. The benefits of this surgical approach include complete excision of the ulcer, adequate exposure for bone resection, early bone biopsy before the spread of infection or necrosis of local tissue, flap coverage with viable soft tissue, and partial offloading of mechanical pressure at the plantar interphalangeal joint.

Boffeli TJ; Pfannenstien RR; Thompson JC. Radiation therapy for recurrent heterotopic ossification prophylaxis after partial metatarsal amputation. *J Foot Ankle Surg.* 2015 May-Jun;54(3):345-9.

Abstract: The formation of heterotopic ossification is a relatively common, yet rarely discussed, cause of re-ulceration after previous partial metatarsal amputation. Excessive bone growth at the amputation site has the potential to create an unwanted prominence on the weight-bearing surface of the foot, intuitively increasing plantar pressure and placing the neuropathic patient at greater risk of re-ulceration and limb loss. The aim of the present study was to assess the efficacy of single-dose radiation therapy in preventing recurrent heterotopic ossification. The inclusion criteria consisted of a history of clinically relevant heterotopic ossification formation after partial metatarsal amputation with subsequent partial metatarsal amputation for heterotopic ossification resection, followed by prophylactic single-dose radiation therapy. Eleven consecutive patients meeting the inclusion criteria were identified for the present study. Before the intervention, 10 (91%) patients demonstrated formation of mid- to high-grade heterotopic ossification, and 9 (82%) patients exhibited an associated neuropathic ulceration. On follow-up at least 6 weeks after intervention, 2 (18%) patients exhibited low-grade heterotopic ossification reformation that was not clinically relevant and 9 (82%) did not show signs of heterotopic recurrence. Single-dose radiation therapy can help prevent the formation of heterotopic ossification in high-risk patients, acting as an effective adjunct to surgery in minimizing the risk of re-ulceration and re-amputation in the neuropathic patient.

Bohm KC; Ward CM. Necrotizing soft-tissue infection of the thumb. *JBJS Case Connect.* 2015 Mar 11;5(1):e22.

Case: We present the case of a fifty-three-year-old man who presented with a necrotizing soft-tissue infection (NSTI) of the thumb, which tracked along the flexor pollicis longus tendon into the space of Parona. In this case report, we review the clinical and laboratory findings diagnostic of NSTI as well as the appropriate initial treatment for this challenging problem. **Conclusion:** NSTI is a rare, life threatening condition that must be identified and treated promptly for optimal results. In our patient, although we amputated the necrotic thumb, we were able to salvage the remaining hand and wrist despite more proximal involvement.

Bolli GB; Riddle MC; Bergenstal RM; Ziemen M; Sestakauskas K; Goyeau H; Home PD. New insulin glargine 300 U/ml compared with glargine 100 U/ml in insulin-naïve people with type 2 diabetes on oral glucose-lowering drugs: a randomized controlled trial (EDITION 3). *Diabetes Obes Metab.* 2015 Apr;17(4):386-94. PMID: PMC4409854.

AIMS: To compare the efficacy and safety of new insulin glargine 300 U/ml (Gla-300) with that of glargine 100 U/ml (Gla-100) in insulin-naïve people with type 2 diabetes using oral glucose-lowering drugs. **METHODS:** The EDITION 3 study was a multicentre, open-label, parallel-group study. Participants were randomized to Gla-300 or Gla-100 once daily for 6 months, discontinuing sulphonylureas and glinides, with a dose titration aimed at achieving pre-breakfast plasma glucose concentrations of 4.4-5.6 mmol/l (80-100 mg/dl). The primary endpoint was change in glycated haemoglobin (HbA1c) from baseline to month 6. The main secondary endpoint was percentage of participants with ≥ 1 nocturnal confirmed [≤ 3.9 mmol/l (≤ 70 mg/dl)] or severe hypoglycaemia from week 9 to month 6. Other measures of glycaemia and hypoglycaemia, weight change and insulin dose were assessed. **RESULTS:** Randomized participants (n = 878) had a mean (standard deviation) age of 57.7 (10.1) years, diabetes duration 9.8 (6.4) years, body mass index

33.0 (6.7) kg/m²) and HbA1c 8.54 (1.06) % [69.8 (11.6) mmol/mol]. HbA1c levels decreased by equivalent amounts with the two treatments; the least squares mean difference in change from baseline was 0.04 [95% confidence interval (CI) -0.09 to 0.17] % or 0.4 (-1.0 to 1.9) mmol/mol. Numerically fewer participants reported ≥ 1 nocturnal confirmed (≤ 3.9 mmol/l) or severe hypoglycaemia from week 9 to month 6 [relative risk (RR) 0.89 (95% CI 0.66 to 1.20)] with Gla-300 versus Gla-100; a significantly lower risk of hypoglycaemia with this definition was found over the 6-month treatment period [RR 0.76 (95% CI 0.59 to 0.99)]. No between-treatment differences in adverse events were identified. **CONCLUSIONS:** Gla-300 is as effective as Gla-100 in reducing HbA1c in insulin-naïve people with type 2 diabetes, with lower hypoglycaemia risk.

Brophy RH; Haas AK; Huston LJ; Nwosu SK; Wright RW; Mars Group - HealthPartners Investigators **Cooper JM, Vang S.** Association of meniscal status, lower extremity alignment, and body mass index with chondrosis at revision anterior cruciate ligament reconstruction. *Am J Sports Med.* 2015 Jul;43(7):1616-22.

BACKGROUND: Knees undergoing revision anterior cruciate ligament reconstruction (rACL) have a high prevalence of articular cartilage lesions. **HYPOTHESIS:** The prevalence of chondrosis at the time of rACL is associated with meniscal status and lower extremity alignment. **STUDY DESIGN:** Cross-sectional study; Level of evidence, 3. **METHODS:** Data from the prospective Multicenter ACL Revision Study (MARS) cohort were reviewed to identify patients with preoperative lower extremity alignment films. Lower extremity alignment was defined by the weightbearing line (WBL) as a percentage of the tibial plateau width, while the chondral and meniscal status of each weightbearing compartment was recorded at the time of surgery. Multivariable proportional odds models were constructed and adjusted for relevant factors to examine which risk factors were independently associated with the degree of medial and lateral compartment chondrosis. **RESULTS:** The cohort included 246 patients with lower extremity alignment films at the time of rACL. Mean (+/-SD) patient age was 26.9 +/- 9.5 years and body mass index (BMI) was 26.4 +/- 4.6. The medial compartment had more chondrosis (grade 2/3, 42%; grade 4, 6.5%) than did the lateral compartment (grade 2/3, 26%; grade 4, 6.5%). Disruption of the meniscus was noted in 35% of patients on the medial side and 16% in the lateral side. The mean WBL was 0.43 +/- 0.13. Medial compartment chondrosis was associated with BMI (P = .025), alignment (P = .002), and medial meniscal status (P = .001). None of the knees with the WBL lateral to 0.625 had grade 4 chondrosis in the medial compartment. Lateral compartment chondrosis was significantly associated with age (P = .013) and lateral meniscal status (P < .001). Subjects with "intact" menisci were found to decrease their odds of having chondrosis by 64% to 84%. **CONCLUSION:** The status of articular cartilage in the tibiofemoral compartments at the time of rACL is related to meniscal status. Lower extremity alignment and BMI are associated with medial compartment chondrosis. Broy SB; Cauley JA; Lewiecki ME; **Schousboe JT;** Shepherd JA; Leslie WD. Fracture risk prediction by non-BMD DXA measures: the 2015 ISCD Official Positions Part 1: hip geometry. *J Clin Densitom.* 2015 Jul-Sep;18(3):287-308.

Abstract: Bone mineral density (BMD) measured by dual-energy X-ray absorptiometry is the current imaging procedure of choice to assess fracture risk. However, BMD is only one of the factors that explain bone strength or resistance to fracture. Other factors include bone microarchitecture and macroarchitecture. We now have the ability to assess some of these non-BMD parameters from a dual-energy X-ray absorptiometry image. Available measurements include various measurements of hip geometry including hip structural analysis, hip axis length, and neck-shaft angle. At the 2015 Position Development Conference, the

International Society of Clinical Densitometry established official positions for the clinical utility of measurements of hip geometry. We present the official positions approved by an expert panel after careful review of the recommendations and evidence prepared by an independent task force. Each question addressed by the task force is presented followed by the official position with the associated medical evidence and rationale.

Burgers PT; Poolman RW; Van Bakel TM; Tuinebreijer WE; Zielinski SM; Bhandari M; Patka P; Van Lieshout EM; HEALTH and FAITH Trial Investigators - **Switzer JA, Li M, Marston SB, Cole PA, Vang S, Ly TV, Anderson SA**. Reliability, validity, and responsiveness of the Western Ontario and McMaster Universities Osteoarthritis Index for elderly patients with a femoral neck fracture. *J Bone Joint Surg Am*. 2015 May 6;97(9):751-7.

BACKGROUND: The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) has been extensively evaluated in groups of patients with osteoarthritis, yet not in patients with a femoral neck fracture. This study aimed to determine the reliability, construct validity, and responsiveness of the WOMAC compared with the Short Form-12 (SF-12) and the EuroQol 5D (EQ-5D) questionnaires for the assessment of elderly patients with a femoral neck fracture. **METHODS:** Reliability was tested by assessing the Cronbach alpha. Construct validity was determined with the Pearson correlation coefficient. Change scores were calculated from ten weeks to twelve months of follow-up. Standardized response means and floor and ceiling effects were determined. Analyses were performed to compare the results for patients less than eighty years old with those for patients eighty years of age or older. **RESULTS:** The mean WOMAC total score was 89 points before the fracture in the younger patients and increased from 70 points at ten weeks to 81 points at two years postoperatively. In the older age group, these scores were 86, 75, and 78 points. The mean WOMAC pain scores before the fracture and at ten weeks and two years postoperatively were 92, 76, and 87 points, respectively, in the younger age group and 92, 84, and 93 points in the older age group. Function scores were 89, 68, and 79 points for the younger age group and 84, 71, and 73 points for the older age group. The Cronbach alpha for pain, stiffness, function, and the total scale ranged from 0.83 to 0.98 for the younger age group and from 0.79 to 0.97 for the older age group. Construct validity was good, with 82% and 79% of predefined hypotheses confirmed in the younger and older age groups, respectively. Responsiveness was moderate. No floor effects were found. Moderate to large ceiling effects were found for pain and stiffness scales at ten weeks and twelve months in younger patients (18% to 36%) and in the older age group (38% to 53%). **CONCLUSIONS:** The WOMAC showed good reliability, construct validity, and responsiveness in both age groups of elderly patients with a femoral neck fracture who had been physically and mentally fit before the fracture. The instrument is suitable for use in future clinical studies in these populations. **CLINICAL RELEVANCE:** The results are based on two clinical trials. The questionnaires used concern pure, clinically relevant issues (ability to walk, climb stairs, etc.). Moreover, the results can be used for future research comparing clinical outcomes (or treatments) for populations with a femoral neck fracture.

Burnett AM; Panchal D; Peterson BK; Ernest EV; Griffith KR; Frascione RJ; Engebretsen KM. The administration of pre-hospital ketamine for chemical restraint does not prolong on-scene times compared to haloperidol based sedation. *Australas J Paramedicine*. 2015 Feb;12(1):Article 2.

BACKGROUND: Agitated patients who present a danger to themselves or emergency medical services providers may require chemical restraints. Haloperidol is employed for chemical restraint in many

emergency medical services. Recently, ketamine has been introduced as an alternate option for pre-hospital sedation. On-scene time is a unique metric in pre-hospital medicine that has been linked to outcomes in multiple patient populations. When used for chemical restraint, the impact of ketamine relative to haloperidol on onscene time is unknown. **OBJECTIVE:** To evaluate whether the use of ketamine for chemical restraint was associated with a clinically significant (.5 minute) increased on-scene time compared to a haloperidol based regimen. **METHODS:** Patients who received haloperidol or ketamine for chemical restraint were identified by retrospective chart review. On-scene time was compared between groups using an unadjusted student t-test powered to 80% to detect a .5 minute difference in on-scene time. **RESULTS:** 110 cases were abstracted (haloperidol = 55; ketamine = 55). Of the patients receiving haloperidol, 11/55 (20%) were coadministered a benzodiazepine, 4/55 (7%) received diphenhydramine and 34/55 (62%) received the three drugs in combination. There were no demographic differences between the haloperidol and ketamine groups. On-scene time was not statistically different for patients receiving a haloperidol-based regimen compared to ketamine (18.2 minutes, [95% CI: 15.7-20.8] vs. 17.6 minutes, [95% CI: 15.1-20.0]; $p=0.71$). **CONCLUSION:** The use of pre-hospital ketamine for chemical restraint was not associated with a clinically significant (.5 minute) increased onscene time compared to a haloperidol based regimen.

Burnett AM; Peterson BK; Stellpflug SJ; Engebretsen KM; Glasrud KJ; Marks J; Frascone RJ. The association between ketamine given for prehospital chemical restraint with intubation and hospital admission. *Am J Emerg Med.* 2015 Jan;33(1):76-9.

INTRODUCTION: Intramuscular ketamine has become increasingly popular for prehospital chemical restraint of severely agitated or violent patients because of its favorable adverse effect profile, rapid onset, and wide therapeutic window. However, there is currently no literature quantifying the need for intubation or hospital admission for these patients once they reach the emergency department. **METHODS:** Medical records for patients receiving prehospital ketamine who were transported to a single level 1 trauma center were abstracted. Ketamine dose, patient weight, final disposition, and presence of intubation were recorded. Exclusion criteria were missing dose or weight and ketamine given for an indication other than chemical restraint. Statistical analysis was performed with unadjusted Student t test. Statistical significance was defined as $P < .05$. **RESULTS:** A convenience sample of 51 consecutive patients was identified with 2 excluded because of missing data, leaving 49 for analysis. Ketamine dosing ranged from 2.25 to 9.42 mg/kg (mean, 5.26 +/- 1.65 mg/kg). Significant differences were noted between those who required intubation ($n = 14$) and those who did not ($n = 35$) (6.16 +/- 1.62 mg/kg vs 4.90 +/- 1.54 mg/kg, $P = .02$). No patients were intubated prehospital. There was an increased dose in patients admitted to a medical ward (57%, 28/49) that approached statistical significance (5.62 +/- 1.80 vs 4.78 +/- 1.31, $P = .06$). **CONCLUSION:** Intubation was observed in our emergency department in 29% of patients administered intramuscular ketamine for prehospital chemical restraint. There was a positive association between higher ketamine doses and both endotracheal intubation and hospital admission. Future research should aim to define the minimum effective ketamine dose for successful chemical restraint.

Cannell MB; Weitlauf JC; Garcia L; Andresen EM; **Margolis KL**; Manini TM. Cross-sectional and longitudinal risk of physical impairment in a cohort of postmenopausal women who experience physical and verbal abuse. *BMC Womens Health*. 2015;15(1):98. PMCID: PMC4641397.

BACKGROUND: Exposure to interpersonal violence, namely verbal and physical abuse, is a highly prevalent threat to women's health and well-being. Among older, post-menopausal women, several researchers have characterized a possible bi-directional relationship of abuse exposure and diminished physical functioning. However, studies that prospectively examine the relationship between interpersonal abuse exposure and physical functioning across multiple years of observation are lacking. To address this literature gap, we prospectively evaluate the association between abuse exposure and physical functioning in a large, national cohort of post-menopausal women across 12 years of follow-up observation. **METHODS:** Multivariable logistic regression was used to measure the adjusted association between experiencing abuse and physical function score at baseline in 154,902 Women's Health Initiative (WHI) participants. Multilevel modeling, where the trajectories of decline in physical function were modeled as a function of time-varying abuse exposure, was used to evaluate the contribution of abuse to trajectories of physical function scores over time. **RESULT:** Abuse was prevalent among WHI participants, with 11 % of our study population reporting baseline exposure. Verbal abuse was the most commonly reported abuse type (10 %), followed by combined physical and verbal abuse (1 %), followed by physical abuse in the absence of verbal abuse (0.2 %). Abuse exposure (all types) was associated with diminished physical functioning, with women exposed to combined physical and verbal abuse presenting baseline physical functioning scores consistent with non-abused women 20 years senior. Results did not reveal a differential rate of decline over time in physical functioning based on abuse exposure. **CONCLUSIONS:** Taken together, our findings suggest a need for increased awareness of the prevalence of abuse exposure among postmenopausal women; they also underscore the importance of clinician's vigilance in their efforts toward the prevention, early detection and effective intervention with abuse exposure, including verbal abuse exposure, in post-menopausal women. Given our findings related to abuse exposure and women's diminished physical functioning at WHI baseline, our work illuminates a need for further study, particularly the investigation of this association in younger, pre-menopausal women so that the temporal ordering of this relationship may be better understood.

Cawthon PM; Haslam J; Fullman R; Peters KW; Black D; Ensrud KE; Cummings SR; Orwoll ES; Barrett-Connor E; Marshall L; Steiger P; **Schousboe JT**; Osteoporotic Fractures in Men (MrOS) Research Group. Response to BONE-D-14-00884. *Bone*. 2015 Jun;75:246. [Comment on: *Bone*. 2015 Jun;75:244-5. *Bone*. 2014 Oct;67:152-5.]

Chou CM; Nelson C; Tarle SA; **Pribila JT**; Bardakjian T; Woods S; Schneider A; Glaser T. Biochemical basis for dominant inheritance, variable penetrance, and maternal effects in RBP4 congenital eye disease. *Cell*. 2015 Apr 23;161(3):634-46. PMCID: PMC4409664.

Abstract: Gestational vitamin A (retinol) deficiency poses a risk for ocular birth defects and blindness. We identified missense mutations in RBP4, encoding serum retinol binding protein, in three families with eye malformations of differing severity, including bilateral anophthalmia. The mutant phenotypes exhibit dominant inheritance, but incomplete penetrance. Maternal transmission significantly increases the probability of phenotypic expression. RBP normally delivers retinol from hepatic stores to peripheral tissues, including the placenta and fetal eye. The disease mutations greatly reduce retinol binding to RBP, yet

paradoxically increase the affinity of RBP for its cell surface receptor, STRA6. By occupying STRA6 nonproductively, the dominant-negative proteins disrupt vitamin A delivery from wild-type proteins within the fetus, but also, in the case of maternal transmission, at the placenta. These findings establish a previously uncharacterized mode of maternal inheritance, distinct from imprinting and oocyte-derived mRNA, and define a group of hereditary disorders plausibly modulated by dietary vitamin A.

Cohn DE; **Shimp WS**. The cost implications of the use of pegylated liposomal doxorubicin when choosing an anthracycline for the treatment of platinum-resistant ovarian cancer: A low-value intervention? *Gynecol Oncol Rep*. 2015 Aug;13:47-8. PMCID: PMC4563795.

Cole PA; Dyskin EA; Gilbertson JA. Minimally-invasive fixation for anterior pelvic ring disruptions. *Injury*. 2015 Sep;46(Suppl 3):S27-34.

Abstract: Pelvic fractures are usually the result of high-energy trauma. In addition to the underlying disruption of the pelvic ring extensive damage to the surrounding soft tissue envelope might be present. Different fixation techniques have been developed including open plating, external fixation and transramus intraosseous screw fixation. Recently another method has been reported the so called pelvic Bridge or Infix technique. In this short review article the different techniques of pelvic fixation are described.

Cole PA; Jamil M; Jacobson AR; Hill BW. "The Skiver Screw": a useful fixation technique for iliac wing fractures. *J Orthop Trauma*. 2015 Jul;29(7):e231-4.

Abstract: The contour of the ilium is curved and the iliac fossa is thin, making adequate fixation for fractures involving the iliac wing challenging to achieve at times. The purpose of this article is to describe a previously unreported technique for enhancing fixation in iliac fractures using simple cortical screws.

Cole PA Jr; Jacobson AR; Cole PA Sr. Open reduction and internal fixation of scapula fractures in a geriatric series. *Geriatr Orthop Surg Rehabil*. 2015 Sep;6(3):180-5. PMCID: PMC4536507.

Abstract: The purpose of this small descriptive series was to report patient and injury characteristics, as well as, surgical and functional outcomes in patients aged 70 years or older, with operative scapular fracture. A retrospective review of 214 scapula fractures identified 6 consecutive geriatric patients aged 70 years or older and formed the basis for this study. Outcomes reported include surgical complications; disabilities of the arm, shoulder, and hand (DASH); range of motion (ROM); and strength assessment at the 6-month postoperative interval and final follow-up. All patients were community ambulators and 5 of the 6 patients routinely performed recreational activities that required shoulder strength and/or motion. Outcomes were attained on all patients at greater than 1 year with a mean of 23.2 months. There were no surgical complications and all fractures united. The mean ROM expressed as a percentage of contralateral ROM ranged from 82% to 100% at both 6-month and final follow-up. The mean strength expressed as a percentage of contralateral strength ranged from 63% to 82% at the 6-month follow-up and 94% to 100% at the final follow-up. The mean DASH score was 12.3 at final follow-up. Our conclusion is that operative treatment for displaced scapula fractures appears to be safe and can yield good functional results in patients aged 70 years and older.

Corathers SD; Schoettker PJ; Clements MA; List BA; **Mullen DM**; Ohmer A; Shah A; Lee J. Health-system-based interventions to improve care in pediatric and adolescent type 1 diabetes. *Curr Diab Rep*. 2015 Nov;15(11):91.

Abstract: Despite significant advances in pharmacology and technology, glycemic targets are difficult to achieve for patients with type 1 diabetes (T1D) and management remains burdensome for patients and their families. Quality improvement (QI) science offers a methodology to identify an aim, evaluate complex contributors to the goal, and test potential interventions to achieve outcomes of interest. Day-to-day management of diabetes is often an iterative process but interventions exist at all care levels: individual patient and family, clinic, and larger population and health system. This article reviews current literature and proposes novel QI interventions for enhancing health outcomes, with attention to essential determinants or drivers of improved glycemic control and patient experience for pediatric T1D in the context of the Chronic Care Model. In-depth consideration of key drivers of successful T1D care, including self-management and integration of technology, are explored, and examples of larger health systems with improved outcomes, including Learning Health Systems are highlighted.

Cortes-Puentes GA; Keenan JC; Adams AB; Parker ED; Dries DJ; Marini JJ. Impact of chest wall modifications and lung injury on the correspondence between airway and transpulmonary driving pressures. *Crit Care Med*. 2015 Aug;43(8):e287-95.

OBJECTIVE: Recent interest has arisen in airway driving pressure (DPAW), the quotient of tidal volume (VT), and respiratory system compliance (CRS), which could serve as a direct and easily measured marker for ventilator-induced lung injury risk. We aimed to test the correspondence between DPAW and transpulmonary driving pressure (DPTP)-the quotient of VT and lung compliance (CL), in response to intra-abdominal hypertension and changes in positive end-expiratory pressure during different models of lung pathology. **DESIGN:** Well-controlled experimental setting that allowed reversible modification of chest wall compliance (CCW) in a variety of models of lung pathology. **SETTING:** Large animal laboratory of a university-affiliated hospital. **SUBJECTS:** Ten deeply anesthetized swine. **INTERVENTIONS:** Application of intra-abdominal pressures of 0 and 20 cm H₂O at positive end-expiratory pressure of 1 and 10 cm H₂O, under volume-controlled mechanical ventilation in the settings of normal lungs (baseline), unilateral whole-lung atelectasis, and unilateral and bilateral lung injuries caused by saline lavage. **MEASUREMENTS AND MAIN RESULTS:** Pulmonary mechanics including esophageal pressure and calculations of DPAW, DPTP, CRS, CL, and CCW. When compared with normal intra-abdominal pressures, intra-abdominal hypertension increased DPAW, during both "normal lung conditions" ($p < 0.0001$) and "unilateral atelectasis" ($p = 0.0026$). In contrast, DPTP remained virtually unaffected by changes in positive end-expiratory pressure or intra-abdominal pressures in both conditions. During unilateral lung injury, both DPAW and DPTP were increased by the presence of intra-abdominal hypertension ($p < 0.0001$ and $p = 0.0222$, respectively). During bilateral lung injury, intra-abdominal hypertension increased both DPAW (at positive end-expiratory pressure of 1 cm H₂O, $p < 0.0001$; and at positive end-expiratory pressure of 10 cm H₂O, $p = 0.0091$) and DPTP (at positive end-expiratory pressure of 1 cm H₂O, $p = 0.0510$; and at positive end-expiratory pressure of 10 cm H₂O, $p = 0.0335$). **CONCLUSIONS:** Our data indicate that DPAW is influenced by reductions in chest wall compliance and by underlying lung properties. As with other measures of pulmonary mechanics that are based on unmodified PAW, caution is advised in attempting to attribute hazard or safety to any specific absolute value of DPAW.

Crowell MD; Murphy TB; Levy RL; Langer SL; **Kunin-Batson AS; Seburg EM; Senso MM; Sherwood NE.** Eating behaviors and quality of life in preadolescents at risk for obesity with and without abdominal pain. *J Pediatr Gastroenterol Nutr.* 2015 Feb;60(2):217-23. PMID: PMC4308479.

OBJECTIVES: We evaluated eating behaviors and quality of life (QOL) in preadolescent children at risk for obesity, with and without abdominal pain (AP). **METHODS:** Participants were parent-child dyads enrolled in a randomized, controlled obesity prevention trial. The children were between 5 and 10 years of age and at risk for obesity (70th-95th percentile of body mass index, $n = 420$). Parents completed measures of their child's eating behaviors, QOL, AP, and bowel function and their own depression status, concern about child weight, and feeding practices. Children's height and weight were also measured. **RESULTS:** Children with frequent AP (≥ 2 /month, $n = 103$) were compared with children reporting infrequent AP (< 2 /month, $n = 312$). Age and body mass index did not differ between groups, but AP was more prevalent in girls. Child emotional overeating and parental depression scores were higher in the frequent AP group ($P < 0.01$), and child QOL was lower ($P < 0.01$). In multivariable analysis, female gender (odds ratio [OR] 2.18, 95% confidence interval [CI] 1.20-3.97), emotional overeating (OR 2.28, 95% CI 1.37-3.81), and parental depression (OR 1.23, 95% CI 1.12-1.35) were associated with more frequent AP. Secondary analyses were completed for children who met Rome III criteria for irritable bowel syndrome. **CONCLUSIONS:** Clinicians working with children with AP at risk for obesity should consider assessing for and, when appropriate, addressing parent and child factors that could exacerbate AP.

Cui Z; **Seburg EM; Sherwood NE;** Faith MS; Ward DS. Recruitment and retention in obesity prevention and treatment trials targeting minority or low-income children: a review of the clinical trials registration database. *Trials.* 2015 Dec 10;16(1):564-79. PMID: PMC4674912.

BACKGROUND: Efforts to recruit and retain participants in clinical trials are challenging, especially in studies that include minority or low-income children. To date, no studies have systematically examined recruitment and retention strategies and their effectiveness in working successfully with this population. We examined strategies employed to recruit or retain minority or low-income children in trials that included an obesity-related behavior modification component. **METHODS:** First, completed home-, community-, and school-based trials involving minority or low-income children aged 2-17 years were identified in a search of the ClinicalTrials.gov registry. Second, a PubMed search of identified trials was conducted to locate publications pertinent to identified trials. Recruitment and retention rates were calculated for studies that included relevant information. **RESULTS:** Our final analytic sample included 43 studies. Of these, 25 studies reported recruitment or retention strategies, with the amount of information varying from a single comment to several pages; 4 published no specific information on recruitment or retention; and 14 had no publications listed in PubMed. The vast majority (92 %) of the 25 studies reported retention rates of, on average, 86 %. Retention rates were lower in studies that: targeted solely Hispanics or African Americans (vs. mixed races of African Americans, whites, and others); involved children and parents (vs. children only); focused on overweight or obese children (vs. general children), lasted ≥ 1 year (vs. < 1 year), were home or community-based (vs. school-based), included nutrition and physical activity intervention (vs. either intervention alone), had body mass index or other anthropometrics as primary outcome measures (vs. obesity-related behavior, insulin sensitivity, etc.). Retention rates did not vary based on child age, number of intervention sessions, or sample size. **CONCLUSIONS:** Variable amounts of information were provided on recruitment and retention

strategies in obesity-related trials involving minority or low-income children. Although reported retention rates were fairly high, a lack of reporting limited the available information. More and consistent reporting and systematic cataloging of recruitment and retention methods are needed. In addition, qualitative and quantitative studies to inform evidence-based decisions in the selection of effective recruitment and retention strategies for trials including minority or low-income children are warranted.

Daniels GH; Hegedus L; Marso SP; Nauck MA; Zinman B; **Bergenstal RM**; Mann JF; Derving Karsbol J; Moses AC; Buse JB; Tuttle RM. LEADER 2: baseline calcitonin in 9340 people with type 2 diabetes enrolled in the Liraglutide Effect and Action in Diabetes: Evaluation of cardiovascular outcome Results (LEADER) trial: preliminary observations. *Diabetes Obes Metab*. 2015 May;17(5):477-86. PMID: PMC4405040.

AIMS: To report preliminary data on baseline serum calcitonin concentrations and associated clinical characteristics in a global population with type 2 diabetes before liraglutide or placebo randomization. **METHODS:** The ongoing LEADER trial has enrolled 9340 people with type 2 diabetes and at high risk of cardiovascular disease at 410 centres worldwide. People with baseline serum calcitonin ≤ 50 ng/l were randomized to liraglutide once daily or placebo and will be followed for up to 5 years. Serum calcitonin was measured at baseline and will be measured annually thereafter. An independent committee of thyroid experts will oversee calcitonin monitoring throughout the trial and will review all calcitonin concentrations ≥ 20 ng/l. **RESULTS:** The mean age of participants was 64.3 \pm 7.2 years, 64.3% were men, and mean the body mass index was 32.5 \pm 6.3 kg/m². The median (interquartile range) baseline serum calcitonin values were 3.9 (1.0 to >7.6) ng/l in men and 1.0 (1.0 to >1) ng/l in women. Serum calcitonin was >10 ng/l in 14.6% of men and in 0.96% of women. In sex-specific multivariable linear analysis of covariance models, a reduced glomerular filtration rate (GFR) was associated with higher serum calcitonin concentrations that were statistically significant. A 20 ml/min/1.73 m² decrease in estimated GFR (eGFR) was associated with a 14% increase in serum calcitonin in women and an 11% increase in men. **CONCLUSIONS:** In the LEADER population, the prevalence of elevated serum calcitonin concentrations at baseline was high, and there was an inverse association between eGFR and serum calcitonin concentrations.

Davies MJ; **Bergenstal RM**; Bode B; Kushner RF; Lewin A; Skjoth TV; Andreasen AH; Jensen CB; DeFronzo RA; NN8022-1922 Study Group. Efficacy of liraglutide for weight loss among patients with type 2 diabetes: The SCALE Diabetes Randomized Clinical Trial. *JAMA*. 2015 Aug 18;314(7):687-99.

IMPORTANCE: Weight loss of 5% to 10% can improve type 2 diabetes and related comorbidities. Few safe, effective weight-management drugs are currently available. **OBJECTIVE:** To investigate efficacy and safety of liraglutide vs placebo for weight management in adults with overweight or obesity and type 2 diabetes. **DESIGN, SETTING, AND PARTICIPANTS:** Fifty-six-week randomized (2:1:1), double-blind, placebo-controlled, parallel-group trial with 12-week observational off-drug follow-up period. The study was conducted at 126 sites in 9 countries between June 2011 and January 2013. Of 1361 participants assessed for eligibility, 846 were randomized. Inclusion criteria were body mass index of 27.0 or greater, age 18 years or older, taking 0 to 3 oral hypoglycemic agents (metformin, thiazolidinedione, sulfonylurea) with stable body weight, and glycated hemoglobin level 7.0% to 10.0%. **INTERVENTIONS:** Once-daily, subcutaneous liraglutide (3.0 mg) (n = 423), liraglutide (1.8 mg) (n = 211), or placebo (n = 212), all as adjunct to 500 kcal/d dietary deficit and increased physical activity (≥ 150 min/wk). **MAIN OUTCOMES AND MEASURES:** Three coprimary end points: relative change in weight, proportion of participants losing 5% or more, or more than 10%, of

baseline weight at week 56. RESULTS: Baseline weight was 105.7 kg with liraglutide (3.0-mg dose), 105.8 kg with liraglutide (1.8-mg dose), and 106.5 kg with placebo. Weight loss was 6.0% (6.4 kg) with liraglutide (3.0-mg dose), 4.7% (5.0 kg) with liraglutide (1.8-mg dose), and 2.0% (2.2 kg) with placebo (estimated difference for liraglutide [3.0 mg] vs placebo, -4.00% [95% CI, -5.10% to -2.90%]; liraglutide [1.8 mg] vs placebo, -2.71% [95% CI, -4.00% to -1.42%]; $P < .001$ for both). Weight loss of 5% or greater occurred in 54.3% with liraglutide (3.0 mg) and 40.4% with liraglutide (1.8 mg) vs 21.4% with placebo (estimated difference for liraglutide [3.0 mg] vs placebo, 32.9% [95% CI, 24.6% to 41.2%]; for liraglutide [1.8 mg] vs placebo, 19.0% [95% CI, 9.1% to 28.8%]; $P < .001$ for both). Weight loss greater than 10% occurred in 25.2% with liraglutide (3.0 mg) and 15.9% with liraglutide (1.8 mg) vs 6.7% with placebo (estimated difference for liraglutide [3.0 mg] vs placebo, 18.5% [95% CI, 12.7% to 24.4%], $P < .001$; for liraglutide [1.8 mg] vs placebo, 9.3% [95% CI, 2.7% to 15.8%], $P = .006$). More gastrointestinal disorders were reported with liraglutide (3.0 mg) vs liraglutide (1.8 mg) and placebo. No pancreatitis was reported. CONCLUSIONS AND RELEVANCE: Among overweight and obese participants with type 2 diabetes, use of subcutaneous liraglutide (3.0 mg) daily, compared with placebo, resulted in weight loss over 56 weeks. Further studies are needed to evaluate longer-term efficacy and safety.

Davis RL; Gallagher MA; Asgari MM; Eide MJ; Margolis DJ; Macy E; Burmester JK; Selvam N; Boscarino JA; Cromwell LF; Feigelson HS; Kuntz JL; **Pawloski PA**; Penfold RB; Raebel MA; Sridhar G; Wu A; La Grenade LA; Pacanowski MA; Pinheiro SP. Identification of Stevens-Johnson syndrome and toxic epidermal necrolysis in electronic health record databases. *Pharmacoepidemiol Drug Saf.* 2015 Jul;24(7):684-92. Project Number: A11-115.

BACKGROUND: Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) carry a high mortality risk. While identifying clinical and genetic risk factors for these conditions has been hindered by their rarity, large electronic health databases hold promise for identifying large numbers of cases for study, especially with the introduction in 2008 of ICD-9 codes more specific for these conditions. OBJECTIVE: The objective of this study is to estimate the validity of ICD-9 codes for ascertaining SJS/TEN in 12 collaborating research units in the USA, covering almost 60 million lives. METHODS: From the electronic databases at each site, we ascertained potential cases of SJS/TEN using ICD-9 codes. At five sites, a subset of medical records was abstracted and standardized criteria applied by board-certified dermatologists to adjudicate diagnoses. Multivariate logistic regression was used to identify factors independently associated with validated SJS/TEN cases. RESULTS: A total of 56 591 potential cases of SJS/TEN were identified. A subset of 276 charts was selected for adjudication and 39 (of the 276) were confirmed as SJS/TEN. Patients with the ICD-9 codes introduced after 2008 were more likely to be confirmed as cases (OR 3.32; 95%CI 0.82, 13.47) than those identified in earlier years. Likelihood of case status increased with length of hospitalization. Applying the probability of case status to the 56 591 potential cases, we estimated 475-875 to be valid SJS/TEN cases. CONCLUSION: Newer ICD-9 codes, along with length of hospitalization, identified patients with a high likelihood of SJS/TEN. This is important for identification of subjects for future pharmacogenomics studies.

Deplanque G; Demarchi M; Hebbar M; **Flynn TP**; Melichar B; Atkins J; Nowara E; Moye L; Piquemal D; Ritter D; Dubreuil P; Mansfield CD; Acin Y; Moussy A; Hermine O; Hammel P. A randomized, placebo-controlled phase III trial of masitinib plus gemcitabine in the treatment of advanced pancreatic cancer. *Ann Oncol*. 2015 Jun;26(6):1194-200. PMCID: PMC4516046.

BACKGROUND: Masitinib is a selective oral tyrosine-kinase inhibitor. The efficacy and safety of masitinib combined with gemcitabine was compared against single-agent gemcitabine in patients with advanced pancreatic ductal adenocarcinoma (PDAC). **PATIENTS AND METHODS:** Patients with inoperable, chemotherapy-naïve, PDAC were randomized (1:1) to receive gemcitabine (1000 mg/m²) in combination with either masitinib (9 mg/kg/day) or a placebo. The primary endpoint was overall survival (OS) in the modified intent-to-treat population. Secondary OS analyses aimed to characterize subgroups with poor survival while receiving single-agent gemcitabine with subsequent evaluation of masitinib therapeutic benefit. These prospectively declared subgroups were based on pharmacogenomic data or a baseline characteristic. **RESULTS:** Three hundred and fifty-three patients were randomly assigned to receive either masitinib plus gemcitabine (N = 175) or placebo plus gemcitabine (N = 178). Median OS was similar between treatment-arms for the overall population, at respectively, 7.7 and 7.1 months, with a hazard ratio (HR) of 0.89 (95% CI [0.70; 1.13]). Secondary analyses identified two subgroups having a significantly poor survival rate when receiving single-agent gemcitabine; one defined by an overexpression of acyl-CoA oxidase-1 (ACOX1) in blood, and another via a baseline pain intensity threshold (VAS > 20 mm). These subgroups represent a critical unmet medical need as evidenced from median OS of 5.5 months in patients receiving single-agent gemcitabine, and comprise an estimated 63% of patients. A significant treatment effect was observed in these subgroups for masitinib with median OS of 11.7 months in the 'ACOX1' subgroup [HR = 0.23 (0.10; 0.51), P = 0.001], and 8.0 months in the 'pain' subgroup [HR = 0.62 (0.43; 0.89), P = 0.012]. Despite an increased toxicity of the combination as compared with single-agent gemcitabine, side-effects remained manageable. **CONCLUSIONS:** The present data warrant initiation of a confirmatory study that may support the use of masitinib plus gemcitabine for treatment of PDAC patients with overexpression of ACOX1 or baseline pain (VAS > 20mm). Masitinib's effect in these subgroups is also supported by biological plausibility and evidence of internal clinical validation.

Desai JR; Vazquez-Benitez G; Xu Z; Schroeder EB; Karter AJ; Steiner JF; Nichols GA; Reynolds K; Xu S; Newton KM; Pathak RD; Waitzfelder BE; Lafata JE; Butler MG; Kirchner HL; **Thomas AJ; O'Connor PJ;** SUPREME-DM Study Group. Who must we target now to minimize future cardiovascular events and total mortality? Lessons from the Surveillance, Prevention and Management of Diabetes Mellitus (SUPREME-DM) cohort study. *Circ Cardiovasc Qual Outcomes*. 2015 Sep;8(5):508-16. PMCID: PMC4703450. Project Number: A13-132 SUPREME DM.

BACKGROUND: Examining trends in cardiovascular events and mortality in US health systems can guide the design of targeted clinical and public health strategies to reduce cardiovascular events and mortality rates. **METHODS AND RESULTS:** We conducted an observational cohort study from 2005 to 2011 among 1.25 million diabetic subjects and 1.25 million nondiabetic subjects from 11 health systems that participate in the Surveillance, Prevention and Management of Diabetes Mellitus (SUPREME-DM) DataLink. Annual rates (per 1000 person-years) of myocardial infarction/acute coronary syndrome (International Classification of Diseases-Ninth Revision, 410.0-410.91, 411.1-411.8), stroke (International Classification of Diseases-Ninth Revision, 430-432.9, 433-434.9), heart failure (International Classification of Diseases-Ninth Revision, 428-

428.9), and all-cause mortality were monitored by diabetes mellitus (DM) status, age, sex, race/ethnicity, and a prior cardiovascular history. We observed significant declines in cardiovascular events and mortality rates in subjects with and without DM. However, there was substantial variation by age, sex, race/ethnicity, and prior cardiovascular history. Mortality declined from 44.7 to 27.1 ($P<0.0001$) for those with DM and cardiovascular disease (CVD), from 11.2 to 10.9 ($P=0.03$) for those with DM only, and from 18.9 to 13.0 ($P<0.0001$) for those with CVD only. Yet, in the [almost equal to] 85% of subjects with neither DM nor CVD, overall mortality (7.0 to 6.8; $P=0.10$) and stroke rates (1.6-1.6; $P=0.77$) did not decline and heart failure rates increased (0.9-1.15; $P=0.0005$). **CONCLUSIONS:** To sustain improvements in myocardial infarction, stroke, heart failure, and mortality, health systems that have successfully focused on care improvement in high-risk adults with DM or CVD must broaden their improvement strategies to target lower risk adults who have not yet developed DM or CVD.

DeSilva MB; Sharma A; Staples E; Arndt B; Shieh WJ; Shames J; Cieslak P. Notes from the field: fatal yellow fever vaccine-associated viscerotropic disease--Oregon, September 2014. *MMWR Morb Mortal Wkly Rep*. 2015 Mar 20;64(10):279-81.

Abstract: In September 2014, a previously healthy Oregon woman in her 60s went to a hospital emergency department with malaise, dyspnea, vomiting, and diarrhea of 3-5 days' duration. She reported no recent travel, ill contacts, or dietary changes. Six days earlier, she had received a single dose of yellow fever vaccine and typhoid vaccine before planned travel to South America.

Dietz WH; Solomon LS; **Pronk NP;** Ziegenhorn SK; Standish M; Longjohn MM; Fukuzawa DD; Eneli IU; Loy L; Muth ND; Sanchez EJ; Bogard J; Bradley DW. An integrated framework for the prevention and treatment of obesity and its related chronic diseases. *Health Aff (Millwood)*. 2015 Sep;34(9):1456-63.

Abstract: Improved patient experience, population health, and reduced cost of care for patients with obesity and other chronic diseases will not be achieved by clinical interventions alone. We offer here a new iteration of the Chronic Care Model that integrates clinical and community systems to address chronic diseases. Obesity contributes substantially to cardiovascular disease, type 2 diabetes mellitus, and cancer. Dietary and physical activity interventions will prevent, mitigate, and treat obesity and its related diseases. Challenges with the implementation of this model include provider training, the need to provide incentives for health systems to move beyond clinical care to link with community systems, and addressing the multiple elements necessary for integration within clinical care and with social systems. The Affordable Care Act, with its emphasis on prevention and new systems for care delivery, provides support for innovative strategies such as those proposed here.

Dries DJ. Extracorporeal life support. *Air Med J*. 2015 Mar-Apr;34(2):65-8.

Dries DJ. Lessons from the military. *Air Med J*. 2015 Jan-Feb;34(1):12-5.

Dries DJ. Taking one for the team [editorial]. *Pediatr Crit Care Med*. 2015 May;16(4):379-80. [Comment on: *Pediatr Crit Care Med*. 2015 May;16(4):319-24.]

Dries DJ. Targeted temperature management: part 1. *Air Med J*. 2015 May-Jun;34(3):128-31.

Dries DJ. Targeted temperature management: part 2. *Air Med J.* 2015 Jul-Aug;34(4):166-9.

Dries DJ; Hussein HM. Stroke: Part 1 [review article]. *Air Med J.* 2015 Sep-Oct;34(5):236-9.

Dries DJ; Hussein HM. Stroke: Part 2. *Air Med J.* 2015 Nov-Dec;34(6):306-13.

DuBose SN; Hermann JM; Tamborlane WV; Beck RW; Dost A; DiMeglio LA; Schwab KO; Holl RW; Hofer SE; Maahs DM; Type 1 Diabetes Exchange Clinic Network and Diabetes Prospective Follow-up Registry Collaborators; **Bergental RM; Criego AB; Damberg G; Powers MA; Tridgell D; Olson B; Thomas LA.** Obesity in youth with type 1 diabetes in Germany, Austria, and the United States. *J Pediatr.* 2015 Sep;167(3):627-632.e4.

OBJECTIVE: To examine the current extent of the obesity problem in 2 large pediatric clinical registries in the US and Europe and to examine the hypotheses that increased body mass index (BMI) z-scores (BMIz) are associated with greater hemoglobin A1c (HbA1c) and increased frequency of severe hypoglycemia in youth with type 1 diabetes (T1D). **STUDY DESIGN:** International (World Health Organization) and national (Centers for Disease Control and Prevention/German Health Interview and Examination Survey for Children and Adolescents) BMI references were used to calculate BMIz in participants (age 2-<18 years and ≥ 1 year duration of T1D) enrolled in the T1D Exchange (n = 11 435) and the Diabetes Prospective Follow-up (n = 21 501). Associations between BMIz and HbA1c and severe hypoglycemia were assessed. **RESULTS:** Participants in both registries had median BMI values that were greater than international and their respective national reference values. BMIz was significantly greater in the T1D Exchange vs the Diabetes Prospective Follow-up ($P < .001$). After stratification by age-group, no differences in BMI between registries existed for children 2-5 years, but differences were confirmed for 6- to 9-, 10- to 13-, and 14- to 17-year age groups (all $P < .001$). Greater BMIz were significantly related to greater HbA1c levels and more frequent occurrence of severe hypoglycemia across the registries, although these associations may not be clinically relevant. **CONCLUSIONS:** Excessive weight is a common problem in children with T1D in Germany and Austria and, especially, in the US. Our data suggest that obesity contributes to the challenges in achieving optimal glycemic control in children and adolescents with T1D.

Durand EU. Research that works: The National Dental Practice-Based Research Network. *Int J Evid Based Pract Dent Hyg.* 2015 Summer;1(1):17-8.

Abstract: The National Dental Practice-Based Research Network is a consortium of participating practices and dental organizations committed to advancing knowledge of dental practice and ways to improve it. It is “practical science” done about, in, and for the benefit of “real-world” everyday clinical practice. The major source of funding for the nation’s network is the National Institute of Dental and Craniofacial Research (NIDCR), part of the US National Institutes of Health (NIH). Dental professionals and researchers are encouraged to enroll in the network, engage in the development of studies, participate in data collection and other network opportunities, and utilize the results of network studies in practice with the collective goal of improving the nation’s oral health by improving the knowledge base for clinical decision-making and moving the latest evidence into routine care.

Durham J; Touger-Decker R; **Nixdorf DR**; Rigassio-Radler D; Moynihan P. Oro-facial pain and nutrition: a forgotten relationship [editorial]? *J Oral Rehabil*. 2015 Jan;42(1):75-80.

Abstract: Oro-facial pain (OFP) is known to exert profound impacts on quality of life including functionally and psychosocially mediated changes in dietary intake and thereby nutrition. This commentary explores the evidence base available on chronic oro-facial pain, diet and nutrition and discusses current dietary guidance for individuals with chronic OFP; potential impact of chronic OFP on eating and nutritional status; impact of nutritional status on pathophysiology of chronic OFP; and potential role of nutrition in the management of chronic OFP.

Eby EL; Curtis BH; Gelwicks SC; Hood RC; Idris I; Peters AL; **Bergenstal RM**; Jackson JA. Initiation of human regular U-500 insulin use is associated with improved glycemic control: a real-world US cohort study. *BMJ Open Diabetes Res Care*. 2015 Apr 30;3(1):e000074. PMCID: PMC4419461.

AIM: Describe the characteristics of patients initiating human regular U-500 insulin (U-500R) and their subsequent glycemic control in a real-world setting. METHODS: US Humedica electronic health record system data (July 2007-September 2011) were used to identify patients with diabetes aged ≥ 18 years with ≥ 1 records for U-500R prescriptions, 6 months of preindex data, 12 months following first use of U-500R, and at least one glycated hemoglobin (HbA1c) value in both preindex and postindex periods. Paired t tests were used to measure the change in HbA1c from preindex to postindex periods (last or most recent values) and hypoglycemia. RESULTS: Among patients initiating U-500R (N=445), 96.9% had type 2 diabetes with mean age 57 years and mean body mass index 40.4 kg/m². Postindex prescriptions were written for U-500R alone (47.0%, group A) and concomitant U-500R/U-100 insulins (53.0%, group B). Concomitant oral antihyperglycemic agents (AHAs) and non-insulin injectable AHAs were used by 43.4% and 14.6% of patients, respectively. Following initiation of U-500R, mean HbA1c improved 0.68% in all patients ($p < 0.0001$ compared with baseline), but the decrease in HbA1c did not differ significantly between groups (A: 0.78%; B: 0.60%). Overall, hypoglycemic events, largely captured in the outpatient setting, increased in incidence from 6.7% to 11.9% ($p < 0.0001$) and from 0.23 to 0.39 events/patient/year, an increase of 0.16 ($p = 0.003$), from preindex to postindex. CONCLUSIONS: This real-world outcomes analysis demonstrates that U-500R initiation is associated with a clinically meaningful improvement in glycemic control over the subsequent 12-month period with modest increase in incidence and rate of hypoglycemia.

Emohare O; Cagan AB; Polly DW Jr; **Gertner E**. Opportunistic computed tomography screening shows a high incidence of osteoporosis in ankylosing spondylitis patients with acute vertebral fractures. *J Clin Densitom*. 2015 Jan;18(1):17-21.

Abstract: Advanced ankylosing spondylitis is associated with reductions in bone mineral density (BMD), contributing to pain and predisposing to fractures. Quantifying this reduction is complicated because overgrowth of bone and loss of trabecular bone occur concurrently. Traditional methods such as dual-energy X-ray absorptiometry struggle to generate accurate estimates of BMD in these patients. The aim of this study was to evaluate the utility of computed tomography (CT) attenuation in generating estimates of BMD in patients with severe AS who had sustained vertebral fractures. Patients with severe AS and bridging syndesmophytes who presented, with acute fractures of the spine, were reviewed to assess whether they had a CT scan in the 6 mo before or after injury that included an image of the L1 vertebra; if it did, the scans

were selected for analysis. A total of 17 patients were evaluated. Using a CT attenuation threshold of 135 HU balanced for sensitivity and specificity, 14 of 17 (82%) patients were osteoporotic. Using a CT attenuation threshold for higher sensitivity (160 HU), 15 of 17 (88%) patients were osteoporotic. Even using the L1 CT attenuation threshold of 110 HU for higher specificity, 14 of 17 (82%) patients were osteoporotic. CT attenuation demonstrates that a high proportion of AS patients who sustain fractures have osteoporosis. This overcomes some of the difficulties that have been encountered with the use of dual-energy X-ray absorptiometry in this group of patients. This simple and accessible method saves on time, cost, and exposure to radiation and can help in the planning of a patient's management.

Emohare O; Wiggin MJ; Hemmati P; Switzer JA. Assessing bone mineral density following acute hip fractures: the role of computed tomography attenuation. *Geriatr Orthop Surg Rehabil.* 2015 Mar;6(1):16-21.

Objectives: In older patients, bone mineral density (BMD) diminishes with age, increasing susceptibility to femoral neck fractures. Evidence has emerged that patients who should have dual x-ray absorptiometry scans to evaluate their bone health are not doing so. Because computed tomography (CT) attenuation has now been correlated with BMD thresholds relating to osteoporosis, virtually any existing CT scan that includes the L1 vertebra can be used to assess BMD. This study evaluates the utility of CT attenuation in characterizing BMD in patients after femoral neck fractures. **Methods:** The electronic medical records of adults who presented to a level I trauma center with hip fractures were evaluated for eligibility. Those with a CT scan of the abdomen or other CT scan with a complete view of the L1 vertebra were included. To measure attenuation, a region of interest was selected to include the body of the L1 vertebra in the axial plane and exclude the cortices and posterior venous complex. **Results:** Of the 589 patients reviewed, 217 met inclusion criteria; 112 were aged 18 to 64, while 105 were ≥65. Eight (7.1%) patients in the younger cohort had a mean CT attenuation below the 110-HU threshold set for 90% specificity, whereas 31 (29.5%) patients in the older cohort had a mean CT attenuation below this threshold. Using the 160-HU threshold set for 90% sensitivity, 39 (34.8%) patients of the younger cohort and 74 (70%) patients of the older cohort were osteoporotic; all differences in CT attenuation by age were strongly significant ($P < .0001$). **Conclusions:** A significantly larger proportion of older patients with hip fractures had osteoporosis, helping validate the utility of CT attenuation in this context. In addition, a large proportion of these patients already had these images available, thus potentially helping limit cost and unnecessary medical investigations.

Engelke K; Lang T; Khosla S; Qin L; Zysset P; Leslie WD; Shepherd JA; **Schousboe JT.** Clinical use of quantitative computed tomography (QCT) of the hip in the management of osteoporosis in adults: the 2015 ISCD Official Positions-Part I. *J Clin Densitom.* 2015 Jul-Sep;18(3):338-58.

Abstract: The International Society for Clinical Densitometry (ISCD) has developed new official positions for the clinical use of quantitative computed tomography of the hip. The ISCD task force for quantitative computed tomography reviewed the evidence for clinical applications and presented a report with recommendations at the 2015 ISCD Position Development Conference. Here, we discuss the agreed on ISCD official positions with supporting medical evidence, rationale, controversy, and suggestions for further study. Parts II and III address the advanced techniques of finite element analysis applied to computed tomography scans and the clinical feasibility of existing techniques for opportunistic screening of osteoporosis using computed tomography scans obtained for other diagnosis such as colonography was addressed.

Engelke K; Lang T; Khosla S; Qin L; Zysset P; Leslie WD; Shepherd JA; **Shousboe JT**. Clinical use of quantitative computed tomography-based advanced techniques in the management of osteoporosis in adults: the 2015 ISCD Official Positions-Part III. *J Clin Densitom*. 2015 Jul-Sep;18(3):393-407.

Abstract: The International Society for Clinical Densitometry (ISCD) has developed new official positions for the clinical use of computed tomography (CT) scans acquired without a calibration phantom, for example, CT scans obtained for other diagnosis such as colonography. This also addresses techniques suggested for opportunistic screening of osteoporosis. The ISCD task force for quantitative CT reviewed the evidence for clinical applications of these new techniques and presented a report with recommendations at the 2015 ISCD Position Development Conference. Here we discuss the agreed upon ISCD official positions with supporting medical evidence, rationale, controversy, and suggestions for further study. Advanced techniques summarized as statistical parameter mapping methods were also reviewed. Their future use is promising but the clinical application is premature. The clinical use of QCT of the hip is addressed in part I and of finite element analysis of the hip and spine in part II.

Fan J; McCoy RG; **Ziegenfuss JY**; Smith SA; Borah BJ; Deming JR; Montori VM; Shah ND. Evaluating the structure of the Patient Assessment of Chronic Illness Care (PACIC) survey from the patient's perspective. *Ann Behav Med*. 2015 Feb;49(1):104-11.

BACKGROUND: The Patient Assessment of Chronic Illness Care (PACIC) survey is a widely used instrument to assess the patient experience with healthcare delivery. **PURPOSE:** This study aims to evaluate the factorial structure of PACIC from the patient perspective. **METHODS:** A postal survey was mailed to 4,796 randomly selected adults with diabetes from 34 primary care clinics. Internal consistencies of PACIC subscales were assessed by Cronhach's alpha. Factorial structure was evaluated by confirmatory and exploratory factor analyses. **RESULTS:** Based on responses of 2,055 patients (43 % response rate), exploratory factor analysis discerned a 4-factor, not 5-factor, model dominated by patient evaluation of healthcare services (explaining 74 % of the variance). The other 3 factors addressed patient involvement (goal setting, participating in the healthcare team) and social support for self-management. **CONCLUSIONS:** The underlying factorial structure of PACIC, which reflects the patient perspective, is dynamic, patient-centered, and differs from the original 5-factor model that was more aligned with views of healthcare delivery stakeholders.

Fazio CJ; Kottke TE. A paradox of well-being [editorial]. *Star Tribune*. 2015 Feb 17:A9.

Fielding JE; Rimer BK; Johnson RL; Orleans CT; Calonge N; Clymer JM; Glanz K; Goetzel RZ; Green LW; Ramirez G; **Pronk NP**; Community Preventive Services Task Force. Recommendation to reduce patients' blood pressure and cholesterol medication costs. *Prev Chronic Dis*. 2015 Nov 25;12:E209. PMID: PMC467444.

Fine JM; Renner DB; Forsberg AC; Cameron RA; Galick BT; Le C; Conway PM; Stroebel BM; Frey WH 2nd; Hanson LR. Intranasal deferoxamine engages multiple pathways to decrease memory loss in the APP/PS1 model of amyloid accumulation. *Neurosci Lett*. 2015 Jan 1;584:362-7.

Abstract: In addition to the hallmark accumulation of amyloid and hyper-phosphorylation of tau, brain changes in Alzheimer's disease are multifactorial including inflammation, oxidative stress, and metal

dysregulation. Metal chelators have been explored as a less well known approach to treatment. One chelator currently being developed is deferoxamine (DFO), administered via the intranasal (IN) route. In the current study, APP/PS1 amyloid mice were treated with a chronic, low dose of IN DFO, subjected to a rigorous battery of behavior tests, and the mechanism of action was examined. Mice were treated 3x/week with 0.24C IN DFO for 18 weeks from 36 to 54 weeks of age, 4 weeks of behavior tests were performed that included both working and reference memory, anxiolytic and motor behaviors, and finally brain tissues were analyzed for amyloid, protein oxidation, and other proteins affected by DFO. We found that IN DFO treatment significantly decreased loss of both reference and working memory in the Morris and radial arm water mazes ($p < 0.05$), and also decreased soluble A β 40 and A β 42 in cortex and hippocampus ($p < 0.05$). Further, IN DFO decreased activity of GSK3 β , and led to decreases in oxidative stress ($p < 0.05$). These data demonstrate that low doses of IN DFO can modify several targets along the multiple pathways implicated in the neuropathology of Alzheimer's, making it an attractive candidate for the treatment of this heterogeneous disease.

Fleischer AE; Abicht BP; Baker JR; **Boffeli TJ**; Jupiter DC; Schade VL. American College of Foot and Ankle Surgeons' clinical consensus statement: risk, prevention, and diagnosis of venous thromboembolism disease in foot and ankle surgery and injuries requiring immobilization. *J Foot Ankle Surg.* 2015 May-Jun;54(3):497-507.

Abstract: The purpose of this document is to provide guidance for physicians regarding the risk, prevention, and diagnosis of venous thromboembolism disease after foot and ankle surgery and while caring for lower extremity injuries that require ankle immobilization. A panel composed of all authors of this document reviewed the published evidence and, through a series of meetings, reached consensus regarding the viewpoints contained herein. We conclude that routine chemical prophylaxis is not warranted; rather, patients should be stratified and have a prevention plan tailored to their individual risk level. An effective venous thromboembolism prevention program is typically multimodal and focuses on addressing any modifiable risk factors, use of mechanical prophylaxis, early mobilization, and careful consideration of the use of chemical prophylaxis. The final decision regarding use and method(s) of prophylaxis adopted should be agreed upon by both the clinician and patient after a discussion of the potential benefits and harms as they relate to the individual. This should take place preferably during the preoperative visit or in the immediate post-injury setting, and it may need to be revisited during the course of care if the patient's risk level changes. Prompt recognition of the signs and symptoms of deep venous thrombosis following surgery or injury is important. Patients suspected of deep venous thrombosis should receive further work-up with either a D-dimer test or duplex venous ultrasound of the symptomatic leg, depending on their pretest probability for the disease. The latter can be determined using a validated clinical decision-making tool (e.g., Well's criteria).

Fonarow GC; Calitz C; Arena R; Baase C; Isaac FW; Lloyd-Jones D; Peterson ED; **Pronk NP**; Sanchez E; Terry PE; Volpp KG; Antman EM; American Heart Association. Workplace wellness recognition for optimizing workplace health: a presidential advisory from the American Heart Association. *Circulation.* 2015 May 19;131(20):e480-97.

Abstract: The workplace is an important setting for promoting cardiovascular health and cardiovascular disease and stroke prevention in the United States. Well-designed, comprehensive workplace wellness

programs have the potential to improve cardiovascular health and to reduce mortality, morbidity, and disability resulting from cardiovascular disease and stroke. Nevertheless, widespread implementation of comprehensive workplace wellness programs is lacking, and program composition and quality vary. Several organizations provide worksite wellness recognition programs; however, there is variation in recognition criteria, and they do not specifically focus on cardiovascular disease and stroke prevention. Although there is limited evidence to suggest that company performance on employer health management scorecards is associated with favorable healthcare cost trends, these data are not currently robust, and further evaluation is needed. As a recognized national leader in evidence-based guidelines, care systems, and quality programs, the American Heart Association/American Stroke Association is uniquely positioned and committed to promoting the adoption of comprehensive workplace wellness programs, as well as improving program quality and workforce health outcomes. As part of its commitment to improve the cardiovascular health of all Americans, the American Heart Association/American Stroke Association will promote science-based best practices for comprehensive workplace wellness programs and establish benchmarks for a national workplace wellness recognition program to assist employers in applying the best systems and strategies for optimal programming. The recognition program will integrate identification of a workplace culture of health and achievement of rigorous standards for cardiovascular health based on Life's Simple 7 metrics. In addition, the American Heart Association/American Stroke Association will develop resources that assist employers in meeting these rigorous standards, facilitating access to high-quality comprehensive workplace wellness programs for both employees and dependents, and fostering innovation and additional research.

Fontaine PL; Whitebird RR; Solberg LI; Tillema JO; Smithson A; Crabtree BF. Minnesota's early experience with medical home implementation: viewpoints from the front lines. *J Gen Intern Med*. 2015 Jul;30(7):899-906. PMID: PMC4471008. Project Number: A09-159 Medical Home. [Comment in: *J Gen Intern Med*. 2015 Jul;30(7):870-2.]

BACKGROUND: Evidence is evolving about the impact of patient-centered medical homes (PCMHs) on important outcomes in primary care. Minnesota has developed its own PCMH certification process, envisioned as an all-payer initiative with an emphasis on patient-centeredness, which may add unique experiences and outcomes to the national discussion. **OBJECTIVE:** We aimed to identify the facilitators and barriers encountered by nine diverse primary care practices selected from the first 80 to achieve PCMH certification in Minnesota. **DESIGN:** This was a qualitative analysis of semi-structured, in-person interviews. **PARTICIPANTS:** Thirty-one administrative and clinical leaders, including clinic managers, physician champions, medical directors, nursing supervisors, and care coordinators participated in the study. **KEY RESULTS:** Six factors emerged as most important to the efforts to become PMCHs: leadership support, organizational culture, finances, quality improvement (QI) experience, information technology (IT) resources, and patient involvement. Facilitators included committed leadership at local and higher levels, prior experience and ongoing support for QI initiatives, and adequate financial and IT resources. Reimbursement was a significant barrier due to perceived inadequacy and inconsistent participation by health plans. The unsuitability of electronic medical records (EMRs) to PCMH documentation requirements likewise presented ongoing challenges. Many interviewees described patient input as helpful to their clinics' PCMH-related changes and were enthusiastic about their "patient partners." The majority of interviewees felt that becoming a PCMH was right for patients and was personally worthwhile, even while acknowledging

the tremendous effort involved and voicing skepticism about reimbursement over the short term.

CONCLUSIONS: The experience of participants in Minnesota's state-wide initiative to legislate PCMH transformation provides a broad view of facilitators and barriers. Unique facilitators included a requirement for patient involvement, which pushed practices to create patient-centered innovations, and new reimbursement models based on quality indicators for a population. Among barriers were the costs to practices and patients, and EMRs that failed to accommodate PCMH requirements.

Fraga OR; Sandoval Y; Love SA; **McKinney ZJ**; Murakami MM; Smith SW; Apple FS. Cardiac troponin testing is overused after the rule-in or rule-out of myocardial infarction [editorial]. *Clin Chem*. 2015 Feb;61(2):436-8.

Frascone RJ; Salzman JG; Adams AB; Bliss PL; Wewerka SS; Dries DJ. Evaluation of intraosseous pressure in a hypovolemic animal model. *J Surg Res*. 2015 Jan;193(1):383-90.

BACKGROUND: In emergent situations, access to the vascular bed is frequently required for fluid and medication administration. Central venous catheter placement is associated with risk and may slow resuscitation in the unstable patient. The purpose of this study was to determine whether intraosseous pressure (IOP) could be consistently recorded and how similar this pressure was to central venous and arterial pressure in a porcine hemorrhagic shock model. **MATERIALS AND METHODS:** After sedation, eight female swine had catheters placed in the femoral vein, aorta via femoral artery, and superior vena cava. IOP lines were placed in the proximal humerus, distal femur, and proximal tibia. Pressure readings were recorded continuously through the five stages of progressive hypovolemia. Pressure data were descriptively summarized, with the percent of change of IOP at each stage compared with arterial pressure using a multilevel mixed effects linear model with log transformation. **RESULTS:** The IOP baseline values were between 16 and 18 mm Hg, approximately 22% of baseline arterial pressure. The intraosseous (IO) waveform mostly closely resembled the arterial pressure waveform, including the presence of a dichroitic notch. Pressure variations caused by ventilation (respiratory variability) were also identified in all the tracings. The rate of pressure change in the humeral IO most closely matched the change in arterial pressure rate. IO blood gas analysis showed gas composition to most closely match venous blood. **CONCLUSIONS:** IOP was reliably obtained in this porcine model and suggests potential for clinical application in humans.

Freudenreich O; Huffman JC; Sharpe M; Beach SR; Celano CM; Chwastiak LA; Cohen MA; Dickerman A; Fitz-Gerald MJ; Kontos N; Mittal L; Nejad SH; Niazi S; Novak M; Philbrick K; **Rasimas JJ**; Shim J; Simpson SA; Walker A; Walker J; Wichman CL; Zimbrea P; Sollner W; Stern TA. Updates in psychosomatic medicine: 2014. *Psychosomatics*. 2015 Sep-Oct;56(5):445-59.

BACKGROUND: The amount of literature published annually related to psychosomatic medicine is vast; this poses a challenge for practitioners to keep up-to-date in all but a small area of expertise. **OBJECTIVES:** To introduce how a group process using volunteer experts can be harnessed to provide clinicians with a manageable selection of important publications in psychosomatic medicine, organized by specialty area, for 2014. **METHODS:** We used quarterly annotated abstracts selected by experts from the Academy of Psychosomatic Medicine and the European Association of Psychosomatic Medicine in 15 subspecialties to create a list of important articles. **RESULTS:** In 2014, subspecialty experts selected 88 articles of interest for practitioners of psychosomatic medicine. For this review, 14 articles were chosen. **CONCLUSIONS:** A group process can be used to whittle down the vast literature in psychosomatic medicine and compile a list of

important articles for individual practitioners. Such an approach is consistent with the idea of physicians as lifelong learners and educators.

Frey WH 2nd. Noninvasive intranasal stem cells bypass the blood-brain barrier to target the brain to treat Parkinson's disease, stroke, MS, brain tumors, cerebral ischemia, Alzheimer's and other CNS disorders. *J Nat Sci.* 2015;1(1):e23.

Abstract: Together with my collaborators in Germany, especially Lusine Danielyan M.D., we discovered and patented that therapeutic cells, including adult stem cells and genetically-engineered cells, can be non-invasively delivered to the CNS using the noninvasive intranasal delivery method that I developed. Intranasal stem cells bypass the blood-brain barrier to target the brain by traveling extracellularly along the olfactory neural pathway with minimal delivery to other organs. Once in the brain, adult stem cells target the damaged areas of the brain specifically to treat the underlying disease. Researchers at University Medical Center Utrecht in the Netherlands have demonstrated the effectiveness of intranasal stem cell treatment technology in an animal model of neonatal cerebral ischemia and also in animals with neonatal brain damage and subarachnoid hemorrhage. Researchers at Emory University have used our intranasal stem cell treatment successfully in an animal model of stroke, and researchers at Uppsala University in Sweden have demonstrated that intranasal T regulatory cell therapy delivered and targeted the cells to the brain and efficiently suppressed ongoing inflammation in an EAE model of multiple sclerosis leading to reduced disease symptoms. Intranasal adult neural stem cells have also been shown to improve the EAE model of MS as have intranasal mesenchymal stromal cells. Other researchers have reported that intranasal stem cells target and treat brain tumors. This intranasal delivery, targeting and treatment technology can make stem cell treatments practical for CNS disorders by eliminating the need for invasive neurosurgical implantation of cells and by eliminating the need for intravenous delivery that disperses cells throughout the body resulting in unwanted systemic exposure. This delivery and treatment method can facilitate the development of stem cell and genetically-engineered cell therapies for Parkinson's, PSP, Huntington's, Alzheimer's, MS, epilepsy, stroke, neonatal ischemia, brain tumors, traumatic brain injury (TBI), spinal cord (SCI) injury, etc. In humans, GnRH neurons or Gonadotropin-releasing hormone expressing neurons are known to reach the brain by using this same olfactory neural pathway during development. In addition, pathologic cells, such as the amoeba *Naegleria fowleri*, are known to enter the brains of humans by this same pathway and cause amoebic infection of the brain. We have discovered how to use this pathway to deliver therapeutic cells, including stem cells, to the brain to treat disorders of the central nervous system. This intranasal therapeutic cell delivery, targeting and treatment technology is available for licensing.

Fricton JR. The need for preventing chronic pain: the "big elephant in the room" of healthcare. *Glob Adv Health Med.* 2015 Jan;4(1):6-7. PMCID: PMC4311557.

Fricton JR; Anderson K; **Clavel AL;** Fricton R; Hathaway K; Kang W; Jaeger B; Maixner W; Pesut D; Russell J; Weisberg MB; **Whitebird RR.** Preventing chronic pain: a human systems approach-results from a massive open online course. *Glob Adv Health Med.* 2015 Sep;4(5):23-32. PMCID: PMC4563888.

Abstract: Chronic pain conditions are the top reason patients seek care, the most common reason for disability and addiction, and the biggest driver of healthcare costs; their treatment costs more than cancer,

heart disease, dementia, and diabetes care. The personal impact in terms of suffering, disability, depression, suicide, and other problems is incalculable. There has been much effort to prevent many medical and dental conditions, but little effort has been directed toward preventing chronic pain. To address this deficit, a massive open online course (MOOC) was developed for students and healthcare professionals. "Preventing Chronic Pain: A Human Systems Approach" was offered by the University of Minnesota through the online platform Coursera. The first offering of this free open course was in the spring of 2014 and had 23 650 participants; 53% were patients or consumers interested in pain. This article describes the course concepts in preventing chronic pain, the analytic data from course participants, and postcourse evaluation forms.

Froberg BA; Levine M; Beuhler MC; Judge BS; Moore PW; **Engebretsen** KM; Mckeown NJ; Rosenbaum CD; Young AC; Rusyniak DE. Acute methylenedioxypyrovalerone toxicity. *J Med Toxicol.* 2015 Jun;11(2):185-94. PMID: PMC4469722.

Abstract: The objective of this study was to characterize the acute clinical effects, laboratory findings, complications, and disposition of patients presenting to the hospital after abusing synthetic cathinone. We conducted a retrospective multicenter case series of patients with synthetic cathinone abuse by searching for the terms bath salts, MDPV, methylenedioxypyrovalerone, mephedrone, methcathinone, methylone, methedrone, and cathinone within the "agent" field of a national clinical toxicology database (ToxIC). The medical records of these patients were obtained and abstracted by investigators at each study site. Patients with confirmatory testing that identified a synthetic cathinone in either blood or urine were included in the series. Patients who had either an undetectable synthetic cathinone test or no confirmatory testing were excluded. A data abstraction sheet was used to obtain information on each patient. We entered data into an Excel spreadsheet and calculated descriptive statistics. We identified 23 patients with confirmed synthetic cathinone exposure-all were positive for methylenedioxypyrovalerone (MDPV). Eighty-three percent were male and 74 % had recreational intent. The most common reported clinical effects were tachycardia (74 %), agitation (65 %), and sympathomimetic syndrome (65 %). Acidosis was the most common laboratory abnormality (43 %). Seventy-eight percent of patients were treated with benzodiazepines and 30 % were intubated. Ninety-six percent of patients were hospitalized and 87 % were admitted to the ICU. The majority (61 %) of patients was discharged home but 30 % required inpatient psychiatric care. There was one death in our series. The majority of patients presenting to the hospital after abusing MDPV have severe sympathomimetic findings requiring hospitalization. A number of these patients require inpatient psychiatric care after their acute presentation.

Fuglestad PT; Rothman AJ; Jeffery RW; **Sherwood** NE. Regulatory focus, proximity to goal weight, and weight loss maintenance. *Am J Health Behav.* 2015 Sep;39(5):709-20. PMID: PMC4669580.

OBJECTIVES: Regulatory focus theory proposes 2 self-regulatory orientations: promotion focus - related to achieving aspirations and positive outcomes - and prevention focus - related to fulfilling responsibilities and preventing negative outcomes. The investigation examined whether regulatory focus and proximity to goal weight moderated the effectiveness of a weight-loss maintenance intervention. **METHODS:** Participants who lost $\geq 10\%$ of their weight were assigned to guided or self-directed treatments and completed regulatory focus and weight goal measures. **RESULTS:** Across treatment groups, people who were more promotion-focused had better 2-year maintenance rates (defined as regain $< 25\%$) than people who were less promotion-focused, especially if far from their goal weight (.59 versus .44). In the guided group, people who

were more prevention-focused had better maintenance rates than people who were less prevention-focused if closer to their goal weight (.69 versus .42), but poorer maintenance rates if farther from their goal (.36 versus .72). In the self-directed group, prevention focus was unrelated to maintenance. **CONCLUSIONS:** Regulatory focus and proximity to goal weight moderated intervention effectiveness. Maintenance may be enhanced by tailoring treatments to regulatory focus and goal weight (eg, prevention-focused people far from their goals may need extra weight-loss support before focusing on maintenance).

Gangwisch JE; Hale L; Garcia L; Malaspina D; Opler MG; Payne ME; **Rossom RC**; Lane D. High glycemic index diet as a risk factor for depression: analyses from the Women's Health Initiative. *Am J Clin Nutr*. 2015 Aug;102(2):454-63. PMID: PMC4515860.

BACKGROUND: The consumption of sweetened beverages, refined foods, and pastries has been shown to be associated with an increased risk of depression in longitudinal studies. However, any influence that refined carbohydrates has on mood could be commensurate with their proportion in the overall diet; studies are therefore needed that measure overall intakes of carbohydrate and sugar, glycemic index (GI), and glycemic load. **OBJECTIVE:** We hypothesized that higher dietary GI and glycemic load would be associated with greater odds of the prevalence and incidence of depression. **DESIGN:** This was a prospective cohort study to investigate the relations between dietary GI, glycemic load, and other carbohydrate measures (added sugars, total sugars, glucose, sucrose, lactose, fructose, starch, carbohydrate) and depression in postmenopausal women who participated in the Women's Health Initiative Observational Study at baseline between 1994 and 1998 (n = 87,618) and at the 3-y follow-up (n = 69,954). **RESULTS:** We found a progressively higher dietary GI to be associated with increasing odds of incident depression in fully adjusted models (OR for the fifth compared with first quintile: 1.22; 95% CI: 1.09, 1.37), with the trend being statistically significant (P = 0.0032). Progressively higher consumption of dietary added sugars was also associated with increasing odds of incident depression (OR for the fifth compared with first quintile: 1.23; 95% CI: 1.07, 1.41; P-trend = 0.0029). Higher consumption of lactose, fiber, nonjuice fruit, and vegetables was significantly associated with lower odds of incident depression, and nonwhole/refined grain consumption was associated with increased odds of depression. **CONCLUSIONS:** The results from this study suggest that high-GI diets could be a risk factor for depression in postmenopausal women. Randomized trials should be undertaken to examine the question of whether diets rich in low-GI foods could serve as treatments and primary preventive measures for depression in postmenopausal women.

Gattinoni L; **Marini JJ**. Prone positioning and neuromuscular blocking agents are part of standard care in severe ARDS patients: we are not sure [editorial]. *Intensive Care Med*. 2015 Dec;41(12):2201-3.

Gauger EM; Hill BW; Lafferty PM; Cole PA. Outcomes after operative management of symptomatic rib nonunion. *J Orthop Trauma*. 2015 Jun;29(6):283-9.

OBJECTIVE: To report the outcomes of rib reconstruction after painful nonunion. **DESIGN:** Retrospective case series. **SETTING:** Level I trauma center. **PATIENTS/PARTICIPANTS:** Between November 2007 and May 2013, 10 patients who presented with 16 rib nonunions and disabling pain were treated with reconstruction of their nonunited rib fractures. **INTERVENTION:** Rib nonunion reconstruction predominately with iliac crest bone graft and a tension band plate with a locked precontoured plating system for ribs. **MAIN OUTCOME**

MEASUREMENTS: Demographic data, mechanism of injury, and number of rib nonunions were recorded. Operative procedure, length of follow-up, complications, Short Form Survey 36, and a patient questionnaire were also captured and documented. RESULTS: Eight of the 10 patients sustained their original fractures from a fall. Outcomes were available for the 10 patients at a mean follow-up of up of 18.6 months (range, 3-46 months). All 16 ribs went on to union with a mean time from reconstruction to union of 14.7 weeks (range, 12-24 weeks). At final follow-up, the mean mental and physical component Short Form Survey 36 scores were 54.4 and 43.5, respectively. Eight of the 10 patients were able to return to work and/or previous activities without limitations. Complications included 1 wound infection that resolved after irrigation and debridement with adjunctive antibiotics. One symptomatic implant was removed. CONCLUSIONS: Ten patients with 16 symptomatic rib nonunions were reconstructed using autologous bone graft and implant/mesh fixation manifesting in successful union with improved patient function and a low rate of complications.

Geiger-Brown J; Lindberg S; Krachman S; **McEvoy CE**; Criner GJ; Connett JE; Albert RK; Scharf SM. Self-reported sleep quality and acute exacerbations of chronic obstructive pulmonary disease. *Int J Chron Obstruct Pulmon Dis*. 2015 Feb;10(1):389-97. PMID: PMC4345936.

BACKGROUND: Many patients with chronic obstructive pulmonary disease (COPD) suffer from poor sleep quality. We hypothesized that poor sleep quality in otherwise stable patients predicted exacerbations in these patients. METHODS: This is a secondary analysis of the results of a previously published randomized trial of azithromycin in 1,117 patients with moderate to severe COPD who were clinically stable on enrollment. Sleep quality was measured using the Pittsburgh Sleep Quality Index. Other quality of life indices included the Medical Outcome Study 36-item Short Form Health Survey and the St Georges Respiratory Questionnaire. Outcomes included time to first exacerbation and exacerbation rate. RESULTS: Sleep quality was "poor" (Pittsburgh Sleep Quality Index >5) in 53% of participants but was not related to age or severity of airflow obstruction. Quality of life scores were worse in "poor" sleepers than in "good" sleepers. Major classes of comorbid conditions, including psychiatric, neurologic, and musculoskeletal disease, were more prevalent in the "poor" sleepers. Unadjusted time to first exacerbation was shorter (190 versus 239 days) and exacerbation rate (1.7 versus 1.37 per year) was greater in the poor sleepers, but no differences were observed after adjusting for medications and comorbid conditions associated with poor sleep. CONCLUSION: Poor sleepers had greater exacerbation rates than did good sleepers. This appeared to be due largely to them having more, or more severe, concomitant medical conditions and taking more medications.

Gilbert GH; Gordan VV; Korelitz JJ; Fellows JL; Meyerowitz C; Oates TW; **Rindal DB**; Gregory RJ; National Dental PBRN Collaborative Group. Provision of specific dental procedures by general dentists in the National Dental Practice-Based Research Network: questionnaire findings. *BMC Oral Health*. 2015 Jan 22;15(1):11. PMID: PMC4324862. Project Number: A11-037 National Dental PBRN.

BACKGROUND: Objectives were to: (1) determine whether and how often general dentists (GDs) provide specific dental procedures; and (2) test the hypothesis that provision is associated with key dentist, practice, and patient characteristics. METHODS: GDs (n = 2,367) in the United States National Dental Practice-Based Research Network completed an Enrollment Questionnaire that included: (1) dentist; (2) practice; and (3) patient characteristics, and how commonly they provide each of 10 dental procedures. We determined how commonly procedures were provided and tested the hypothesis that provision was substantively related to

the three sets of practice characteristics. RESULTS: Two procedure categories were classified as "uncommon" (orthodontics, periodontal surgery), three were "common" (molar endodontics; implants; non-surgical periodontics), and five were "very common" (restorative; esthetic procedures; extractions; removable prosthetics; non-molar endodontics). Dentist, practice, and patient characteristics were substantively related to procedure provision; several characteristics seemed to have pervasive effects, such as dentist gender, training after dental school, full-time/part-time status, private practice vs. institutional practice, presence of a specialist in the same practice, and insurance status of patients. CONCLUSIONS: As a group, GDs provide a comprehensive range of procedures. However, provision by individual dentists is substantively related to certain dentist, practice, and patient characteristics. A large number and broad range of factors seem to influence which procedures GDs provide. This may have implications for how GDs respond to the ever-changing landscape of dental care utilization, patient population demography, scope of practice, delivery models and GDs' evolving role in primary care.

Goers ML; Settgaast AM. Think globally, act locally: diagnosis and management of latent tuberculosis in Minnesota's foreign-born population. *Minn Med.* 2015 Sep;98(9):49-52.

Abstract: Although the overall incidence and prevalence of tuberculosis (TB) is relatively low in the United States, the disease remains a significant problem among certain populations. Refugees and immigrants migrating from endemic countries are especially at risk for TB, and in Minnesota the majority of cases are found in this population. Given that the vast majority of these cases are caused by reactivated latent infection rather than primary infection, the key to disease control and prevention is the successful diagnosis and management of latent TB in immigrants and refugees from endemic areas. This article details the appropriate approach to screening, diagnosis and management of latent TB in the hope that all physicians are better equipped to aid our state's foreign-born population and improve public health.

Gorczyca AM; He K; Xun P; **Margolis KL**; Wallace JP; Lane D; Thomson C; Ho GY; Shikany JM; Luo J. Association between magnesium intake and risk of colorectal cancer among postmenopausal women. *Cancer Causes Control.* 2015 Dec;26(12):1761-9.

PURPOSE: Data relating to magnesium intake and colorectal cancer (CRC) risk in postmenopausal women are incomplete. We investigated the association between total magnesium intake and the risk of CRC in an ethnically diverse cohort of postmenopausal women enrolled in the Women's Health Initiative. METHODS: Self-reported dietary and supplemental magnesium were combined to form total magnesium intake. Invasive incident CRC was the primary outcome. Cox proportional hazard models were used to estimate hazard ratios (HRs) and 95 % confidence intervals (CI). RESULTS: During an average follow-up of 13 years (1,832,319 person-years), of the 140,601 women included for analysis, 2,381 women were diagnosed with CRC (1,982 colon cancer and 438 rectal cancer). After adjustment for potential confounding variables, an inverse association was observed in the highest quintile of total magnesium intake compared to the lowest quintile for risk of CRC (HR 0.79, 95 % CI 0.67, 0.94, p trend < 0.0001) and colon cancer (HR 0.80, 95 % CI 0.66, 0.97, p trend < 0.0001). A borderline significant inverse association was detected in the highest versus the lowest quintile of total magnesium intake for rectal cancer (HR 0.76, 95 % CI 0.51, 1.13, p trend < 0.001). CONCLUSIONS: Findings from this study support the hypothesis that magnesium intake around 400 mg/day from both dietary and supplemental sources is associated with a lower incidence of CRC in postmenopausal

women.

Gordan VV; Riley JL 3rd; **Rindal DB**; Qvist V; Fellows JL; Dilbone DA; Brotman SG; Gilbert GH; National Dental Practice-Based Research Network Collaborative Group. Repair or replacement of restorations: A prospective cohort study by dentists in The National Dental Practice-Based Research Network. *J Am Dent Assoc.* 2015 Dec;146(12):895-903. PMID: PMC4663659. Project Number: A11-037 National Dental PBRN.

BACKGROUND: A prospective cohort study that included dentists in The National Dental Practice-Based Research Network was conducted to quantify 12-month failures of restorations that were repaired or replaced at baseline. The study tested the hypothesis that no significant differences exist in failure percentages between repaired and replaced restorations after 12 months. It also tested the hypothesis that certain dentist, patient, and restoration characteristics are significantly associated with the incidence of restoration failure. **METHODS:** Dentists recorded data for 50 or more consecutive defective restorations. The restorations that were either repaired or replaced were recalled after 12 months and characterized for developing defects. **RESULTS:** Dentists (N = 195) recorded data on 5,889 restorations; 378 restorations required additional treatment (74 repaired, 171 replaced, 84 teeth received endodontic treatment, and 49 were extracted). Multivariable logistic regression analysis indicated that additional treatment was more likely to occur if the original restoration had been repaired (7%) compared with replaced (5%) (odds ratio [OR], 1.6; P < .001; 95% confidence interval [CI], 1.2-2.1), if a molar was restored (7%) compared with premolars or anterior teeth (5% and 6%, respectively) (OR, 1.4; P = .010; 95% CI, 1.1-1.7), and if the primary reason was a fracture (8%) compared with other reasons (6%) (OR, 1.3; P = .033; 95% CI, 1.1-1.6). **CONCLUSIONS:** An additional treatment was more likely to occur within the first year if the original restoration had been repaired (7%) compared with being replaced (5%). However, repaired restorations were less likely to need an aggressive treatment (replacement, endodontic treatment, or extraction) than replaced restorations. **PRACTICAL IMPLICATIONS:** One year after repair or replacement of a defective restoration, the failure rate was low. However, repaired restorations were less likely to need an aggressive treatment than replaced restorations.

Gordon BD; Bernard K; **Salzman J**; **Whitebird RR**. Impact of health information exchange on emergency medicine clinical decision making. *West J Emerg Med.* 2015 Dec;16(7):1047-51. PMID: PMC4703172.

INTRODUCTION: The objective of the study was to understand the immediate utility of health information exchange (HIE) on emergency department (ED) providers by interviewing them shortly after the information was retrieved. Prior studies of physician perceptions regarding HIE have only been performed outside of the care environment. **METHODS:** Trained research assistants interviewed resident physicians, physician assistants and attending physicians using a semi-structured questionnaire within two hours of making a HIE request. The responses were recorded, then transcribed for qualitative analysis. The transcribed interviews were analyzed for emerging qualitative themes. **RESULTS:** We analyzed 40 interviews obtained from 29 providers. Primary qualitative themes discovered included the following: drivers for requests for outside information; the importance of unexpected information; historical lab values as reference points; providing context when determining whether to admit or discharge a patient; the importance of information in refining disposition; improved confidence of provider; and changes in decisions for diagnostic imaging. **CONCLUSION:** ED providers are driven to use HIE when they're missing a known piece of information. This study finds two additional impacts not previously reported. First, providers sometimes find additional

unanticipated useful information, supporting a workflow that lowers the threshold to request external information. Second, providers sometimes report utility when no changes to their existing plan are made as their confidence is increased based on external records. Our findings are concordant with previous studies in finding exchanged information is useful to provide context for interpreting lab results, making admission decisions, and prevents repeat diagnostic imaging.

Gosselin S; Morris M; Miller-Nesbitt A; Hoffman RS; Hayes BD; Turgeon AF; Gilfix BM; Grunbaum AM; Bania TC; Thomas SH; Morais JA; Graudins A; Bailey B; Megarbane B; Calello DP; Levine M; **Stellpflug SJ**; Hoegberg LC; Chuang R; Stork C; Bhalla A; Rollins CJ; Lavergne V; AACT Lipid Emulsion Therapy workgroup. Methodology for AACT evidence-based recommendations on the use of intravenous lipid emulsion therapy in poisoning [review article]. *Clin Toxicol (Phila)*. 2015 Jul;53(6):557-64.

Abstract: Intravenous lipid emulsion (ILE) therapy is a novel treatment that was discovered in the last decade. Despite unclear understanding of its mechanisms of action, numerous and diverse publications attested to its clinical use. However, current evidence supporting its use is unclear and recommendations are inconsistent. To assist clinicians in decision-making, the American Academy of Clinical Toxicology created a workgroup composed of international experts from various clinical specialties, which includes representatives of major clinical toxicology associations. Rigorous methodology using the Appraisal of Guidelines for Research and Evaluation or AGREE II instrument was developed to provide a framework for the systematic reviews for this project and to formulate evidence-based recommendations on the use of ILE in poisoning. Systematic reviews on the efficacy of ILE in local anesthetic toxicity and non-local anesthetic poisonings as well as adverse effects of ILE are planned. A comprehensive review of lipid analytical interferences and a survey of ILE costs will be developed. The evidence will be appraised using the GRADE system. A thorough and transparent process for consensus statements will be performed to provide recommendations, using a modified Delphi method with two rounds of voting. This process will allow for the production of useful practice recommendations for this therapy.

Gourlay ML; Overman RA; Fine JP; Ensrud KE; Crandall CJ; Gass ML; Robbins J; Johnson KC; LeBlanc ES; Womack CR; **Schousboe JT**; LaCroix AZ. Baseline age and time to major fracture in younger postmenopausal women. *Menopause*. 2015 Jun;22(6):589-97. PMID: PMC4411185. [Comment in: *Menopause*. 2015 Jun;22(6):581-3.]

OBJECTIVE: This study aims to estimate the incidence of first hip or clinical vertebral fracture or major osteoporotic (hip, clinical vertebral, proximal humerus, or wrist) fracture in postmenopausal women undergoing their first bone mineral density (BMD) test before age 65 years. **METHODS:** We studied 4,068 postmenopausal women, aged 50 to 64 years without hip or clinical vertebral fracture or antifracture treatment at baseline, who were participating in the Women's Health Initiative BMD cohort study. BMD tests were performed between October 1993 and April 2005, with fracture follow-up through 2012. Outcomes were the time for 1% of women to sustain a hip or clinical vertebral fracture and the time for 3% of women to sustain a major osteoporotic fracture before initiating treatment, adjusting for clinical risk factors and accounting for competing risks. Women without osteoporosis and women with osteoporosis on their first BMD test were analyzed separately. **RESULTS:** During a maximum of 11.2 years of concurrent BMD and fracture follow-up, the adjusted estimated time for 1% of women to have a hip or clinical vertebral

fracture was 12.8 years (95% CI, 8.0-20.4) for women aged 50 to 54 years without baseline osteoporosis, 7.6 years (95% CI, 4.8-12.1) for women aged 60 to 64 years without baseline osteoporosis, and 3.0 years (95% CI, 1.3-7.1) for all women aged 50 to 64 years with baseline osteoporosis. Results for major osteoporotic fracture were similar. **CONCLUSIONS:** Because of very low rates of major osteoporotic fracture, postmenopausal women aged 50 to 64 years without osteoporosis on their first BMD test are unlikely to benefit from frequent rescreening before age 65 years.

Graham B; Green A; James M; Katz J; **Swiontkowski MF**. Measuring patient satisfaction in orthopaedic surgery [review article]. *J Bone Joint Surg Am*. 2015 Jan 7;97(1):80-4.

Abstract: In addition to their wish to understand the clinical results of orthopaedic interventions, clinicians, patients, and payers are increasingly interested in patient satisfaction, both with the process of care and with outcomes. The construct of satisfaction is complex and depends on the context in which care takes place, including the nature of treatment, its setting, and most importantly the expectation of patients prior to treatment. The characteristics of scales that are effective measures of satisfaction are the same as those of all effective measurement instruments--i.e., reliability, validity, and responsiveness. Measurement of patient satisfaction may be especially important in evaluations of established procedures and processes so that the value of those procedures and processes to patients can be more completely understood.

Gromski MA; Aggarwal A; George V; Marks RA; **Luz LP**. Dedifferentiated liposarcoma presenting as a large rectal mass. *Gastrointest Endosc*. 2015 Dec;82(6):1134; discussion 1134-5.

Gromski MA; Vakili ST; George V; **Luz LP**. Fake out: a giant fibroepithelial polyp mimicking a rectal tumor. *Gastrointest Endosc*. 2015 Oct;82(4):763-4.

Gutova M; Shahmanyany D; Oganesyany D; Abramyan Y; Danielyan L; **Frey WH** 2nd; Khankaldyyan V; Najbauer J; Balyasnikova IV; Moats RA; Lesniak MS; Barish ME; Aboody KS. Intranasal delivery of therapeutic neural stem cells to target intracerebral glioma. *Environ: J Stem Cell Res Regen Med*. 2015;1(1):1-7.

Abstract: Despite aggressive multimodal therapy and advances in imaging, surgical and radiation techniques, high-grade gliomas remain incurable, with patient survival often measured in months. Treatment failure is largely attributable to the invasive nature of glioma cells, ineffective delivery of chemotherapeutic agents across the blood-brain barrier, and dose-limiting systemic toxicities. Neural stem cells (NSCs) have inherent tumor-tropic properties that can be exploited for targeted delivery of anti-cancer agents. However, current intracranial and intravenous injection approaches for administering NSCs are not optimal, especially for repeat administrations, because the methods are invasive and may lead to complications. We hypothesized that intranasal administration of NSCs would circumvent these challenges. In this study, we evaluated the biodistribution of NSCs administered intranasally to severely immunodeficient esterase-deficient Esle mice bearing orthotopic xenografts of U251.eGFP.fluc human gliomas. Histological imaging and 3D reconstruction revealed that NSCs specifically localized to tumor sites, but not to non-tumor areas of the brain. Importantly, mice treated with intranasally administered NSCs that were genetically modified to express carboxylesterase, a prodrug-activating enzyme, in combination with CPT-11 showed increased survival and reduced tumor growth. These results support further development of intranasal delivery of NSCs as a new approach to treating glioma and possibly other invasive brain tumors.

Hansford S; Kaurah P; Li-Chang H; Woo M; Senz J; Pinheiro H; Schrader KA; Schaeffer DF; Shumansky K; Zogopoulos G; Santos TA; Claro I; Carvalho J; Nielsen C; Padilla S; Lum A; Talhouk A; **Baker-Lange KM**; Richardson S; Lewis I; Lindor NM; Pennell E; MacMillan A; Fernandez B; Keller G; Lynch H; Shah SP; Guilford P; Gallinger S; Corso G; Roviello F; Caldas C; Oliveira C; Pharoah PD; Huntsman DG. Hereditary diffuse gastric cancer syndrome: CDH1 mutations and beyond. *JAMA Oncol.* 2015 Apr;1(1):23-32. [Comment in: *JAMA Oncol.* 2015 Apr;1(1):16-8.]

IMPORTANCE: E-cadherin (CDH1) is a cancer predisposition gene mutated in families meeting clinically defined hereditary diffuse gastric cancer (HDGC). Reliable estimates of cancer risk and spectrum in germline mutation carriers are essential for management. For families without CDH1 mutations, genetic-based risk stratification has not been possible, resulting in limited clinical options. **OBJECTIVES:** To derive accurate estimates of gastric and breast cancer risks in CDH1 mutation carriers and determine if germline mutations in other genes are associated with HDGC. **DESIGN, SETTING, AND PARTICIPANTS:** Testing for CDH1 germline mutations was performed on 183 index cases meeting clinical criteria for HDGC. Penetrance was derived from 75 mutation-positive families from within this and other cohorts, comprising 3858 probands (353 with gastric cancer and 89 with breast cancer). Germline DNA from 144 HDGC probands lacking CDH1 mutations was screened using multiplexed targeted sequencing for 55 cancer-associated genes. **MAIN OUTCOMES AND MEASURES:** Accurate estimates of gastric and breast cancer risks in CDH1 mutation carriers and the relative contribution of other cancer predisposition genes in familial gastric cancers. **RESULTS:** Thirty-one distinct pathogenic CDH1 mutations (14 novel) were identified in 34 of 183 index cases (19%). By the age of 80 years, the cumulative incidence of gastric cancer was 70% (95% CI, 59%-80%) for males and 56% (95% CI, 44%-69%) for females, and the risk of breast cancer for females was 42% (95% CI, 23%-68%). In CDH1 mutation-negative index cases, candidate mutations were identified in 16 of 144 probands (11%), including mutations within genes of high and moderate penetrance: CTNNA1, BRCA2, STK11, SDHB, PRSS1, ATM, MSR1, and PALB2. **CONCLUSIONS AND RELEVANCE:** This is the largest reported series of CDH1 mutation carriers, providing more precise estimates of age-associated risks of gastric and breast cancer that will improve counseling of unaffected carriers. In HDGC families lacking CDH1 mutations, testing of CTNNA1 and other tumor suppressor genes should be considered. Clinically defined HDGC families can harbor mutations in genes (ie, BRCA2) with different clinical ramifications from CDH1. Therefore, we propose that HDGC syndrome may be best defined by mutations in CDH1 and closely related genes, rather than through clinical criteria that capture families with heterogeneous susceptibility profiles.

Hararah MK; Pollack CE; Garza MA; Yeh HC; Markakis D; Phelan-Emrick DF; Wenzel J; **Shapiro GR**; Bone L; Johnson L; Ford JG. The relationship between education and prostate-specific antigen testing among urban African American medicare beneficiaries. *J Racial Ethn Health Disparities.* 2015 Jun;2(2):176-83.

PURPOSE: We examined the association between socioeconomic status (SES) and prostate-specific antigen (PSA) cancer screening among older African American men. **METHODS:** We analyzed baseline data from a sample of 485 community-dwelling African American men who participated in the Cancer Prevention and Treatment Demonstration Trial. The outcome was receipt of PSA screening within the past year. SES was measured using income and educational attainment. Sequential multivariate logistic regression models were performed to study whether health care access, patient-provider relationship, and cancer fatalism mediated the relationship between SES and PSA screening. **RESULTS:** Higher educational attainment was significantly

associated with higher odds of PSA screening in the past year (odds ratio (OR) 2.08 for college graduate compared to less than high school graduate, 95 % confidence interval (CI) 1.03-4.24); income was not. Health care access and patient-provider communication did not alter the relationship between education and screening; however, beliefs regarding cancer fatalism partially mediated the observed relationship. **CONCLUSION:** Rates of prostate cancer screening among African American men vary by level of educational attainment; beliefs concerning cancer fatalism help explain this gradient. Understanding the determinants of cancer fatalism is a critical next step in building interventions that seek to ensure equitable access to prostate cancer screening.

Heaven TJ; Gordan VV; Litaker MS; Fellows JL; **Rindal DB**; Gilbert GH; National Dental PBRN Collaborative Group. Concordance between responses to questionnaire scenarios and actual treatment to repair or replace dental restorations in the National Dental PBRN. *J Dent.* 2015 Nov;43(11):1379-84. PMID: PMC4604066. Project Number: A11-037 National Dental PBRN.

OBJECTIVE: To quantify the agreement between treatment recommended during hypothetical clinical scenarios and actual treatment provided in comparable clinical circumstances. **METHODS:** A total of 193 practitioners in the National Dental Practice-Based Research Network participated in both a questionnaire and a clinical study. The questionnaire included three hypothetical scenarios about treatment of existing restorations. Clinicians then participated in a clinical study about repair or replacement of existing restorations. We quantified the overall concordance between their questionnaire responses and what they did in actual clinical treatment. **RESULTS:** Practitioners who recommended repair (instead of replacement) of more scenario restorations also had higher repair percentages in clinical practice. Additionally, for each of the three hypothetical scenario restorations, practitioners who recommended repair had higher repair percentages in clinical practice. **CONCLUSIONS:** The questionnaire scenarios were a valid measure of clinicians' tendency to repair or replace restorations in actual clinical practice. **CLINICAL IMPLICATIONS:** Although there was substantial variation in practitioners' tendency to repair or replace restorations, responses to questionnaire scenarios by individual practitioners were concordant with what they did in actual clinical practice.

Heineman JT; Garcia LJ; Obst MA; Chong HS; Langin JG; Humpal R; Pezzella PA; **Dries DJ**. Collapsible enteroatmospheric fistula isolation device: a novel, simple solution to a complex problem. *J Am Coll Surg.* 2015 Aug;221(2):e7-14.

Heinemann L; Fleming GA; Petrie JR; Holl RW; **Bergental RM**; Peters AL. Insulin pump risks and benefits: a clinical appraisal of pump safety standards, adverse event reporting, and research needs: a joint statement of the European Association for the Study of Diabetes and the American Diabetes Association Diabetes Technology Working Group [review article]. *Diabetes Care.* 2015 Apr;38(4):716-22.

Abstract: Insulin pump therapy, also known as continuous subcutaneous insulin infusion (CSII), is an important and evolving form of insulin delivery, which is mainly used for people with type 1 diabetes. However, even with modern insulin pumps, errors of insulin infusion can occur due to pump failure, insulin infusion set (IIS) blockage, infusion site problems, insulin stability issues, user error, or a combination of these. Users are therefore exposed to significant and potentially fatal hazards: interruption of insulin infusion can result in hyperglycemia and ketoacidosis; conversely, delivery of excessive insulin can cause

severe hypoglycemia. Nevertheless, the available evidence on the safety and efficacy of CSII remains limited. The European Association for the Study of Diabetes (EASD) and the American Diabetes Association (ADA) have therefore joined forces to review the systems in place for evaluating the safety of pumps from a clinical perspective. We found that useful information held by the manufacturing companies is not currently shared in a sufficiently transparent manner. Public availability of adverse event (AE) reports on the US Food and Drug Administration's Manufacturer and User Facility Device Experience (MAUDE) database is potentially a rich source of safety information but is insufficiently utilized due to the current configuration of the system; the comparable database in Europe (European Databank on Medical Devices [EUDAMED]) is not publicly accessible. Many AEs appear to be attributable to human factors and/or user error, but the extent to which manufacturing companies are required by regulators to consider the interactions of users with the technical features of their products is limited. The clinical studies required by regulators prior to marketing are small and over-reliant on bench testing in relation to "predicate" products. Once a pump is available on the market, insufficient data are made publicly available on its long-term use in a real-world setting; such data could provide vital information to help health care teams to educate and support users and thereby prevent AEs. As well as requiring more from the manufacturing companies, we call for public funding of more research addressing clinically important questions in relation to pump therapy: both observational studies and clinical trials. At present, there are significant differences in the regulatory systems between the US and European Union at both pre- and postmarketing stages; improvements in the European system are more urgently required. This statement concludes with a series of recommended specific actions for "meknovigilance" (i.e., a standardized safety approach to technology) that could be implemented to address the shortcomings we highlight.

Heinemann L; Fleming GA; Petrie JR; Holl RW; **Bergenstal RM**; Peters AL. Insulin pump risks and benefits: a clinical appraisal of pump safety standards, adverse event reporting and research needs. A joint statement of the European Association for the Study of Diabetes and the American Diabetes Association Diabetes Technology Working Group [review article]. *Diabetologia*. 2015 May;58(5):862-70.

Abstract: Insulin pump therapy, also known as continuous subcutaneous insulin infusion (CSII), is an important and evolving form of insulin delivery, which is mainly used for people with type 1 diabetes. However, even with modern insulin pumps, errors of insulin infusion can occur due to pump failure, insulin infusion set (IIS) blockage, infusion site problems, insulin stability issues, user error or a combination of these. Users are therefore exposed to significant and potentially fatal hazards: interruption of insulin infusion can result in hyperglycaemia and ketoacidosis; conversely, delivery of excessive insulin can cause severe hypoglycaemia. Nevertheless, the available evidence on the safety and efficacy of CSII remains limited. The European Association for the Study of Diabetes (EASD) and American Diabetes Association (ADA) have therefore joined forces to review the systems in place for evaluating the safety of pumps from a clinical perspective. We found that useful information held by the manufacturing companies is not currently shared in a sufficiently transparent manner. Public availability of adverse event (AE) reports on the US Food and Drug Administration's Manufacturer and User Facility Device Experience (MAUDE) database is potentially a rich source of safety information but is insufficiently utilised due to the current configuration of the system; the comparable database in Europe (European Databank on Medical Devices, EUDAMED) is not publicly accessible. Many AEs appear to be attributable to human factors and/or user error, but the extent

to which manufacturing companies are required by regulators to consider the interactions of users with the technical features of their products is limited. The clinical studies required by regulators prior to marketing are small and over-reliant on bench testing in relation to 'predicate' products. Once a pump is available on the market, insufficient data are made publicly available on its long-term use in a real-world setting; such data could provide vital information to help healthcare teams to educate and support users, and thereby prevent AEs. As well as requiring more from the manufacturing companies, we call for public funding of more research addressing clinically important questions in relation to pump therapy: both observational studies and clinical trials. At present there are significant differences in the regulatory systems between the USA and European Union at both pre- and post-marketing stages; improvements in the European system are more urgently required. This statement concludes with a series of recommended specific actions for 'meknovigilance' (i.e. a standardised safety approach to technology) which could be implemented to address the shortcomings we highlight.

Hofstetter AM; Vargas CY; Camargo S; Holleran S; Vawdrey DK; **Kharbanda EO**; Stockwell MS. Impacting delayed pediatric influenza vaccination: a randomized controlled trial of text message reminders. *Am J Prev Med.* 2015 Apr;48(4):392-401.

BACKGROUND: Influenza vaccination coverage is low, especially among low-income populations. Most doses are generally administered early in the influenza season, yet sustained vaccination efforts are crucial for achieving optimal coverage. The impact of text message influenza vaccination reminders was recently demonstrated in a low-income population. Little is known about their effect on children with delayed influenza vaccination or the most effective message type. **PURPOSE:** To determine the impact of educational plus interactive text message reminders on influenza vaccination of urban low-income children unvaccinated by late fall. **DESIGN:** Randomized controlled trial. **SETTING/PARTICIPANTS:** Parents of 5,462 children aged 6 months-17 years from four academically affiliated pediatric clinics who were unvaccinated by mid-November 2011. **INTERVENTION:** Eligible parents were stratified by their child's age and pediatric clinic site and randomized using a 1:1:1 allocation to educational plus interactive text message reminders, educational-only text message reminders, or usual care. Using an immunization registry-linked text messaging system, parents of intervention children received up to seven weekly text message reminders. One of the messages sent to parents in the educational plus interactive text message arm allowed selection of more information about influenza and influenza vaccination. **MAIN OUTCOME MEASURES:** Influenza vaccination by March 31, 2012. Data were collected and analyzed between 2012 and 2014. **RESULTS:** Most children were publicly insured and Spanish speaking. Baseline demographics were similar between groups. More children of parents in the educational plus interactive text message arm were vaccinated (38.5%) versus those in the educational-only text message (35.3%; difference=3.3%, 95% CI=0.02%, 6.5%; relative risk ratio (RRR)=1.09, 95% CI=1.002, 1.19) and usual care (34.8%; difference=3.8%, 95% CI=0.6%, 7.0%; RRR=1.11, 95% CI=1.02-1.21) arms. **CONCLUSIONS:** Text message reminders with embedded educational information and options for interactivity have a small positive effect on influenza vaccination of urban, low-income, minority children who remain unvaccinated by late fall.

Home PD; **Bergenstal RM**; Bolli GB; Ziemer M; Rojeski M; Espinasse M; Riddle MC. New insulin Glargine 300 Units/mL versus Glargine 100 Units/mL in people with type 1 diabetes: a randomized, phase 3a, open-label clinical trial (EDITION 4). *Diabetes Care.* 2015 Dec;38(12):2217-25.

OBJECTIVE: Insulin therapy in type 1 diabetes still provides suboptimal outcomes. Insulin glargine 300 units/mL (Gla-300), with a flatter pharmacodynamic profile compared with insulin glargine 100 units/mL (Gla-100), is an approach to this problem. **RESEARCH DESIGN AND METHODS:** People with type 1 diabetes, using a mealtime and basal insulin regimen, were randomized open-label to Gla-300 or Gla-100 and to morning or evening injection, continuing the mealtime analog, and followed for 6 months. **RESULTS:** Participants (n = 549) were a mean age of 47 years and had a mean duration of diabetes of 21 years and BMI of 27.6 kg/m². The change in HbA1c (primary end point; baseline 8.1%) was equivalent in the two treatment groups (difference, 0.04% [95% CI -0.10 to 0.19]) (0.4 mmol/mol [-1.1 to 2.1]), and Gla-300 was thus noninferior. Similar results with wider 95% CIs were found for morning and evening injection times and for prebreakfast self-measured plasma glucose (SMPG) overall. Results were also similar for Gla-300 when morning and evening injection time was compared, including overlapping 8-point SMPG profiles. Hypoglycemia did not differ, except for the first 8 weeks of the study, when nocturnal confirmed or severe hypoglycemia was lower with Gla-300 (rate ratio 0.69 [95% CI 0.53-0.91]). Hypoglycemia with Gla-300 did not differ by time of injection. The basal insulin dose was somewhat higher at 6 months for Gla-300. The adverse event profile did not differ and was independent of the Gla-300 time of injection. Weight gain was lower with Gla-300. **CONCLUSIONS:** In long-duration type 1 diabetes, Gla-300 provides similar glucose control to Gla-100, with a lower risk of hypoglycemia after transfer from other insulins, independent of time of injection, and less weight gain.

Hopkins DP; **Pronk NP**, member of the Community Preventive Services Task Force. Clinical decision support systems recommended to prevent cardiovascular disease [review article]. *Am J Prev Med*. 2015 Nov;49(5):796-9.

Horne HN; Phelan-Emrick DF; Pollack CE; Markakis D; Wenzel J; Ahmed S; Garza MA; **Shapiro GR**; Bone LR; Johnson LB; Ford JG. Effect of patient navigation on colorectal cancer screening in a community-based randomized controlled trial of urban African American adults. *Cancer Causes Control*. 2015 Feb;26(2):239-46. PMID: PMC4370183.

PURPOSE: In recent years, colorectal cancer (CRC) screening rates have increased steadily in the USA, though racial and ethnic disparities persist. In a community-based randomized controlled trial, we investigated the effect of patient navigation on increasing CRC screening adherence among older African Americans.

METHODS: Participants in the Cancer Prevention and Treatment Demonstration were randomized to either the control group, receiving only printed educational materials (PEM), or the intervention arm where they were assigned a patient navigator in addition to PEM. Navigators assisted participants with identifying and overcoming screening barriers. Logistic regression analyses were used to assess the effect of patient navigation on CRC screening adherence. Up-to-date with screening was defined as self-reported receipt of colonoscopy/sigmoidoscopy in the previous 10 years or fecal occult blood testing (FOBT) in the year prior to the exit interview. **RESULTS:** Compared with controls, the intervention group was more likely to report being up-to-date with CRC screening at the exit interview (OR 1.55, 95 % CI 1.07-2.23), after adjusting for select demographics. When examining the screening modalities separately, the patient navigator increased screening for colonoscopy/sigmoidoscopy (OR 1.53, 95 % CI 1.07-2.19), but not FOBT screening. Analyses of moderation revealed stronger effects of navigation among participants 65-69 years and those with an adequate health literacy level. **CONCLUSIONS:** In a population of older African Americans adults, patient

navigation was effective in increasing the likelihood of CRC screening. However, more intensive navigation may be necessary for adults over 70 years and individuals with low literacy levels.

Huebsch JA; Kottke TE; McGinnis P; Nichols J; **Parker ED; Tillema JO; Hanson AM.** A qualitative study of processes used to implement evidence-based care in a primary care practice. *Fam Pract.* 2015 Oct;32(5):578-83. PMCID: PMC4592325. Project Number: A09-132 WWMA Trial.

BACKGROUND: Evidence-based guidelines for care of coronary heart disease patients are not fully implemented. Primary care practices provide most of the care for these patients. **OBJECTIVE:** To learn how providers and staff in a busy primary care practice implement interventions to provide evidence-based care of coronary heart disease patients. **METHODS:** We conducted a qualitative analysis of the responses to open-ended questions in nine electronically administered bimonthly surveys of key physicians, clinic staff and managers in the practice. **RESULTS:** Ten to 16 (mean = 12.3) personnel responded to each survey. Nearly 30% were physicians and 40.5% were clinic staff. Four major themes emerged from the qualitative analysis: (i) giving data about not-at-goal patients to providers for care plan development; (ii) developing team roles and defining tasks; (iii) providing patient care and implementing care plans and (iv) providing technology support to generate useful, accurate data. The frequency that the subthemes were mentioned varied from survey to survey, but their mention persisted over the entire time of all nine surveys. **CONCLUSIONS:** Developing a system for implementing evidence-based care involves considerations of roles and teamwork, technology use to develop a patient registry and obtain needed clinical data, care processes for pre-visit planning, and between-visit care management. A registered nurse care manager is a central figure in implementing and sustaining the process. Implementing evidence-based guidelines is an ongoing process of revision, retraining and reinforcement.

Huet AL; **Frail CK;** Lake LM; Snyder ME. Impact of passive and active promotional strategies on patient acceptance of medication therapy management services. *J Am Pharm Assoc (2003).* 2015 Mar 1;55(2):178-81.

OBJECTIVES: To assess the impact of passive and active promotional strategies on patient acceptance of medication therapy management (MTM) services, and to identify reasons for patient acceptance or refusal. **METHODS:** Four promotional approaches were developed to offer MTM services to eligible patients, including letters and bag stuffers ("passive" approaches), and face-to-face offers and telephone calls ("active" approaches). Thirty pharmacies in a grocery store chain were randomized to one of the four approaches. Patient acceptance rates were compared among the four groups, and between active and passive approaches using hierarchical logistic regression techniques. Depending on their decision to accept or decline the service, patients were invited to take part in one of two brief telephone surveys. **RESULTS:** No significant differences were identified among the four promotional methods or between active and passive methods in the analyses. Patients' most frequent reasons for accepting MTM services were potential cost savings, review of how the medications were working, the expert opinion of the pharmacist, and education about medications. Patients' most frequent reasons for declining MTM services were that the participant already felt comfortable with their medications and felt their pharmacist provides these services on a regular basis. **CONCLUSION:** No significant difference was found among any of the four groups or between active or passive approaches. Further research is warranted to identify strategies for improving patient engagement in MTM services.

Ikramuddin S; Billington CJ; Lee WJ; Bantle JP; **Thomas AJ**; Connett JE; Leslie DB; Inabnet WB 3rd; Jeffery RW; Chong K; Chuang LM; Sarr MG; Jensen MD; Vella A; Ahmed L; Belani K; Schone JL; Olofson AE; Bainbridge HA; Laqua PS; Wang Q; Korner J. Roux-en-Y gastric bypass for diabetes (the Diabetes Surgery Study): 2-year outcomes of a 5-year, randomised, controlled trial. *Lancet Diabetes Endocrinol.* 2015 Jun;3(6):413-22. PMID: PMC4477840. [Erratum in: *Lancet Diabetes Endocrinol.* 2015 Jul;3(7):e5. Comment in: *Lancet Diabetes Endocrinol.* 2015 Jun;3(6):394-5.]

BACKGROUND: Conventional treatments for patients with type 2 diabetes are often inadequate. We aimed to assess outcomes of diabetes control and treatment risks 2 years after adding Roux-en-Y gastric bypass to intensive lifestyle and medical management. **METHODS:** We report 2-year outcomes of a 5-year randomised trial (the Diabetes Surgery Study) at four teaching hospitals (three in the USA and one in Taiwan). At baseline, eligible participants had to have HbA1c of at least 8.0% (64 mmol/mol), BMI between 30.0 and 39.9 kg/m², and type 2 diabetes for at least 6 months, and be aged 30-67 years. We randomly assigned participants to receive either intensive lifestyle and medical management alone (lifestyle and medical management), or lifestyle and medical management plus standard Roux-en-Y gastric bypass surgery (gastric bypass). Staff from the clinical centres had access to data from individual patients, but were masked to other patients' data and aggregated data until the 2-year follow-up. Drugs for hyperglycaemia, hypertension, and dyslipidaemia were prescribed by protocol. The primary endpoint was achievement of the composite treatment goal of HbA1c less than 7.0% (53 mmol/mol), LDL cholesterol less than 2.59 mmol/L, and systolic blood pressure less than 130 mm Hg at 12 months; here we report the composite outcome and other pre-planned secondary outcomes at 24 months. Analyses were done on an intention-to-treat basis, with multiple imputations for missing data. This study is registered with ClinicalTrials.gov, number NCT00641251, and is still ongoing. **FINDINGS:** Between April 21, 2008, and Nov 21, 2011, we randomly assigned 120 eligible patients to either lifestyle and medical management alone (n=60) or with the addition of gastric bypass (n=60). One patient in the lifestyle and medical management group died (from pancreatic cancer), thus 119 were included in the primary analysis. Significantly more participants in the gastric bypass group achieved the composite triple endpoint at 24 months than in the lifestyle and medical management group (26 [43%] vs eight [14%]; odds ratio 5.1 [95% CI 2.0-12.6], p=0.0004), mainly through improved glycaemic control (HbA1c <7.0% [53 mmol/mol] in 45 [75%] vs 14 [24%]; treatment difference -1.9% (-2.5 to -1.4); p=0.0001). 46 clinically important adverse events occurred in the gastric bypass group and 25 in the lifestyle and medical management group (mainly infections in both groups [four in the lifestyle and medical management group, eight in the gastric bypass group]). With a negative binomial model adjusted for site, the event rate for the gastric bypass group was non-significantly higher than the lifestyle and medical management group by a factor of 1.67 (95% CI 0.98-2.87, p=0.06). Across both years of the study, the gastric bypass group had seven serious falls with five fractures, compared with three serious falls and one fracture in the lifestyle and medical management group. All fractures happened in women. Many more nutritional deficiencies occurred in the gastric bypass group (mainly deficiencies in iron, albumin, calcium, and vitamin D), despite protocol use of nutritional supplements. **INTERPRETATION:** The addition of gastric bypass to lifestyle and medical management in patients with type 2 diabetes improved diabetes control, but adverse events and nutritional deficiencies were more frequent. Larger and longer studies are needed to investigate whether the benefits and risk of gastric bypass for type 2 diabetes can be balanced.

Inzucchi SE; **Bergenstal RM**; Buse JB; Diamant M; Ferrannini E; Nauck M; Peters AL; Tsapas A; Wender R; Matthews DR. Management of hyperglycemia in type 2 diabetes, 2015: a patient-centered approach: update to a position statement of the American Diabetes Association and the European Association for the Study of Diabetes. *Diabetes Care*. 2015 Jan;38(1):140-9. [Comment in: *Diabetes Care*. 2015 Aug;38(8):e125-9. *Diabetes Care*. 2015 Sep;38(9):e141-3.]

Inzucchi SE; **Bergenstal RM**; Buse JB; Diamant M; Ferrannini E; Nauck M; Peters AL; Tsapas A; Wender R; Matthews DR. Management of hyperglycaemia in type 2 diabetes, 2015: a patient-centred approach. Update to a position statement of the American Diabetes Association and the European Association for the Study of Diabetes. *Diabetologia*. 2015 Mar;58(3):429-42.

Jacob V; Chattopadhyay SK; Thota AB; Proia KK; Njie G; Hopkins DP; Finnie RK; **Pronk NP**; **Kottke TE**; Community Preventive Services Task Force. Economics of team-based care in controlling blood pressure: a Community Guide systematic review [review article]. *Am J Prev Med*. 2015 Nov;49(5):772-83. PMCID: PMC4685935, [Comment in: *Am J Prev Med*. 2015 Nov;49(5):e81-2.]

CONTEXT: High blood pressure is an important risk factor for cardiovascular disease and stroke, the leading cause of death in the U.S., and a substantial national burden through lost productivity and medical care. A recent Community Guide systematic review found strong evidence of effectiveness of team-based care in improving blood pressure control. The objective of the present review is to determine from the economic literature whether team-based care for blood pressure control is cost beneficial or cost effective. EVIDENCE ACQUISITION: Electronic databases of papers published January 1980-May 2012 were searched to find economic evaluations of team-based care interventions to improve blood pressure outcomes, yielding 31 studies for inclusion. EVIDENCE SYNTHESIS: In analyses conducted in 2012, intervention cost, healthcare cost averted, benefit-to-cost ratios, and cost effectiveness were abstracted from the studies. The quality of estimates for intervention and healthcare cost from each study were assessed using three elements: intervention focus on blood pressure control, incremental estimates in the intervention group relative to a control group, and inclusion of major cost-driving elements in estimates. Intervention cost per unit reduction in systolic blood pressure was converted to lifetime intervention cost per quality-adjusted life-year (QALY) saved using algorithms from published trials. CONCLUSIONS: Team-based care to improve blood pressure control is cost effective based on evidence that 26 of 28 estimates of \$/QALY gained from ten studies were below a conservative threshold of \$50,000. This finding is salient to recent U.S. healthcare reforms and coordinated patient-centered care through formation of Accountable Care Organizations.

Jacobson RM; **Isham GJ**; Finney Rutten LJ. Population health as a means for health care organizations to deliver value. *Mayo Clin Proc*. 2015 Nov;90(11):1465-70.

JaKa MM; Haapala JL; Wolfson J; French SA. Describing the relationship between occupational and non-occupational physical activity using objective measurement. *Prev Med Rep*. 2015;2:213-7.

Objective: Physical inactivity is a major health risk for working adults, yet the interplay between physical activity levels in work and non-work settings is not well understood. The association between occupational physical activity (OPA) and non-occupational physical activity (non-OPA), and associations by sex, were examined in a group of 233 working adults in the Minneapolis, MN metro area between 2010 and 2012.

Methods: Accelerometry-measured activity was split into OPA and non-OPA via participant-reported typical work start and end times. Regression models were used to estimate associations. **Results:** Average weekly OPA was positively associated with non-OPA ($B = 0.18$, 95% CI: 0.08 to 0.28) and associations were stronger among women than men (Binteraction = - 0.39, 95% CI: - 0.61 to - 0.17). **Conclusions:** Results suggest that individuals with less physical activity during work also have less physical activity outside of work. Understanding the complexities of the OPA/non-OPA relationship will enable researchers to explore the underlying mechanisms.

JaKa MM; Seburg EM; Roeder AM; Sherwood NE. Objectively coding intervention fidelity during a phone-based obesity prevention study. *J Obes Overweight*. 2015 Feb;1(1):102. PMCID: PMC4662548.

Background: Childhood obesity prevention studies have yielded disappointing results. Understanding intervention fidelity is necessary in explaining why interventions are (or are not) successful and ultimately improving future intervention. In spite of this, intervention fidelity it is not consistently reported in the obesity prevention literature. The purpose of the current study was to develop and utilize a coding protocol to objectively assess intervention fidelity in a phone-based obesity prevention study for parents of preschool-aged children. **Findings:** Both interventionists and independent coders completed session fidelity measures including time spent on target areas (media use, physical activity, etc.) and components of goal setting quality. Coders also rated participant engagement. Agreement between ratings by interventionists and coders, fidelity levels and changes in fidelity components over time is presented. Coders and interventionists showed high agreement when reporting time spent discussing different target areas. Interventionists consistently rated themselves higher than independent coders on measures of goal quality. **Coder ratings of session quality** were initially high, but some components declined slightly across the eight sessions. **Conclusion:** Future directions for intervention fidelity measurement and analysis are discussed, including utilizing changes in fidelity measures over time to predict study outcomes. Obtaining a more in-depth understanding of intervention fidelity has the potential to strengthen obesity interventions.

JaKa MM; Sherwood NE; Flatt SW; Pacanowski CR; Pakiz B; Thomson CA; Rock CL. Mediation of weight loss and weight loss maintenance through dietary disinhibition and restraint. *J Obes Weight Loss Ther*. 2015 Apr;5(2):253. PMCID: PMC4852882.

Abstract: Understanding the degree to which eating behaviors, such as disinhibition and restraint, are associated with weight loss and weight loss maintenance could contribute to further refinement of effective weight management intervention strategies. The purpose of this analysis was to examine if these factors mediate weight loss or weight loss maintenance using data from a randomized controlled trial testing a commercial weight loss program that delivered behavioral counseling and structured meal plans including prepackaged foods. Mediation analyses were used to examine whether changes in disinhibition and restraint mediated the relationship between intervention and weight change during initial weight loss (0-6 months), continued weight loss (6-12 months), or weight loss maintenance (12-24 months) phases. Only decreases in disinhibition between baseline and 6 months mediated the intervention effect on initial weight loss. Our results suggest the mediation effects of these eating behaviors are modest and other factors contribute to a larger, more complex long-term weight loss prognosis.

Johnson T; **Patel RA**; Scott N; **Olives TD**; Smith S; Gray RO; Miner JR. Access to disease treatment among patients presenting to the emergency department with asthma or hypertension. *J Emerg Med*. 2015 May;48(5):527-35.

BACKGROUND: Asthma and hypertension are common among Emergency Department (ED) patients. Primary care providers are integral in managing these conditions, yet these patients are often in the ED. **OBJECTIVE:** To determine access to care among ED patients with asthma or hypertension and the association with sociodemographic factors and disease acuity. **METHODS:** This was a prospective, cross-sectional study of ED patients at an urban county hospital conducted between June 4 and August 31, 2008. Consenting patients were surveyed, and peak flow or blood pressure measured as appropriate. Access to disease treatment was defined as self-reported access to a primary care provider or current prescription for asthma or hypertension, or both. Descriptive statistics and multinomial logistic regression were used to analyze data. **RESULTS:** There were 2303 patients enrolled; 283 had asthma, 543 had hypertension, and 187 had both. Seventy-one patients (25.1%) with asthma, 151 patients (27.8%) with hypertension, and 19 patients (10.2%) with both had poor access to disease treatment. Seeking ED medical attention was related to having poor access to treatment for patients with both asthma and hypertension. Females with asthma had poor access to treatment. In hypertension patients, good access to treatment was associated with excellent/good health status, housing status, and decreasing age. Poor access to treatment was associated with increasing blood pressure. **CONCLUSIONS:** Poor access to disease treatment and aspects of socioeconomic status were associated with seeking care in the ED. Changes in access to treatment may affect the number of patients seeking ED care, but not the severity of the presenting illness.

Karam MD; Thomas GW; Koehler DM; Westerlind BO; **Lafferty PM**; Ohrt GT; Marsh JL; **Van Heest AE**; Anderson DD. Surgical coaching from head-mounted video in the training of fluoroscopically guided articular fracture surgery. *J Bone Joint Surg Am*. 2015 Jun 17;97(12):1031-9.

BACKGROUND: The evolving surgical skills education paradigm in orthopaedics has generated a strong demand for validated educational tools and methodologies. This study aimed to confirm that a one-on-one faculty coaching review of the head-mounted video recording of a resident's surgical performance on a validated articular fracture simulation trainer would substantially improve subsequent performance. **METHODS:** Fifteen first-year or second-year orthopaedic surgery residents reduced and fixed a standardized intra-articular tibial plafond fracture model under fluoroscopic guidance. Their performances were recorded by a head-mounted video camera. Prior to repeating the procedure six weeks later, eight subjects (the intervention group) reviewed the video of their performance with an orthopaedic traumatologist, and seven subjects (the control group) did not. Cohort performance was compared with respect to task duration, number of fluoroscopic images, and scores on the Objective Structured Assessment of Technical Skills (OSATS) as evaluated by fellowship-trained orthopaedic traumatologists blinded to the residents' year in training and prior surgical experience. **RESULTS:** The initial performance OSATS scores were not significantly different ($p \geq 0.05$) between the control and intervention groups. Assessments of their repeat performance showed a significant net interval improvement ($p < 0.05$) in OSATS scores in the intervention group (mean [and standard deviation], 21 +/- 8 points) compared with the control group (6 +/- 3 points). The mean fluoroscopy utilization had a significant net decrease ($p < 0.05$) in the intervention group (-5.4 +/- 11.7 points) compared with the control group (5.3 +/- 7.0 points). Task duration in the repeat performance was similar between both groups. **CONCLUSIONS:** Personalized video-based feedback improved performance on

a standardized articular fracture trainer for first-year and second-year residents. The described technique may further enhance resident surgical skills education.

Katz AS; Mulder B; Pronk NP. Sit, stand, learn: using workplace wellness sit-stand results to improve student behavior and learning. *ACSMs Health Fitness J.* 2015 Jan-Feb;19(1):42-4.

Abstract: Prolonged sitting time is a risk factor for adverse health outcomes and also has been associated with negative impacts on worker productivity. As an increasingly common instance of sedentary behavior, prolonged sitting time is related to premature mortality, chronic disease, metabolic syndrome, and obesity. Programs and products have emerged that are designed to assist individuals in breaking up extended periods of sitting time. Most of these interventions have occurred in workplace settings, where workers often spend more than half of their days sitting. This emerging body of research has shown positive effects, including physical as well as emotional health, such as mood states. Furthermore, the introduction of sit-stand and movement breaks also appears to impact worker performance and productivity positively. Given that the introduction of sit-stand devices at the workplace made employees feel better and be more productive, it would make sense to translate such findings to other settings. Might we want to consider alternative contexts where improved mood and attention to task could really make an important difference in health and other nonhealth outcomes? For example, what if such lessons learned were applied to the classroom settings where students with special needs are taught technical skills to help them contribute meaningfully to society?

Kharbanda EO. Helping mothers to get the message about influenza: are texts the future for increased immunization [editorial]? *Expert Rev Vaccines.* 2015 Mar;14(3):333-5. PMID: PMC4342835.

Abstract: Pregnant women and children are at increased risk of severe influenza infections. Despite existing recommendations, uptake of influenza vaccine in these vulnerable groups remains low. Text message reminder-recalls are a feasible and scalable method for promoting influenza vaccination. In randomized controlled trials, text message interventions have demonstrated small but significant increases in influenza vaccine coverage. They should be considered one of many tools available for increasing vaccination and thus improving maternal and child health.

Kharbanda EO; Nordin JD; Sinaiko AR; Ekstrom HL; Stultz JM; Sherwood NE; Fontaine PL; Asche SE; Dehmer SP; Amundson JH; Appana DX; Bergdall AR; Hayes MG; O'Connor PJ. TeenBP: development and piloting of an EHR-linked clinical decision support system to improve recognition of hypertension in adolescents. *EGEMS (Wash DC).* 2015 Jul 9;3(2):1142. PMID: PMC4537153.

CONTEXT: Blood pressure (BP) is routinely measured in children and adolescents during primary care visits. However, elevated BP or hypertension is frequently not diagnosed or evaluated further by primary care providers. Barriers to recognition include lack of clinician buy-in, competing priorities, and complexity of the standard BP tables. **CASE DESCRIPTION:** We have developed and piloted TeenBP- a web-based, electronic health record (EHR) linked system designed to improve recognition of prehypertension and hypertension in adolescents during primary care visits. **MAJOR THEMES:** Important steps in developing TeenBP included the following: review of national BP guidelines, consideration of clinic workflow, engagement of clinical leaders, and evaluation of the impact on clinical sites. Use of a web-based platform has facilitated updates to the

TeenBP algorithm and to the message content. In addition, the web-based platform has allowed for development of a sophisticated display of patient-specific information at the point of care. In the TeenBP pilot, conducted at a single pediatric and family practice site with six clinicians, over a five-month period, more than half of BPs in the hypertensive range were clinically recognized. Furthermore, in this small pilot the TeenBP clinical decision support (CDS) was accepted by providers and clinical staff. Effectiveness of the TeenBP CDS will be determined in a two-year cluster-randomized clinical trial, currently underway at 20 primary care sites. **CONCLUSION:** Use of technology to extract and display clinically relevant data stored within the EHR may be a useful tool for improving recognition of adolescent hypertension during busy primary care visits. In the future, the methods developed specifically for TeenBP are likely to be translatable to a wide range of acute and chronic issues affecting children and adolescents.

Kiebertz K; Tilley BC; Elm JJ; Babcock D; Hauser R; Ross GW; Augustine AH; Augustine EU; Aminoff MJ; Bodis-Wollner IG; Boyd J; Cambi F; Chou K; Christine CW; Cines M; Dahodwala N; Derwent L; Dewey RB Jr; Hawthorne K; Houghton DJ; Kamp C; Leehey M; Lew MF; Liang GS; Luo ST; Mari Z; Morgan JC; **Parashos SA**; Perez A; Petrovitch H; Rajan S; Reichwein S; Roth JT; Schneider JS; Shannon KM; Simon DK; Simuni T; Singer C; Sudarsky L; Tanner CM; Umeh CC; Williams K; Wills AM; Writing Group for the NINDS Exploratory Trials in Parkinson Disease (NET-PD) Investigators. Effect of creatine monohydrate on clinical progression in patients with Parkinson disease: a randomized clinical trial. *JAMA*. 2015 Feb 10;313(6):584-93. PMID: PMC4349346.

IMPORTANCE: There are no treatments available to slow or prevent the progression of Parkinson disease, despite its global prevalence and significant health care burden. The National Institute of Neurological Disorders and Stroke Exploratory Trials in Parkinson Disease program was established to promote discovery of potential therapies. **OBJECTIVE:** To determine whether creatine monohydrate was more effective than placebo in slowing long-term clinical decline in participants with Parkinson disease. **DESIGN, SETTING, AND PATIENTS:** The Long-term Study 1, a multicenter, double-blind, parallel-group, placebo-controlled, 1:1 randomized efficacy trial. Participants were recruited from 45 investigative sites in the United States and Canada and included 1741 men and women with early (within 5 years of diagnosis) and treated (receiving dopaminergic therapy) Parkinson disease. Participants were enrolled from March 2007 to May 2010 and followed up until September 2013. **INTERVENTIONS:** Participants were randomized to placebo or creatine (10 g/d) monohydrate for a minimum of 5 years (maximum follow-up, 8 years). **MAIN OUTCOMES AND MEASURES:** The primary outcome measure was a difference in clinical decline from baseline to 5-year follow-up, compared between the 2 treatment groups using a global statistical test. Clinical status was defined by 5 outcome measures: Modified Rankin Scale, Symbol Digit Modalities Test, PDQ-39 Summary Index, Schwab and England Activities of Daily Living scale, and ambulatory capacity. All outcomes were coded such that higher scores indicated worse outcomes and were analyzed by a global statistical test. Higher summed ranks (range, 5-4775) indicate worse outcomes. **RESULTS:** The trial was terminated early for futility based on results of a planned interim analysis of participants enrolled at least 5 years prior to the date of the analysis (n = 955). The median follow-up time was 4 years. Of the 955 participants, the mean of the summed ranks for placebo was 2360 (95% CI, 2249-2470) and for creatine was 2414 (95% CI, 2304-2524). The global statistical test yielded $t_{1865.8} = -0.75$ (2-sided $P = .45$). There were no detectable differences ($P < .01$ to partially adjust for multiple comparisons) in adverse and serious adverse events by body system. **CONCLUSIONS AND RELEVANCE:** Among patients with early and treated Parkinson disease, treatment with creatine monohydrate for at least 5 years, compared with placebo did not improve clinical

outcomes. These findings do not support the use of creatine monohydrate in patients with Parkinson disease.

Kim JI; Long JD; Mills JA; Downing N; Williams JK; Paulsen JS; **Nance MA**, member of the PREDICT-HD Investigators and Coordinators of the Huntington Study Group. Performance of the 12-item WHODAS 2.0 in prodromal Huntington disease. *Eur J Hum Genet*. 2015 Nov;23(11):1584-7. PMCID: PMC4613468.

Abstract: The Diagnostic and Statistical Manual for Mental Disorders, Fifth Edition (DSM-5), recommends the World Health Organization Disability Assessment Schedule (WHODAS) 2.0 for routine clinical use. We tested the utility of the 12-item WHODAS 2.0 in prodromal Huntington disease. Using data from 726 participants and 630 companions over a 3-year follow-up, linear mixed models were fitted to test (1) baseline and longitudinal differences by progression group; (2) participant and companion differences within each group; and (3) sensitivity of the 12-item WHODAS in comparison to the 36-item WHODAS and the Total Functional Capacity (TFC) score from the Unified Huntington's Disease Rating Scale. Participants showed baseline group differences whereas companions showed baseline and longitudinal group differences. Companions reported worse functional decline over time than participants as the disease progresses. The 12-item WHODAS detected longitudinal change better than the 36-item WHODAS and the TFC in the medium progression group. Results suggest the 12-item WHODAS 2.0 can detect baseline and longitudinal differences in prodromal HD and may be useful in HD clinical trials.

Kim JI; Long JD; Mills JA; McCusker E; Paulsen JS; **Nance MA**, member of the PREDICT-HD Investigators and Coordinators of the Huntington Study Group. Multivariate clustering of progression profiles reveals different depression patterns in prodromal Huntington disease. *Neuropsychology*. 2015 Nov;29(6):949-60. PMCID: PMC4640959.

OBJECTIVE: Although Huntington disease (HD) is caused by an autosomal dominant mutation, its phenotypic presentation differs widely. Variability in clinical phenotypes of HD may reflect the existence of disease subtypes. This hypothesis was tested in prodromal participants from the longitudinal Neurobiological Predictors of Huntington Disease (PREDICT-HD) study. **METHOD:** We performed clustering using longitudinal data assessing motor, cognitive, and depression symptoms. Using data from 521 participants with 2,716 data points, we fit growth mixture models (GMM) that identify groups based on multivariate trajectories. **RESULTS:** In various GMM, different phases of disease progression were partitioned by progression trajectories of motor and cognitive signs, and by overall level of depression symptoms. More progressed motor signs were accompanied by more progressed cognitive signs, but not always by higher levels of depressive symptoms. In several models, there were at least 2 groups with similar trajectories for motor and cognitive signs that showed different levels for depression symptoms—one with a very low level of depression and the other with a higher level of depression. **CONCLUSIONS:** Findings indicate that at least intermediate HD progression might be associated with different levels of depression. Depression is one of the few symptoms that is treatable in HD and has implications for clinical care. Identification of potential depression subtypes may also help to select appropriate patients for clinical trials.

King AH; Engasser WM; Sousa PL; **Arendt EA**; Dahm DL. Patellar fracture following patellofemoral arthroplasty. *J Arthroplasty*. 2015 Jul;30(7):1203-6.

Abstract: This study aims to report the incidence of patellar fracture after patellofemoral arthroplasty (PFA) and to determine associated factors as well as outcomes of patients with and without this complication. 77 knees in 59 patients with minimum two-year follow-up were included. Seven (9.1%) patients experienced a patellar fracture at a mean of 34 (range 16-64) months postoperatively. All were treated nonoperatively. Lower BMI ($P = 0.03$), change in patellar thickness ($P < 0.001$), amount of bone resected ($P = 0.001$), and larger trochlear component size ($P = 0.01$) were associated with a greater incidence of fracture. Fewer fractures occurred when the postoperative patellar height exceeded the preoperatively measured height. No statistically significant differences were found in outcome scores between groups at mean four-year follow-up.

King VJ; **Fontaine PL**; Atwood LA; Powers E; Leeman L; Ecker JL; Avery MD; Sakala C; Campos-Outcalt D; Jeffcott-Pera M; Schoof B. Clinical practice guideline executive summary: labor after cesarean/planned vaginal birth after cesarean. *Ann Fam Med*. 2015 Jan;13(1):80-1. PMCID: PMC4291269.

Kingsley SL; Eliot MN; Whitsel EA; Wang Y; Coull BA; Hou L; Margolis HG; **Margolis KL**; Mu L; Wu WC; Johnson KC; Allison MA; Manson JE; Eaton CB; Wellenius GA. Residential proximity to major roadways and incident hypertension in post-menopausal women. *Environ Res*. 2015 Oct;142:522-8. PMCID: PMC4609282.

Abstract: Living near major roadways has been associated with increased risk of cardiovascular morbidity and mortality, presumably from exposure to elevated levels of traffic-related air and/or noise pollution. This association may potentially be mediated through increased risk of incident hypertension, but results from prior studies are equivocal. Using Cox proportional hazards models we examined residential proximity to major roadways and incident hypertension among 38,360 participants of the Women's Health Initiative (WHI) Clinical Trial cohorts free of hypertension at enrollment and followed for a median of 7.9 years. Adjusting for participant demographics and lifestyle, trial participation, and markers of individual and neighborhood socioeconomic status, the hazard ratios for incident hypertension were 1.13 (95% CI: 1.00, 1.28), 1.03 (0.95, 1.11), 1.05 (0.99, 1.11), and 1.05 (1.00, 1.10) for participants living ≤ 50 , >50 -200, >200 -400, and >400 -1000m vs >1000 m from the nearest major roadway, respectively (ptrend=0.013). This association varied substantially by WHI study region with hazard ratios for women living ≤ 50 m from a major roadway of 1.61 (1.18, 2.20) in the West, 1.51 (1.22, 1.87) in the Northeast, 0.89 (0.70, 1.14) in the South, and 0.94 (0.75, 1.19) in the Midwest. In this large, national cohort of post-menopausal women, residential proximity to major roadways was associated with incident hypertension in selected regions of the U.S. If causal, these results suggest residential proximity to major roadways, as a marker for air, noise and other traffic-related pollution, may be a risk factor for hypertension.

Klein NP; Lewis E; Fireman BH; Hambidge SJ; Naleway AL; Nelson JC; Belongia EA; Yih WK; **Nordin JD**; Hechter RC; Weintraub ES; Baxter RP. Safety of measles-containing vaccines in 1-year-old children. *Pediatrics*. 2015 Feb;135(2):e321-9.

BACKGROUND AND OBJECTIVES: All measles-containing vaccines are associated with several types of adverse events, including seizure, fever, and immune thrombocytopenia purpura (ITP). Because the measles-

mumps-rubella-varicella (MMRV) vaccine compared with the separate measles-mumps-rubella (MMR) and varicella (MMR + V) vaccine increases a toddler's risk for febrile seizures, we investigated whether MMRV is riskier than MMR + V and whether either vaccine elevates the risk for additional safety outcomes.

METHODS: Study children were aged 12 to 23 months in the Vaccine Safety Datalink from 2000 to 2012.

Nine study outcomes were investigated: 7 main outcomes (anaphylaxis, ITP, ataxia, arthritis, meningitis/encephalitis, acute disseminated encephalomyelitis, and Kawasaki disease), seizure, and fever.

Comparing MMRV with MMR + V, relative risk was estimated by using stratified exact binomial tests.

Secondary analyses examined post-MMRV or MMR + V risk versus comparison intervals; risk and comparison intervals were then contrasted for MMRV versus MMR+V. **RESULTS:** We evaluated 123 200 MMRV and 584

987 MMR + V doses. Comparing MMRV with MMR + V, risks for the 7 main outcomes were not significantly different. Several outcomes had few or zero postvaccination events. Comparing risk versus comparison intervals, ITP risk was higher after MMRV (odds ratio [OR]: 11.3 [95% confidence interval (CI): 1.9 to 68.2])

and MMR + V (OR: 10 [95% CI: 4.5 to 22.5]) and ataxia risk was lower after both vaccines (MMRV OR: 0.8 [95% CI: 0.5 to 1]; MMR + V OR: 0.8 [95% CI: 0.7 to 0.9]).

Compared with MMR + V, MMRV increased risk of seizure and fever 7 to 10 days after vaccination. **CONCLUSIONS:** This study did not identify any new safety concerns comparing MMRV with MMR + V or after either the MMRV or the MMR + V vaccine. This study provides reassurance that these outcomes are unlikely after either vaccine.

Kotsakis GA; Thai A; Ioannou AL; Demmer RT; **Michalowicz BS.** Association between low-dose aspirin and periodontal disease: results from the continuous national health and nutrition examination survey (NHANES) 2011-2012. *J Clin Periodontol.* 2015 Apr;42(4):333-41.

AIM: Low-dose aspirin has been hypothesized as being a potential host modulatory agent for periodontitis treatment. We investigated the relationship between low-dose aspirin use and periodontitis prevalence in the continuous National Health and Nutrition Examination Survey, 2011-2012. **METHODS:** We analysed n = 2335 adult men and women who received a full-mouth periodontal examination and responded to an aspirin use questionnaire. Periodontal disease was defined as severe, moderate or mild according to established case definitions. Mean full-mouth probing depth, attachment loss and tooth loss were also considered. Low-dose aspirin was defined by any self-reported, physician prescribed aspirin use of ≤ 162 mg/day. **RESULTS:** Participants had mean age (SE) 55.8 years (0.42). The prevalences of periodontitis and low-dose aspirin use were 49.5% and 25% respectively. In multivariable logistic regression models controlling for age, sex, race, socioeconomic variables and comorbidities, the odds ratios [95%CI] for moderate or severe periodontitis among low-dose aspirin users (versus non-users) were: 0.91 [0.56-1.50] and 1.06 [0.74-1.50] respectively. Results were unchanged among participants without diabetes or coronary heart disease. **CONCLUSIONS:** Within the limitations of this cross-sectional study we conclude that low-dose aspirin is not associated with prevalent periodontal status in a nationally representative sample of US adults.

Kottke TE; Rindal DB; Rush WA; Asche SE; Enstad CJ. Persistence of smoking-cessation decision support use in a dental practice. *Am J Prev Med.* 2015 Jun;48(6):722-8.

INTRODUCTION: A computer-assisted tobacco decision support tool increased dental practitioners' (dentists and dental hygienists) advice to quit smoking and referral to a quitline during a group randomized trial. The purpose of this study is to document the extent to which use persisted after the trial. **METHODS:** Electronic

dental record (EDR) data from 2010 to 2013 were analyzed in 2014 for use of computer-assisted tobacco intervention tool advice scripts and referral to a quitline during four periods: during the trial and post-trial when only intervention clinic dental practitioners had access to the tool, and during full deployment, both before and after an EDR modification. **RESULTS:** Intervention clinic dental practitioners (18.5 dentist full-time equivalents [FTEs] and 27.8 dental hygienist FTEs practicing in seven clinics) referred 19.0% of 1,368 smokers to a quitline during the trial and referred 15.4% of 4,011 smokers post-trial. After full tool deployment but pre-EDR change, these dental practitioners referred 15.6% of 2,214 intervention clinic smokers, whereas 18.3 dentist FTEs and 29.7 dental hygienist FTEs practicing in eight clinics referred 8.5% of 2,113 smokers. Post-EDR change, dental practitioners referred 12.2% of 2,214 intervention clinic smokers and 8.1% of 2,399 control clinic smokers to a quitline. In the last three quarters of observation, clinic script use ranged from 15.4% to 65.8% and referral to a quitline ranged from 2.0% to 18.7% of visits. **CONCLUSIONS:** Although EDR design affected rates of referral, dental practitioners persisted in using a computer-assisted tobacco intervention tool to refer smokers to a quitline.

Kunin-Batson AS; Seburg EM; Crain AL; JaKa MM; Langer SL; Levy RL; Sherwood NE. Household factors, family behavior patterns, and adherence to dietary and physical activity guidelines among children at risk for obesity. *J Nutr Educ Behav.* 2015 May-Jun;47(3):206-215.e1. PMID: PMC4428928.

OBJECTIVE: To describe the proportion of children adhering to recommended physical activity and dietary guidelines, and examine demographic and household correlates of guideline adherence. **DESIGN:** Cross-sectional (pre-randomization) data from a behavioral intervention trial designed to prevent unhealthy weight gain in children. **PARTICIPANTS:** A total of 421 children (aged 5-10 years) at risk for obesity (body mass index percentile, 70-95). **MAIN OUTCOMES MEASURED:** Physical activity (accelerometry), screen time (parent survey), and fruit and vegetable and sugar-sweetened beverage intake (24-hour dietary recall). **ANALYSIS:** Proportions meeting guidelines were calculated. Logistic regression examined associations between demographic and household factors and whether children met recommended guidelines for (1) physical activity (≥ 60 min/d), (2) screen time (≤ 2 h/d), (3) fruit and vegetable intake (≥ 5 servings/d), and (4) sugar-sweetened beverage avoidance. **RESULTS:** Few children met more than 1 guideline. Only 2% met all 4 recommended guidelines and 19% met none. Each guideline had unique sociodemographic and domain-specific household predictors (ie, availability of certain foods and beverages, media, and active play and exercise equipment). **CONCLUSIONS AND IMPLICATIONS:** Families equipped to promote healthy child behavior patterns in 1 activity or dietary domain may not be in others. Results have implications for the development of interventions to affect children's weight-related behaviors and growth trajectories.

Larsen AJ; Rindal DB; Hatch JP; Kane SM; Asche SE; Carvalho C; Rugh J. Evidence supports no relationship between obstructive sleep apnea and premolar extraction: an electronic health records review. *J Clin Sleep Med.* 2015 Dec 15;11(12):1443-8. PMID: PMC4661337.

OBJECTIVE: A controversy exists concerning the relationship, if any, between obstructive sleep apnea (OSA) and the anatomical position of the anterior teeth. Specifically, there has been speculation that extraction orthodontics and retraction of the anterior teeth contributes to OSA by crowding the tongue and decreasing airway space. This retrospective study utilized electronic medical and dental health records to examine the association between missing premolars and OSA. **METHODS:** The sample ($n = 5,584$) was obtained from the electronic medical and dental health records of HealthPartners in Minnesota. Half of the subjects ($n = 2,792$)

had one missing premolar in each quadrant. The other half had no missing premolars. Cases and controls were paired in a 1:1 match on age range, gender, and body mass index (BMI) range. The outcome was the presence or absence of a diagnosis of OSA confirmed by polysomnography. **RESULTS:** Of the subjects without missing premolars, 267 (9.56%) had received a diagnosis of OSA. Of the subjects with four missing premolars, 299 (10.71%) had received a diagnosis of OSA. The prevalence of OSA was not significantly different between the groups (OR = 1.14, $p = 0.144$). **CONCLUSION:** The absence of four premolars (one from each quadrant), and therefore a presumed indicator of past "extraction orthodontic treatment," is not supported as a significant factor in the cause of OSA.

Lee JS; Narang PD; Enja M; Lippmann SB. Use of ketamine in acute cases of suicidality. *Innov Clin Neurosci*. 2015 Jan-Feb;12(1-2):29-31. PMID: PMC4382138.

Abstract: Ketamine is an N-methyl-D- aspartate antagonist with rapid antidepressant effects. Research shows that ketamine has a fast onset of reduction in depressive symptoms and shows sustained remission of suicidal ideation in some patients. This article provides a brief review of the literature on the use of ketamine for depression and in acute cases of suicidality. The authors conclude that, while further investigation is needed, ketamine may be a useful treatment option for acute suicidality in emergency room settings.

Li M; Cole PA. Anatomical considerations in adult femoral neck fractures: how anatomy influences the treatment issues? *Injury*. 2015 Mar;46(3):453-8.

Abstract: Femoral neck fractures in physiologically young adults are relatively uncommon. The reported incidence of avascular necrosis and nonunion rates remain relatively high despite the advancement in understanding and surgical management. Understanding the normal femoral neck anatomy and its relationship to presenting fracture pathology in young adults could help to lessen reported high complication rates to provide better clinical outcomes.

Li R; Qu S; Zhang P; Chattopadhyay S; Gregg EW; Albright A; Hopkins D; **Pronk NP;** Community Preventive Services Task Force. Economic evaluation of combined diet and physical activity promotion programs to prevent type 2 diabetes among persons at increased risk: a systematic review for the Community Preventive Services Task Force. *Ann Intern Med*. 2015 Sep 15;163(6):452-60.

BACKGROUND: Diabetes is a highly prevalent and costly disease. Studies indicate that combined diet and physical activity promotion programs can prevent type 2 diabetes among persons at increased risk. **PURPOSE:** To systematically evaluate the evidence on cost, cost-effectiveness, and cost-benefit estimates of diet and physical activity promotion programs. **DATA SOURCES:** Cochrane Library, EMBASE, MEDLINE, PsycINFO, Sociological Abstracts, Web of Science, EconLit, and CINAHL through 7 April 2015. **STUDY SELECTION:** English-language studies from high-income countries that provided data on cost, cost-effectiveness, or cost-benefit ratios of diet and physical activity promotion programs with at least 2 sessions over at least 3 months delivered to persons at increased risk for type 2 diabetes. **DATA EXTRACTION:** Dual abstraction and assessment of relevant study details. **DATA SYNTHESIS:** Twenty-eight studies were included. Costs were expressed in 2013 U.S. dollars. The median program cost per participant was \$653. Costs were lower for group-based programs (median, \$417) and programs implemented in community or primary care

settings (median, \$424) than for the U.S. DPP (Diabetes Prevention Program) trial and the DPP Outcomes Study (\$5881). Twenty-two studies assessed the incremental cost-effectiveness ratios (ICERs) of the programs. From a health system perspective, 16 studies reported a median ICER of \$13 761 per quality-adjusted life-year (QALY) saved. Group-based programs were more cost-effective (median, \$1819 per QALY) than those that used individual sessions (median, \$15 846 per QALY). No cost-benefit studies were identified. LIMITATION: Information on recruitment costs and cost-effectiveness of translational programs implemented in community and primary care settings was limited. CONCLUSION: Diet and physical activity promotion programs to prevent type 2 diabetes are cost-effective among persons at increased risk. Costs are lower when programs are delivered to groups in community or primary care settings.

Lin M; Thoma B; Trueger NS; **Ankel FK**; Sherbino J; Chan T. Quality indicators for blogs and podcasts used in medical education: modified Delphi consensus recommendations by an international cohort of health professions educators [review article]. *Postgrad Med J*. 2015 Oct;91(1080):546-50.

BACKGROUND: Quality assurance concerns about social media platforms used for education have arisen within the medical education community. As more trainees and clinicians use resources such as blogs and podcasts for learning, we aimed to identify quality indicators for these resources. A previous study identified 151 potentially relevant quality indicators for these social media resources. OBJECTIVE: To identify quality markers for blogs and podcasts using an international cohort of health professions educators. METHODS: A self-selected group of 44 health professions educators at the 2014 International Conference on Residency Education participated in a Social Media Summit during which a modified Delphi consensus study was conducted to determine which of the 151 quality indicators met the a priori $\geq 90\%$ inclusion threshold. RESULTS: Thirteen quality indicators classified into the domains of credibility (n=8), content (n=4) and design (n=1) met the inclusion threshold. CONCLUSIONS: The quality indicators that were identified may serve as a foundation for further research on quality indicators of social media-based medical education resources and prompt discussion of their legitimacy as a form of educational scholarship.

Liu D; Long JD; Zhang Y; Raymond LA; Marder K; Rosser A; McCusker EA; Mills JA; Paulsen JS; **Nance MA**, member of the PREDICT-HD Investigators and Coordinators of the Huntington Study Group. Motor onset and diagnosis in Huntington disease using the diagnostic confidence level. *J Neurol*. 2015 Dec;262(12):2691-8. PMID: PMC4666501.

Abstract: Huntington disease (HD) is a neurodegenerative disorder characterized by motor dysfunction, cognitive deterioration, and psychiatric symptoms, with progressive motor impairments being a prominent feature. The primary objectives of this study are to delineate the disease course of motor function in HD, to provide estimates of the onset of motor impairments and motor diagnosis, and to examine the effects of genetic and demographic variables on the progression of motor impairments. Data from an international multisite, longitudinal observational study of 905 prodromal HD participants with cytosine-adenine-guanine (CAG) repeats of at least 36 and with at least two visits during the followup period from 2001 to 2012 was examined for changes in the diagnostic confidence level from the Unified Huntington's Disease Rating Scale. HD progression from unimpaired to impaired motor function, as well as the progression from motor impairment to diagnosis, was associated with the linear effect of age and CAG repeat length. Specifically, for every 1-year increase in age, the risk of transition in diagnostic confidence level increased by 11% (95% CI 7-15%) and for one repeat length increase in CAG, the risk of transition in diagnostic confidence level

increased by 47% (95% CI 27-69%). Findings show that CAG repeat length and age increased the likelihood of the first onset of motor impairment as well as the age at diagnosis. Results suggest that more accurate estimates of HD onset age can be obtained by incorporating the current status of diagnostic confidence level into predictive models.

Love JN; Yarris LM; **Ankel FK**; Council of Emergency Medicine Residency Directors (CORD). Emergency medicine milestones: the next step [editorial]. *Acad Emerg Med*. 2015 Jul;22(7):847-8. [Comment on: *Acad Emerg Med*. 2015 Jul;22(7):838-44.]

Love SA; **McKinney ZJ**; Sandoval Y; Smith SW; Kohler R; Murakami MM; Apple FS. Electronic medical record-based performance improvement project to document and reduce excessive cardiac troponin testing. *Clin Chem*. 2015 Mar;61(3):498-504.

BACKGROUND: We assessed the utilization rationale behind provider ordering of cardiac troponin I (cTnI) testing for the diagnosis of myocardial infarction after implementation of a hospital-wide serial order protocol. **METHODS:** During 2 months in 2013, any request for additional cTnI testing within 30 days of the initial serial cTnI order prompted an electronic health record best practice alert (BPA), which included clinical decision support that could be bypassed by giving a clinical indication. cTnI orders were not limited (timing, number), and upon BPA, trigger data was collected for clinical indications and actions, patient stay (duration, location), International Classification of Diseases, Revision 9 diagnosis, cTnI orders, and timing of cTnI measurements. **RESULTS:** The BPA was triggered 1477 times by 423 providers who cared for 702 patients. There were a mean of 3.6 cTnI results per patient, 2.1 BPAs per patient, and 1.2 visits per patient. Providers (42% of whom were residents) acknowledged and overrode the BPA 97% of the time. In response to the BPA, 65% of providers selected a prepared rationale: 64% acute coronary syndrome/ST-elevation myocardial infarction/non-ST-elevation myocardial infarction; 30% demand ischemia; and 6% non-ACS myocardial necrosis. Of the remaining 35% of providers, 71% listed no rationale for their additional cTnI orders. Of patients with a BPA, 93% had non-ACS-related primary International Classification of Diseases, Revision 9 diagnosis, and 58% of the time, patients' cTnI results never increased during their stay. In 53% of cases, BPAs were generated by a request for an additional cTnI series when <2 results were available. **CONCLUSIONS:** Providers largely ignored the BPA that warned of potential overutilization of cTnI testing independent of diagnosis, including ACS.

Lu CY; Zhang F; Lakoma MD; Butler MG; Fung V; Larkin EK; **Kharbanda EO**; Vollmer WM; Lieu TA; Soumerai SB; Chen Wu A. Asthma treatments and mental health visits after a Food and Drug Administration label change for leukotriene inhibitors. *Clin Ther*. 2015 Jun;37(6):1280-91.

PURPOSE: In 2009, the US Food and Drug Administration (FDA) mandated a label change for leukotriene inhibitors (LTIs) to include neuropsychiatric adverse events (eg, depression and suicidality) as a precaution. This study investigated how this label change affected the use of LTIs and other asthma controller medications, mental health visits, and suicide attempts. **METHODS:** We analyzed data (2005-2010) from 5 large health plans in the US Population-Based Effectiveness in Asthma and Lung Diseases (PEAL) Network. The study cohort included children and adolescents (n = 30,000), young adults (n = 20,000), and adults (n = 90,000) with asthma. We used interrupted time series to examine changes in rates of LTI dispensings, non-

LTI dispensings, mental health visits, and suicide attempts (using a validated algorithm based on a combination of diagnoses of injury or poisoning and psychiatric conditions). **FINDINGS:** The label change was associated with abrupt reductions in LTI use among all age groups (relative reductions of 8.3%, 15.1%, and 6.0% among adolescents, young adults, and adults, respectively, compared with expected rates at 1 year after the warnings). Although we detected immediate offset increases in non-LTI asthma medication use, these increases were not sustained among adolescents and young adults. There were small increases in mental health visits among LTI users. **IMPLICATIONS:** The FDA label change for LTIs communicated possible risk of neuropsychiatric events. Communication and enhanced awareness may have increased reporting of mental health symptoms among young adults and adults. It is important to assess intended and unintended consequences of FDA warnings and label changes.

Lundeberg R; **Narang PD**; Lippmann SB. Childhood diabetes and mood disorders. *J Psychiatr.* 2015 Jan;18(1):206.

Luo J; Hendryx M; Safford MM; Wallace RB; **Rossum RC**; Eaton CB; Bassuk S; **Margolis KL**. Newly developed chronic conditions and changes in health-related quality of life in postmenopausal women. *J Am Geriatr Soc.* 2015 Nov;63(11):2349-57.

OBJECTIVES: To prospectively assess the effects of newly developed chronic conditions on changes in health-related quality of life (HRQoL) in postmenopausal women. **DESIGN:** Prospective cohort study. **SETTING:** Forty clinical centers in the United States. **PARTICIPANTS:** Women aged 50 to 79 enrolled in the Women's Health Initiative Observational Study during 1993-98 (N = 75,198). **MEASUREMENTS:** Onset of seven chronic conditions (hypertension, heart disease, stroke, cancer, osteoporosis, diabetes mellitus, arthritis), HRQoL based on the Medical Outcomes Study 36-item Short Form survey (SF-36), and change in HRQoL from baseline to Year 3 in scores on the Physical (PCS) and Mental (MCS) Component Summary of the SF-36. **RESULTS:** Each of the seven chronic conditions was statistically significantly associated with HRQoL for physical and mental health. Women with incident stroke had the greatest decline in HRQoL for physical and mental health (PCS: 10.2, 95% confidence interval (CI) = 8.3-12.1; MCS: 10.4, 95% CI = 8.8-12.1), which exceeded minimal clinically important differences (MCID). Having more new chronic conditions was associated with greater decrease in HRQoL. Declines in HRQoL in women with two or more chronic conditions exceeded MCID. Those with heart disease and stroke had the largest decline in physical health, and those with stroke and arthritis had the greatest decline in mental health. For all conditions other than stroke and diabetes mellitus, the more recently a condition was diagnosed, the greater the decrease in PCS. For stroke and cancer, a similar pattern was observed for MCS. **CONCLUSION:** The more conditions a woman developed, the greater reduction in HRQoL she experienced. Declines in HRQoL in women with stroke, cancer, and some combinations exceeded MCID. Findings from this study might lead to more-effective patient-centered approaches to health care for women with multiple chronic conditions.

Luo J; Hendryx M; Virnig B; Wen S; Chlebowski RT; Chen C; Rohan TE; Tinker LF; Wactawski-Wende J; Lessin L; **Margolis KL**. Pre-existing diabetes and breast cancer prognosis among elderly women. *Br J Cancer.* 2015 Sep 1;113(5):827-32.

BACKGROUND: The objective of this study was to assess the impact of pre-existing diabetes on breast cancer prognosis. **METHODS:** Women (n=2833) with centrally confirmed invasive breast cancer in the Women's

Health Initiative, who were linked to Medicare claims data (CMS) were followed from the date of breast cancer diagnosis to date of death or 20 September 2013. Information on diabetes was identified through the CMS Chronic Condition Warehouse algorithm. Cox proportional hazard regression was used to estimate adjusted hazard ratios for overall mortality. A competing risks model (proportional subdistribution) model was used to estimate hazard ratios for breast cancer-specific mortality. **RESULTS:** Women with diabetes were more likely to have factors related to delayed diagnosis (less recent mammograms, and more advanced cancer stage) and were less likely to receive radiation therapy. Compared with women without diabetes, women with diabetes had significantly increased risk of overall mortality (HR=1.57, 95% CI: 1.23-2.01) and had nonsignificantly increased risk for breast cancer-specific mortality (HR=1.36, 95% CI: 0.86-2.15) before adjustment for factors related to delayed diagnosis and treatment. Adjustment for these factors resulted in a little change in the association of diabetes with overall mortality risk, but further attenuated the point estimate for breast cancer-specific mortality. **CONCLUSIONS:** Our study provides additional evidence that pre-existing diabetes increases the risk of total mortality among women with breast cancer. Very large studies with data on breast cancer risk factors, screening and diagnostic delays, treatment choices, and the biological influence of diabetes on breast cancer will be needed to determine whether diabetes also increases the risk for breast cancer-specific mortality.

Maciosek MV; Xu X; Butani AL; Pechacek TF. Smoking-attributable medical expenditures by age, sex, and smoking status estimated using a relative risk approach. *Prev Med.* 2015 Aug;77:162-7. PMID: PMC4597893.

OBJECTIVE: To accurately assess the benefits of tobacco control interventions and to better inform decision makers, knowledge of medical expenditures by age, gender, and smoking status is essential. **METHOD:** We propose an approach to distribute smoking-attributable expenditures by age, gender, and cigarette smoking status to reflect the known risks of smoking. We distribute hospitalization days for smoking-attributable diseases according to relative risks of smoking-attributable mortality, and use the method to determine national estimates of smoking-attributable expenditures by age, sex, and cigarette smoking status. Sensitivity analyses explored assumptions of the method. **RESULTS:** Both current and former smokers ages 75 and over have about 12 times the smoking-attributable expenditures of their current and former smoker counterparts 35-54 years of age. Within each age group, the expenditures of former smokers are about 70% lower than current smokers. In sensitivity analysis, these results were not robust to large changes to the relative risks of smoking-attributable mortality which were used in the calculations. **CONCLUSION:** Sex- and age-group-specific smoking expenditures reflect observed disease risk differences between current and former cigarette smokers and indicate that about 70% of current smokers' excess medical care costs is preventable by quitting.

Magnussen RA; Trojani C; Granan LP; Neyret P; Colombet P; Engebretsen L; Wright RW; Kaeding CC; MARS Group - HP Investigators, **Cooper JM Vang S;** SFA Revision ACL Group. Patient demographics and surgical characteristics in ACL revision: a comparison of French, Norwegian, and North American cohorts. *Knee Surg Sports Traumatol Arthrosc.* 2015 Aug;23(8):2339-48. PMID: PMC4241181.

PURPOSE: The goal of this paper is to compare patient factors, intra-operative findings, and surgical techniques between patients followed in large cohorts in France, Norway, and North America. **METHODS:**

Data collected on 2,286 patients undergoing revision anterior cruciate ligament reconstruction (ACLR) were obtained. These data included 1,216 patients enrolled in the Multicenter ACL Revision Study (MARS) in North America, 793 patients undergoing revision ACLR and recorded in the Norwegian Knee Ligament Registry (NKLR), and 277 patients recorded in the revision ACL database of the Societe Francaise d'Arthroscopie (SFA) in France. Data collected from each database included patient demographics (age, sex, height, and weight), graft choice and reason for failure of the primary ACLR, time from primary to revision ACLR, pre-revision patient-reported outcome scores (Knee Injury and Osteoarthritis Outcome Score, subjective International Knee Documentation Committee), associated intra-articular findings and treatments at revision, and graft choice for revision reconstruction. RESULTS: Patient demographics in the three databases were relatively similar. Graft choice for primary and revision ACLR varied significantly, with more allografts used in the MARS cohort. Hamstring autograft was favoured in the NKLR, while bone-patellar tendon-bone autograft was most common in the SFA cohort. Reasons for failure of the primary ACLR were comparable, with recurrent trauma noted in 46-56 % of patients in each of the three cohorts. Technical error was cited in 44-51 % of patients in the MARS and SFA cohorts, but was not clearly elucidated in the NKLR cohort. Biologic failure of the primary graft was more common in the MARS cohort. Differences in associated intra-articular findings were noted at the time of revision ACLR, with significantly more high-grade cartilage lesions noted in the MARS group. CONCLUSIONS: Significant differences exist between patient populations followed in revision ACL cohorts throughout the world that should be considered when applying findings from such cohorts to different patient populations.

Main EK; Goffman D; Scavone BM; Low LK; Bingham D; **Fontaine PL**; Gorlin JB; Lagrew DC; Levy BS. National Partnership for Maternal Safety: consensus bundle on obstetric hemorrhage. *Anesth Analg*. 2015 Jul;121(1):142-8.[Comment in: *Anesth Analg*. 2015 Jul;121(1).14-6.]

Abstract: Hemorrhage is the most frequent cause of severe maternal morbidity and preventable maternal mortality and therefore is an ideal topic for the initial national maternity patient safety bundle. These safety bundles outline critical clinical practices that should be implemented in every maternity unit. They are developed by multidisciplinary work groups of the National Partnership for Maternal Safety under the guidance of the Council on Patient Safety in Women's Health Care. The safety bundle is organized into four domains: Readiness, Recognition and Prevention, Response, and Reporting and System Learning. Although the bundle components may be adapted to meet the resources available in individual facilities, standardization within an institution is strongly encouraged. References contain sample resources and "Potential Best Practices" to assist with implementation.

Main EK; Goffman D; Scavone BM; Low LK; Bingham D; **Fontaine PL**; Gorlin JB; Lagrew DC; Levy BS. National partnership for maternal safety: consensus bundle on obstetric hemorrhage. *Obstet Gynecol*. 2015 Jul;126(1):155-62.

Abstract: Hemorrhage is the most frequent cause of severe maternal morbidity and preventable maternal mortality and therefore is an ideal topic for the initial national maternity patient safety bundle. These safety bundles outline critical clinical practices that should be implemented in every maternity unit. They are developed by multidisciplinary work groups of the National Partnership for Maternal Safety under the guidance of the Council on Patient Safety in Women's Health Care. The safety bundle is organized into four domains: Readiness, Recognition and Prevention, Response, and Reporting and System Learning. Although

the bundle components may be adapted to meet the resources available in individual facilities, standardization within an institution is strongly encouraged. References contain sample resources and "Potential Best Practices" to assist with implementation.

Main EK; Goffman D; Scavone BM; Low LK; Bingham D; **Fontaine PL**; Gorlin JB; Lagrew DC; Levy BS. National Partnership for Maternal Safety: consensus bundle on obstetric hemorrhage. *J Obstet Gynecol Neonatal Nurs*. 2015 Jul-Aug;44(4):462-70.

Main EK; Goffman D; Scavone BM; Low LK; Bingham D; **Fontaine PL**; Gorlin JB; Lagrew DC; Levy BS. National Partnership for Maternal Safety consensus bundle on obstetric hemorrhage. *J Midwifery Womens Health*. 2015 Jul-Aug;60(4):458-64.

Abstract: Hemorrhage is the most frequent cause of severe maternal morbidity and preventable maternal mortality and therefore is an ideal topic for the initial national maternity patient safety bundle. These safety bundles outline critical clinical practices that should be implemented in every maternity unit. They are developed by multidisciplinary work groups of the National Partnership for Maternal Safety under the guidance of the Council on Patient Safety in Women's Health Care. The safety bundle is organized into 4 domains: Readiness, Recognition and Prevention, Response, and Reporting and Systems Learning. Although the bundle components may be adapted to meet the resources available in individual facilities, standardization within an institution is strongly encouraged. References contain sample resources and "Potential Best Practices" to assist with implementation.

Margolis KL; Asche SE; Bergdall AR; Dehmer SP; Maciosek MV; Nyboer RA; O'Connor PJ; Pawloski PA; Sperl-Hillen JM; Trower NK; Tucker AD; Green BB. A successful multifaceted trial to improve hypertension control in primary care: why did it work? *J Gen Intern Med*. 2015 Nov;30(11):1665-72. PMID: PMC4617923. Project Number: A07-116 Hyperlink. [Comment in: *J Gen Intern Med*. 2015 Nov;30(11):1700.]

BACKGROUND: It is important to understand which components of successful multifaceted interventions are responsible for study outcomes, since some components may be more important contributors to the intervention effect than others. **OBJECTIVE:** We conducted a mediation analysis to determine which of seven factors had the greatest effect on change in systolic blood pressure (BP) after 6 months in a trial to improve hypertension control. **DESIGN:** The study was a preplanned secondary analysis of a cluster-randomized clinical trial. Eight clinics in an integrated health system were randomized to provide usual care to their patients (n = 222), and eight were randomized to provide a telemonitoring intervention (n = 228). **PARTICIPANTS:** Four hundred three of 450 trial participants completing the 6-month follow-up visit were included. **INTERVENTIONS:** Intervention group participants received home BP telemonitors and transmitted measurements to pharmacists, who adjusted medications and provided advice to improve adherence to medications and lifestyle modification via telephone visits. **MAIN MEASURES:** Path analytic models estimated indirect effects of the seven potential mediators of intervention effect (defined as the difference between the intervention and usual care groups in change in systolic BP from baseline to 6 months). The potential mediators were change in home BP monitor use, number of BP medication classes, adherence to BP medications, physical activity, salt intake, alcohol use, and weight. **KEY RESULTS:** The difference in change in systolic BP was 11.3 mmHg. The multivariable mediation model explained 47 % (5.3 mmHg) of the

intervention effect. Nearly all of this was mediated by two factors: an increase in medication treatment intensity (24 %) and increased home BP monitor use (19 %). The other five factors were not significant mediators, although medication adherence and salt intake improved more in the intervention group than in the usual care group. **CONCLUSIONS:** Most of the explained intervention effect was attributable to the combination of self-monitoring and medication intensification. High adherence at baseline and the relatively low intensity of resources directed toward lifestyle change may explain why these factors did not contribute to the improvement in BP.

Margolis KL; Evans GW; Schwartz AV; Fleg J. Intensive BP control, falls, and fractures: response to Jolobe [editorial]. *J Gen Intern Med.* 2015 May;30(5):547. PMID: PMC4395588. Project Number: A06-045 ACCORD Bone. [Comment on: *J Gen Intern Med.* 2014 Dec;29(12):1599-606. *J Gen Intern Med.* 2015 May;30(5):546.]

Maring B; Greenspan LC; Chandra M; Daniels SR; Sinaiko AR; Prineas RJ; **Parker ED; Adams KF; Daley MF; Sherwood NE; Kharbanda EO; Margolis KL;** Magid DJ; **O'Connor PJ;** Lo JC. Comparing US paediatric and adult weight classification at the transition from late teenage to young adulthood. *Pediatr Obes.* 2015 Oct;10(5):371-9. Project Number: A08-087 Pediatric Hypertension.

BACKGROUND: Although paediatric growth charts are recommended for weight assessment prior to age 20, many teenagers transition earlier to adult care where absolute body mass index (BMI) is used. This study examines concordance of weight classification in older teenagers using paediatric percentiles and adult thresholds. **METHODS:** BMI from 23 640 US teens ages 18-19 years were classified using paediatric BMI percentile criteria for underweight (< 5th), normal (5th to < 85th), overweight (85th to < 95th), obesity (\geq 95th) and severe obesity (\geq 120% x 95th percentile) and adult BMI (kg m⁻²) criteria for underweight (< 18.5), normal (18.5-24.9), overweight (25-29.9) and obesity: class I (30-34.9), class II (35-39.9) and class III (\geq 40). Concordance was examined using the kappa (kappa) statistic. Blood pressure (BP) from the same visit was classified hypertensive for BP \geq 140/90. **RESULTS:** The majority of visits (72.8%) occurred in adult primary care. Using paediatric/adult criteria, 3.4%/5.2% were underweight, 66.6%/58.8% normal weight, 15.7%/21.7% overweight, 14.3%/14.3% obese and 4.9%/6.0% severely/class II-III obese, respectively. Paediatric and adult classification for underweight, normal, overweight and obesity were concordant for 90.3% (weighted kappa 0.87 [95% confidence interval, 0.87-0.88]). For severe obesity, BMI \geq 120% x 95th percentile showed high agreement with BMI \geq 35 kg m⁻² (kappa 0.89 [0.88-0.91]). Normal-weight males and moderately obese females by paediatric BMI percentile criteria who were discordantly classified into higher adult weight strata had a greater proportion with hypertensive BP compared with concordantly classified counterparts. **CONCLUSIONS:** Strong agreement exists between US paediatric BMI percentile and adult BMI classification for older teenagers. Adult BMI classification may optimize BMI tracking and risk stratification during transition from paediatric to adult care.

Marini JJ. Does high-pressure, high-frequency oscillation shake the foundations of lung protection? *Intensive Care Med.* 2015 Dec;41(12):2210-2. [Comment on: *Intensive Care Med.* 2015 Dec;41(12):2076-86.]

Marini JJ; Vincent JL; Annane D. Critical care evidence--new directions. *JAMA.* 2015 Mar 3;313(9):893-4.

Marx RG; Wilson SM; **Swiontkowski MF**. Updating the assignment of levels of evidence [editorial]. *J Bone Joint Surg Am*. 2015 Jan 7;97(1):1-2.

Matava MJ; Arciero RA; Baumgarten KM; Carey JL; DeBerardino TM; Hame SL; Hannafin JA; Miller BS; Nissen CW; Taft TN; Wolf BR; Wright RW; **Cooper JM** and **Vang S**, members of the MARS Group. Multirater agreement of the causes of anterior cruciate ligament reconstruction failure: a radiographic and video analysis of the MARS cohort. *Am J Sports Med*. 2015 Feb;43 (2):310-9.

BACKGROUND: Anterior cruciate ligament (ACL) reconstruction failure occurs in up to 10% of cases. Technical errors are considered the most common cause of graft failure despite the absence of validated studies. Limited data are available regarding the agreement among orthopaedic surgeons regarding the causes of primary ACL reconstruction failure and accuracy of graft tunnel placement. **HYPOTHESIS:** Experienced knee surgeons have a high level of interobserver reliability in the agreement about the causes of primary ACL reconstruction failure, anatomic graft characteristics, and tunnel placement. **STUDY DESIGN:** Cohort study (diagnosis); Level of evidence, 3. **METHODS:** Twenty cases of revision ACL reconstruction were randomly selected from the Multicenter ACL Revision Study (MARS) database. Each case included the patient's history, standardized radiographs, and a concise 30-second arthroscopic video taken at the time of revision demonstrating the graft remnant and location of the tunnel apertures. All 20 cases were reviewed by 10 MARS surgeons not involved with the primary surgery. Each surgeon completed a 2-part questionnaire dealing with each surgeon's training and practice, as well as the placement of the femoral and tibial tunnels, condition of the primary graft, and the surgeon's opinion as to the causes of graft failure. Interrater agreement was determined for each question with the kappa coefficient and the prevalence-adjusted, bias-adjusted kappa (PABAK). **RESULTS:** The 10 reviewers have been in practice an average of 14 years and have performed at least 25 ACL reconstructions per year, and 9 were fellowship trained in sports medicine. There was wide variability in agreement among knee experts as to the specific causes of ACL graft failure. When participants were specifically asked about technical error as the cause for failure, interobserver agreement was only slight (PABAK = 0.26). There was fair overall agreement on ideal femoral tunnel placement (PABAK = 0.55) but only slight agreement on whether a femoral tunnel was too anterior (PABAK = 0.24) and fair agreement on whether it was too vertical (PABAK = 0.46). There was poor overall agreement for ideal tibial tunnel placement (PABAK = 0.17). **CONCLUSION:** This study suggests that more objective criteria are needed to accurately determine the causes of primary ACL graft failure as well as the ideal femoral and tibial tunnel placement in patients undergoing revision ACL reconstruction.

Mathews BK. Commentary on Gonzalo, et al., Impact of an overnight internal medicine academic hospitalist program on patient outcomes [editorial]. *J Gen Intern Med*. 2015 Dec;30(12):1850. PMID: PMC4636579. [Comment on: *J Gen Intern Med*. 2015 Dec;30(12):1795-802.]

Mathews BK; Ruedinger E; Olson APJ. Talking about the diagnostic process and diagnostic error in medical education. *Academic Internal Medicine Insight*. 2015;13(3):4-5.

McCoy RG; Fan J; Smith SA; Deming JR; **Ziegenfuss JY**; Montori VM; Shah ND. Patient experience with care and clinical outcomes in diabetes: a case for more person-centered measurement. *Eur J Pers Cent Healthc*. 2015;3(2):187-95.

McKinney ZJ; Peters JM; Gorlin JB; Perry EH. Improving red blood cell orders, utilization, and management with point-of-care clinical decision support. *Transfusion*. 2015 Sep;55(9):2086-94.

BACKGROUND: The computerized order for red blood cell (RBC) transfusion within our electronic health record was redesigned with integrated clinical decision support (CDS) to reinforce our restrictive transfusion policy. These changes encouraged 1-unit (1U) RBC orders, clarified hemoglobin (Hb) transfusion triggers, and discouraged unnecessary orders. This study assessed whether these changes resulted in durable effects on provider practices. **STUDY DESIGN AND METHODS:** The study compared three 1-year subperiods from August 2011 to August 2014, with each year corresponding to a historical control period, preintervention and postintervention years. This study analyzed ratios of 1U versus 2-unit (2U) orders and the absolute rate of RBC orders, units charged, Hb transfusion triggers, repeat transfusion orders, and selected clinical indications both institution-wide and across several subpopulations. **RESULTS:** Our institution-wide ratio of 1U versus 2U orders increased from 0.50 to 1.20 ($p < 0.0001$) in the pre- to postintervention subperiods, respectively. The number of units charged per day decreased from 15.68 to 13.53 ($p < 0.001$), while rates of initial and repeat orders remained stable. Proportion of clinical indications used and mean Hb triggers demonstrated generally positive results. The changes observed between the pre- and postintervention years were far greater than changes between historical control versus preintervention years, reinforcing attribution of results to computerized physician order entry changes. **CONCLUSION:** Use of computerized orders and CDS encouraged a restrictive transfusion policy, which was highly successful in changing provider practices. We also succeeded in decreasing mean Hb triggers and overall utilization of RBCs. These findings persisted across many subpopulations.

McLellan DL; Caban-Martinez AJ; Nelson CC; **Pronk NP**; Katz JN; Allen JD; Davis KL; Wagner GR; Sorensen G. Organizational characteristics influence implementation of worksite health protection and promotion programs: evidence from smaller businesses. *J Occup Environ Med*. 2015 Sep;57(9):1009-16. PMID: PMC4582757.

OBJECTIVE: We explored associations between organizational factors (size, sector, leadership support, and organizational capacity) and implementation of occupational safety and health (OSH) and worksite health promotion (WHP) programs in smaller businesses. **METHODS:** We conducted a web-based survey of human resource managers of 117 smaller businesses (<750 employees) and analyzed factors associated with implementation of OSH and WHP among these sites using multivariate analyses. **RESULTS:** Implementation of OSH, but not WHP activities, was related to industry sector ($P = 0.003$). Leadership support was positively associated with OSH activities ($P < 0.001$), but negatively associated with WHP implementation. Organizational capacity (budgets, staffing, and committee involvement) was associated with implementation of both OSH and WHP. Size was related to neither. **CONCLUSIONS:** Leadership support and specifically allocated resources reflecting that support are important factors for implementing OSH and WHP in smaller organizations.

Michienzi AE; Anderson CP; Vang S; Ward CM. Lateral epicondylitis and tobacco use: a case-control study. *Iowa Orthop J*. 2015;35:114-8. PMID: PMC4492151.

BACKGROUND: Although lateral epicondylitis (LE) is a very common tendinopathy, we understand little about the etiology of the disease. Tobacco use has been associated with other tendinopathies, and the

purpose of this study is to determine if there is an association between the incidence of lateral epicondylitis and tobacco use. **METHODS:** We performed a retrospective cohort study of adult patients diagnosed with lateral epicondylitis. Patients from a single orthopaedic surgeon's practice with LE were matched to control patients with other common upper extremity conditions based on age, gender, and occupation. A total of 65 case patients and 217 control patients were included in the study. The incidence of smoking in patients with lateral epicondylitis was compared to the incidence of smoking in the control group. **RESULTS:** Of the LE patients, 30/65 (46.2%) were non-smokers, 23/65 (35.4%) were former smokers, and 12/65 (18.5%) were current smokers. Of the control patients, 121/217 (55.8%) were non-smokers, 45/217 (20.7%) were former smokers, and 51/217 (23.5%) were current smokers. The odds of LE patients being former or current smokers compared to control patients were 1.45 times higher, but this was not statistically significant. Among people who did not smoke at the time of presentation, the odds of being a former smoker were 2.28 times higher in LE patients than in controls, which was statistically significant. **CONCLUSIONS:** The odds of being a former smoker were significantly higher in patients with lateral epicondylitis compared to patients with other upper extremity conditions. Although it did not reach statistical significance, the odds of being former or current smokers were also higher in the LE group. These results suggest a relationship between smoking history and incidence of lateral epicondylitis, though more research is needed to determine the exact nature of the relationship.

Miller KM; Foster NC; Beck RW; **Bergental RM**; DuBose SN; DiMeglio LA; Maahs DM; Tamborlane WV. Current state of type 1 diabetes treatment in the U.S.: updated data from the T1D Exchange Clinic registry. *Diabetes Care*. 2015 Jun;38(6):971-8.

Abstract: To examine the overall state of metabolic control and current use of advanced diabetes technologies in the U.S., we report recent data collected on individuals with type 1 diabetes participating in the T1D Exchange clinic registry. Data from 16,061 participants updated between 1 September 2013 and 1 December 2014 were compared with registry enrollment data collected from 1 September 2010 to 1 August 2012. Mean hemoglobin A1c (HbA1c) was assessed by year of age from <4 to >75 years. The overall average HbA1c was 8.2% (66 mmol/mol) at enrollment and 8.4% (68 mmol/mol) at the most recent update. During childhood, mean HbA1c decreased from 8.3% (67 mmol/mol) in 2-4-year-olds to 8.1% (65 mmol/mol) at 7 years of age, followed by an increase to 9.2% (77 mmol/mol) in 19-year-olds. Subsequently, mean HbA1c values decline gradually until approximately 30 years of age, plateauing at 7.5-7.8% (58-62 mmol/mol) beyond age 30 until a modest drop in HbA1c below 7.5% (58 mmol/mol) in those 65 years of age. Severe hypoglycemia (SH) and diabetic ketoacidosis (DKA) remain all too common complications of treatment, especially in older (SH) and younger patients (DKA). Insulin pump use increased slightly from enrollment (58-62%), and use of continuous glucose monitoring (CGM) did not change (7%). Although the T1D Exchange registry findings are not population based and could be biased, it is clear that there remains considerable room for improving outcomes of treatment of type 1 diabetes across all age-groups. Barriers to more effective use of current treatments need to be addressed and new therapies are needed to achieve optimal metabolic control in people with type 1 diabetes.

Miotke SA; Mohr WJ; Endorf FW. Burn care: regionalisation, organisation and triage. *ICU Management*. 2015;15(4):156-8.

Abstract: The interdisciplinary nature of burn care has driven centre regionalisation. The role of burn centres in the national trauma system cannot be overstated. Burn centres, essential components of any trauma system, serve a broad base of patients, including potentially those injured in mass casualty events. Over the past fifty years, the field of burn care has made dramatic improvements in patient outcomes following severe burns, attributable to advances in all aspects of patient management. The complexity of patient care, both in the short- and long-term, requires a well-prepared interdisciplinary team. Such implementation has been made possible by centre regionalisation.

Moana-Filho EJ; Bereiter DA; **Nixdorf DR.** Amplified brain processing of dentoalveolar pressure stimulus in persistent dentoalveolar pain disorder patients. *J Oral Facial Pain Headache*. 2015 Fall;29(4):349-62.

AIMS: (1) To determine the brain regions activated by dentoalveolar pressure stimulation in persistent dentoalveolar pain disorder (PDAP) patients, and (2) to compare these activation patterns to those seen in pain-free control subjects. **METHODS:** A total of 13 PDAP patients and 13 matched controls completed the study. Clinical pain characteristics and psychosocial data were collected. Dentoalveolar mechanical pain thresholds were determined with a custom-made device over the painful area for patients and were used as the stimulation level during functional magnetic resonance imaging (fMRI) data acquisition. Control subjects received two stimulation levels over matched locations during fMRI scanning: one determined (as above) that evoked equally subjective pain ratings matching those of patients (subjective-pain match) and another nonpainful stimulation level matching the average stimulus intensity provided to patients (stimulus-intensity match). Clinical and psychosocial data were analyzed using independent samples t tests, Mann-Whitney U test, and Spearman rank-order correlation coefficient. fMRI data were analyzed using validated neuroimaging software and tested using a general linear model. **RESULTS:** PDAP patients had greater anxiety ($P<.0001$) and depression scores ($P=.001$), more jaw function impairment ($P<.0001$), and greater social impact ($P<.0001$) than controls. No significant differences were found for brain activation spatial extent (PDAP X Controls subjective pain: $P=.48$; PDAP X Controls stimulus intensity: $P=.12$). Brain activations were significantly increased for PDAP patients compared to control subjects when matched to stimulus intensity in several regions related to the sensory-discriminative and cognitive components of pain perception, including the primary and secondary somatosensory cortices, inferior parietal lobule, insula, premotor cortex, prefrontal cortex, and thalamus. When matched to subjective pain ratings, increased brain activations were still present for PDAP patients compared to controls, although to a lesser extent. **CONCLUSION:** The present results suggest that dentoalveolar pressure is processed differently in the brain of PDAP patients, and the increased activation in several brain areas is consistent with amplified pain processing.

Moore PW; **Rasimas JJ;** Donovan JW. Physostigmine is the antidote for anticholinergic syndrome [editorial]. *J Med Toxicol*. 2015 Mar;11(1):159-60. PMID: PMC4371033. [Comment in: *J Med Toxicol*. 2015 Mar;11(1):161-2. Comment on: *J Med Toxicol*. 2014 Dec;10(4):406-10.]

Moreau WJ; Nabhan DC; Roecker C; Kimura MN; **Klein A**; Guimard B; Pierce K; Helma P; Nelson R; Bahr KS; Nelson L; Williams P. The American Chiropractic Board of Sports Physicians position statement on pre-participation examinations: an expert consensus. *J Chiropr Med*. 2015 Sep;14(3):176-82.

OBJECTIVE: The purpose of this paper is to present a position statement of best practices for the provision of a safe and high-quality pre-participation examination (PPE) and to provide recommendations on education requirements for doctors of chiropractic providing the PPE. **METHODS:** In 2014, the American Chiropractic Board of Sports Physicians (ACBSP) Board of Directors identified a need to review and update the ACBSP position statements and practice guidelines in order to be current with evolving best practices. Twelve ACBSP certificants, 10 Diplomates of the ACBSP, and 2 Certified Chiropractic Sports Physicians, met in April 2015 to author a pre-participation position statement using an expert consensus process. Panel members excluded anyone with commercial conflicts of interest and included individuals with expertise in clinical sports medicine and the performance of PPEs. A literature review was performed and circulated in advance for use by the panel in addressing the topic. The position statement was written through a consensus process and accepted by the ACBSP Board of Directors in May of 2015. **RESULTS:** The ACBSP Position Statement on Pre-participation Examinations identifies the qualifications and best practices for doctors of chiropractic to perform a PPE. **CONCLUSION:** This position statement states that doctors of chiropractic with post graduate education and current Diplomates of the ACBSP or Certified Chiropractic Sports Physicians certification have the prerequisite education and qualifying skills to perform PPEs.

Morgan MW; Salzman JG; LeFevere RC; Thomas AJ; Isenberger KM. Demographic, operational, and healthcare utilization factors associated with emergency department patient satisfaction. *West J Emerg Med*. 2015 Jul;16(4):516-26. PMCID: PMC4530909.

INTRODUCTION: The primary aim of this study was to determine which objectively measured patient demographics, emergency department (ED) operational characteristics, and healthcare utilization frequencies (care factors) were associated with patient satisfaction ratings obtained from phone surveys conducted by a third-party vendor for patients discharged from our ED. **METHODS:** This is a retrospective, observational analysis of data obtained between September 2011 and August 2012 from all English- and Spanish-speaking patients discharged from our ED who were contacted by a third-party patient satisfaction vendor to complete a standardized nine-item telephone survey by a trained phone surveyor. We linked data from completed surveys to the patient's electronic medical record to abstract additional demographic, ED operational, and healthcare utilization data. We used univariate ordinal logistic regression, followed by two multivariate models, to identify significant predictors of patient satisfaction. **RESULTS:** We included 20,940 patients for analysis. The overall patient satisfaction ratings were as follows: 1=471 (2%); 2=558 (3%); 3=2,014 (10%), 4=5,347 (26%); 5=12,550 (60%). Factors associated with higher satisfaction included race/ethnicity (Non-Hispanic Black; Hispanic patients), age (patients ≥ 65), insurance (Medicare), mode of arrival (arrived by bus or on foot), and having a medication ordered in the ED. Patients who felt their medical condition did not improve, those treated in our ED behavioral health area, and those experiencing longer wait times had reduced satisfaction. **CONCLUSION:** These findings provide a basis for development and evaluation of targeted interventions that could be used to improve patient satisfaction in our ED.

Mulawka B; Jacobson AR; Schroder LK; Cole PA. Triple and quadruple disruptions of the superior shoulder suspensory complex. *J Orthop Trauma*. 2015 Jun;29(6):264-70.

OBJECTIVES: The purpose of this study is to report on a series of patients who sustained triple and quadruple disruptions to the superior shoulder suspensory complex (SSSC), their associated injuries, and functional outcomes of open reduction and internal fixation. **DESIGN:** Prospective observational study. **SETTING:** Level 1 trauma center. **PATIENTS/PARTICIPANTS:** Patients who sustained more than 2 lesions to the SSSC that underwent surgery. **OUTCOME MEASUREMENTS:** Disabilities of the Arm, Shoulder, and Hand (DASH) scores, range of motion, and shoulder strength measurements. **RESULTS:** Fifteen patients with greater than 2 disruptions (12 triple and 3 quadruple) were identified. There were 14 scapula neck fractures, 8 clavicle fractures, 6 acromioclavicular separations, 10 coracoid, and 10 acromion fractures. Rib fractures were present in 87% (13 of 15) patients. Thirteen patients (87%) sustained nerve injuries with 13 lesions distal to the brachial plexus, 5 at the level of the brachial plexus, 3 nerve root, and 2 spinal cord injuries. At final follow-up (14 of 15 patients, mean follow-up = 30.7 months), DASH scores averaged 14.9 and mean range of motion when expressed as the percentage of injured shoulder over the contralateral shoulder was 95% forward flexion, 92% abduction, and 78% external rotation. Mean strength measured by a hand-held dynamometer and expressed as the percentage of injured over contralateral was 67% forward flexion, 61% abduction, and 65% external rotation. **CONCLUSIONS:** Patients with triple and quadruple disruptions of the SSSC had a high rate of associated injuries including a majority with spinal and peripheral nerve lesions. Treatment with open reduction internal fixation of the scapula was associated with satisfactory functional outcomes despite decreases in shoulder strength measurements.

Munch T; Harrison SL; Barrett-Connor E; Lane NE; Nevitt MC; **Schousboe JT**; Stefanick M; Cawthon PM. Pain and falls and fractures in community-dwelling older men. *Age Ageing*. 2015 Nov;44(6):973-9. PMID: PMC4621231.

BACKGROUND: pain may reduce stability and increase falls and subsequent fractures in older men. **OBJECTIVES:** to examine the association between joint pain and any pain with falls, hip and non-spine fractures in older community-dwelling men. **DESIGN:** a cohort study. **SETTING AND PARTICIPANTS:** analyses included 5,993 community-dwelling men aged ≥ 65 years from the MrOS cohort. **MEASUREMENTS:** pain at hip, knee and elsewhere (any) was assessed by self-report. Men reported falls via questionnaires mailed 3x per year during the year following the baseline visit. Fractures were verified centrally. Mean follow-up time for fractures was 9.7 (SD 3.1) years. Logistic regression models estimated likelihood of falls and proportional hazards models estimated risk of fractures. Models were adjusted for age, BMI, race, smoking, alcohol use, medications use, co-morbidities and arthritis; fracture models additionally adjusted for bone mineral density. **RESULTS:** one quarter (25%, $n = 1,519$) reported ≥ 1 fall; 710 reported ≥ 2 falls in the year after baseline. In multivariate models, baseline pain at hip, knee or any pain increased likelihood of ≥ 1 fall and ≥ 2 falls over the following year. For example, knee pain increased likelihood of ≥ 1 fall (odds ratio, OR 1.44; 95% confidence interval, CI 1.25-1.65) and ≥ 2 falls (OR 1.75; 95% CI 1.46-2.10). During follow-up, 936 (15.6%) men suffered a non-spine fracture ($n = 217$, 3.6% hip). In multivariate models, baseline pain was not associated with incident hip or non-spine fractures. **CONCLUSIONS:** any pain, knee pain and hip pain were each strong independent risk factors for falls in older men. Increased risk of falls did not translate into an increased risk of fractures.

Nance MA. Managing residents with Parkinson's disease in long-term care. *Geriatric Medicine and Medical Direction.* 2015 Apr;36(4):1-8.

Abstract: Parkinson's disease currently affects up to one million Americans. With increasing longevity as we better manage the complications of conditions of middle age such as diabetes, hypertension, and hypercholesterolemia, that number is expected to double globally over the next 25 years. Until there is a cure for the disease, a growing proportion of this increasing number of people with Parkinson's disease will live to experience the later stages of their disease, needing hands-on assistance with activities of daily living, either in the home or in a care facility. It is useful, therefore, to review the common symptoms and complications of late-stage Parkinson's, focusing particularly on the practical issues that primary care physicians typically address, such as medications, rehabilitation team referrals, prognosis, and end-of-life discussions and care.

Nance MA, member of the Huntington Study Group Reach2HD Investigators. Safety, tolerability, and efficacy of PBT2 in Huntington's disease: a phase 2, randomised, double-blind, placebo-controlled trial. *Lancet Neurol.* 2015 Jan;14(1):39-47.

BACKGROUND: PBT2 is a metal protein-attenuating compound that might reduce metal-induced aggregation of mutant huntingtin and has prolonged survival in a mouse model of Huntington's disease. We aimed to assess the safety, tolerability, and efficacy of PBT2 in patients with Huntington's disease. METHODS: In this 26-week, randomised, double-blind, placebo-controlled trial, adults (≥ 25 years old) with early-stage to mid-stage Huntington's disease were randomly assigned (1:1:1) by a centralised interactive response system to once daily PBT2 250 mg, PBT2 100 mg, or placebo. Randomisation was stratified by site with a block size of three. Participants, carers, the steering committee, site investigators, study staff, and the study sponsor were masked to treatment assignment. Primary endpoints were safety and tolerability. The safety population consisted of all participants who were randomly assigned and had at least one dose of study drug. The principal secondary endpoint was cognition, measured by the change from baseline to week 26 in the main composite Z score of five cognitive tests (Category Fluency Test, Trail Making Test Part B, Map Search, Symbol Digit Modalities Test, and Stroop Word Reading Test) and scores on eight individual cognitive tests (the five aforementioned plus the Trail Making Test Part A, Montreal Cognitive Assessment, and the Speeded Tapping Test). The intention-to-treat population comprised participants who were randomly assigned and had at least one efficacy assessment after administration of study drug. This trial is registered with ClinicalTrials.gov, NCT01590888. FINDINGS: Between April 18, 2012, and Dec 14, 2012, 109 participants were randomly assigned to PBT2 250 mg (n=36), PBT2 100 mg (n=38), or placebo (n=35) at 19 research centres in Australia and the USA. 32 (89%) individuals on PBT2 250 mg, 38 (100%) on PBT2 100 mg, and 34 (97%) on placebo completed the study. Six serious adverse events (acute coronary syndrome, major depression, pneumonia, suicide attempt, viral infection, and worsening of Huntington's disease) occurred in five participants in the PBT2 250 mg group, three (fall with subdural haematoma, suicide attempt, and hospital admission for stabilisation of Huntington's disease) occurred in two participants in the PBT2 100 mg group, and one (increasing aggression) occurred in a participant in the placebo group. The site investigators deemed all, except the worsening of Huntington's disease, as unrelated to study drug. 32 (89%) participants on PBT2 250 mg, 30 (79%) on PBT2 100 mg, and 28 (80%) on placebo had at least one adverse event. Compared with placebo, neither PBT2 100 mg (least-squares mean 0.02, 95% CI -0.10 to 0.14; $p=0.772$) nor

PBT2 250 mg (0.07, -0.05 to 0.20; $p=0.240$) significantly improved the main composite cognition Z score between baseline and 26 weeks. Compared with placebo, the Trail Making Test Part B score was improved between baseline and 26 weeks in the PBT2 250 mg group (17.65 s, 0.65-34.65; $p=0.042$) but not in the 100 mg group (0.79 s improvement, -15.75 to 17.32; $p=0.925$); neither dose significantly improved cognition on the other tests. INTERPRETATION: PBT2 was generally safe and well tolerated in patients with Huntington's disease. The potential benefit on executive function will need to be confirmed in a larger study.

Narang PD; Glowacki A; Lippmann SB. Electroconvulsive therapy intervention for Parkinson's disease [review article]. *Innov Clin Neurosci*. 2015 Sep-Oct;12(9-10):25-8. PMID: PMC4655896.

BACKGROUND: Electroconvulsive therapy is an established means to improve function in a variety of psychiatric and neurologic conditions, particularly for patients who remain treatment-refractory. Parkinson's disease is a neurodegenerative disorder that sometimes does not respond well to conventional pharmacotherapies. Reports have indicated that electroconvulsive therapy may be an effective and safe treatment for those patients with Parkinson's disease who are not optimally responding to first-line treatments. Despite these reports, however, electroconvulsive therapy is not often used by clinicians in patients with treatment-resistant Parkinson's disease, perhaps due to stigma, lack of knowledge regarding its safety and efficacy, and/or inability to predict the duration of therapeutic benefit. **OBJECTIVE:** Our objective was to determine if the available literature on ECT supports it as a safe and effective treatment option in patients with treatment-refractory Parkinson's disease. **CONCLUSION:** Motoric improvement induced by electroconvulsive therapy has been documented for decades in persons with Parkinson's disease. Efficacy and safety are reported following electroconvulsive therapy in people with Parkinson's disease who have sub-optimal response to medicines or experience the "on/off" phenomenon to L-dopa. Electroconvulsive therapy is an effective option for acute and maintenance treatment of Parkinson's disease in select patients. Inability to predict how long the beneficial effects of ECT therapy will last in patients with Parkinson's disease may be a reason why this treatment is underutilized by clinicians. More research is warranted to clarify parameters for application and duration of therapeutic benefit in individuals with difficult-to-treat Parkinson's disease.

Nelson CC; Allen JD; McLellan DL; **Pronk NP**; Davis KL. Integrating health promotion and occupational safety and health in manufacturing worksites: Perspectives of leaders in small-to-medium sized businesses. *Work*. 2015;52(1):169-76.

BACKGROUND: Accumulating evidence suggests that worksite interventions integrating worksite health promotion (WHP) and occupational safety and health (OSH) may be more efficacious and have higher participation rates than health promotion programs offered alone. However, dissemination of integrated programs is complicated by lack of tools for implementation - particularly for small and medium-sized businesses (SMBs). **OBJECTIVE:** The goal of this study is to describe perceptions of acceptability and feasibility of implementing an integrated approach to worker health that coordinates WHP and OSH in SMBs. **METHODS:** In September to November 2012, decision-makers for employee health programming within SMBs (< 750 employees) in greater Minneapolis were identified. Fourteen semi-structured interviews were conducted and analyzed to develop an understanding of perceived benefits and barriers, awareness, and capacity for implementing an integrated approach. **RESULTS:** Worker health was widely valued by participants. They reported strong management support for improving employee health and safety. Most

participants 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. **CONCLUSIONS:** There are opportunities for implementing integrated worksite health programs in SMBs with existing resources and values. However, challenges to implementation exist, as these worksites may lack the appropriate resources.

Ness BM; **Taylor AL**; Haberl MD; Reuteman PF; Borgert AJ. Clinical observation and analysis of movement quality during performance on the star excursion balance test. *Int J Sports Phys Ther.* 2015 Apr;10(2):168-77.

STUDY DESIGN: Observational. **BACKGROUND:** The Star Excursion Balance Test (SEBT) is used to evaluate dynamic postural control and screen for injury risk. No prior studies have investigated whether the quality of movement during the SEBT has clinical value and can adequately predict injury. **PURPOSE:** To develop a visual assessment tool and evaluate the relationship between movement quality and SEBT outcomes.

METHODS: One hundred healthy subjects were included. Baseline demographic, limb length, and individual SEBT performance data were collected. SEBT outcomes were obtained and used to classify individuals as at-risk or not at-risk. At-risk individuals demonstrated anterior right/left reach distance difference greater than 4 cm, and/or normalized composite reach distance less than 89.6% for males or 94% for females. Three independent reviewers, blinded to SEBT outcomes, assessed the anterior reach test on videotape. Reviewers underwent training on a scoring system to assess movement quality at the trunk, pelvis, and knee. The total score of movement faults was used to determine interrater reliability and calculate sensitivity and specificity, in addition to positive and negative predictive values of SEBT outcome. **RESULTS:** Seventy-one subjects were classified as at risk. Interrater reliability of movement scoring was poor-moderate for the trunk and pelvis ($\kappa=0.18-0.43$), and moderate for the knee ($\kappa=0.5-0.6$). Rater agreement for total movement score was fair-moderate ($W=0.64-0.73$). Rater assessment of aberrant movement was not predictive of SEBT performance. However, subjects deemed at risk had fewer movement faults per rater assessment. Raters displayed moderately strong specificity (0.59-0.82) and poor sensitivity (0.14-0.39) in knee assessment to detect at risk performance on the SEBT. **CONCLUSION:** Clinical observation of knee movement demonstrated acceptable interrater reliability and moderately strong specificity to detect at-risk SEBT outcome. Total movement score across all regions demonstrated fair-moderate agreement. Subjects who were at risk tended to have fewer movement faults.

Nguyen KT; Billington CJ; Vella A; Wang Q; Ahmed L; Bantle JP; Bessler M; Connett JE; Inabnet WB; **Thomas AJ**; Ikramuddin S; Korner J. Preserved insulin secretory capacity and weight loss are the predominant predictors of glycemic control in patients with type 2 diabetes randomized to roux-en-Y gastric bypass. *Diabetes.* 2015 Sep;64(9):3104-10. PMID: PMC4542441.

Abstract: Improvement in type 2 diabetes after Roux-en-Y gastric bypass (RYGB) has been attributed partly to weight loss, but mechanisms beyond weight loss remain unclear. We performed an ancillary study to the Diabetes Surgery Study to assess changes in incretins, insulin sensitivity, and secretion 1 year after randomization to lifestyle modification and intensive medical management (LS/IMM) alone ($n = 34$) or in conjunction with RYGB ($n = 34$). The RYGB group lost more weight and had greater improvement in HbA1c. Fasting glucose was lower after RYGB than after LS/IMM, although the glucose area under the curve decreased comparably for both groups. Insulin sensitivity increased in both groups. Insulin secretion was unchanged after LS/IMM but decreased after RYGB, except for a rapid increase during the first 30 min after

meal ingestion. Glucagon-like peptide 1 (GLP-1) was substantially increased after RYGB, while gastric inhibitory polypeptide and glucagon decreased. Lower HbA1c was most strongly correlated with the percentage of weight loss for both groups. At baseline, a greater C-peptide index and 90-min postprandial C-peptide level were predictive of lower HbA1c at 1 year after RYGB. beta-Cell glucose sensitivity, which improved only after RYGB, and improved disposition index were associated with lower HbA1c in both groups, independent of weight loss. Weight loss and preserved beta-cell function both predominantly determine the greatest glycemic benefit after RYGB.

Nichols GA; Schroeder EB; Karter AJ; Gregg EW; **Desai JR**; Lawrence JM; **O'Connor PJ**; Xu S; Newton KM; Raebel MA; Pathak RD; Waitzfelder BE; Segal J; Lafata JE; Butler MG; Kirchner HL; Thomas A; Steiner JF; SUPREME-DM Study Group. Trends in diabetes incidence among 7 million insured adults, 2006-2011: the SUPREME-DM project. *Am J Epidemiol.* 2015 Jan 1;181(1):32-9. PMCID: PMC4288120. Project Number: A13-132 SUPREME 2.

Abstract: An observational cohort analysis was conducted within the Surveillance, Prevention, and Management of Diabetes Mellitus (SUPREME-DM) DataLink, a consortium of 11 integrated health-care delivery systems with electronic health records in 10 US states. Among nearly 7 million adults aged 20 years or older, we estimated annual diabetes incidence per 1,000 persons overall and by age, sex, race/ethnicity, and body mass index. We identified 289,050 incident cases of diabetes. Age- and sex-adjusted population incidence was stable between 2006 and 2010, ranging from 10.3 per 1,000 adults (95% confidence interval (CI): 9.8, 10.7) to 11.3 per 1,000 adults (95% CI: 11.0, 11.7). Adjusted incidence was significantly higher in 2011 (11.5, 95% CI: 10.9, 12.0) than in the 2 years with the lowest incidence. A similar pattern was observed in most prespecified subgroups, but only the differences for persons who were not white were significant. In 2006, 56% of incident cases had a glycated hemoglobin (hemoglobin A1c) test as one of the pair of events identifying diabetes. By 2011, that number was 74%. In conclusion, overall diabetes incidence in this population did not significantly increase between 2006 and 2010, but increases in hemoglobin A1c testing may have contributed to rising diabetes incidence among nonwhites in 2011.

Nixdorf DR. The pain puzzle: Q's, A's, and mapping the maze. *Northwest Dent.* 2015 Jul-Aug;94(4):25, 27-9, 31.

Nixdorf DR; Law AS; John MT; Sobieh RM; Kohli R; Nguyen RH; National Dental PBRN Collaborative Group. Differential diagnoses for persistent pain after root canal treatment: a study in the National Dental Practice-based Research Network. *J Endod.* 2015 Apr;41(4):457-63. PMCID: PMC4380676.

INTRODUCTION: Pain present 6 months after root canal treatment (RCT) may be of odontogenic or nonodontogenic origin. This is important because treatments and prognoses are different; therefore, the aim of this study was to provide specific diagnoses of patients reporting pain 6 months after receiving initial orthograde RCT. **METHODS:** We enrolled patients from the Midwest region of an existing prospective observational study of pain after RCT. Pain at 6 months was defined as ≥ 1 day of pain and average pain intensity of at least 1 of 10 over the preceding month. An endodontist and an orofacial pain practitioner independently performed clinical evaluations, which included periapical and cone-beam computed tomographic radiographs, to determine diagnoses. **RESULTS:** Thirty-eight of the 354 eligible patients in the geographic area (11%) met the pain criteria, with 19 (50%) consenting to be clinically evaluated. As the sole

reason for pain, 7 patients (37%) were given odontogenic diagnoses (4 involving the RCT tooth and 3 involving an adjacent tooth). Eight patients (42%) were given nonodontogenic pain diagnoses (7 from referred temporomandibular disorder pain and 1 from persistent dentoalveolar pain disorder). Two patients (11%) had both odontogenic and nonodontogenic diagnoses, whereas 2 (11%) no longer fit the pain criteria at the time of the clinical evaluation. **CONCLUSIONS:** Patients reporting "tooth" pain 6 months after RCT had a nonodontogenic pain diagnosis accounting for some of this pain, with temporomandibular disorder being the most frequent nonodontogenic diagnosis. Dentists should have the necessary knowledge to differentiate between these diagnoses to adequately manage their patients.

Njie GJ; Finnie RK; Acharya SD; Jacob V; Proia KK; Hopkins DP; **Pronk NP**; Goetzel RZ; **Kottke TE**; Rask KJ; Lackland DT; Braun LT; Community Preventive Services Task Force. Reducing medication costs to prevent cardiovascular disease: a community guide systematic review [review article]. *Prev Chronic Dis*. 2015 Nov 25;12:E208. PMID: PMC4675495.

INTRODUCTION: Hypertension and hyperlipidemia are major cardiovascular disease risk factors. To modify them, patients often need to adopt healthier lifestyles and adhere to prescribed medications. However, patients' adherence to recommended treatments has been suboptimal. Reducing out-of-pocket costs (ROPC) to patients may improve medication adherence and consequently improve health outcomes. This Community Guide systematic review examined the effectiveness of ROPC for medications prescribed for patients with hypertension and hyperlipidemia. **METHODS:** We assessed effectiveness and economics of ROPC for medications to treat hypertension, hyperlipidemia, or both. Per Community Guide review methods, reviewers identified, evaluated, and summarized available evidence published from January 1980 through July 2015. **RESULTS:** Eighteen studies were included in the analysis. ROPC interventions resulted in increased medication adherence for patients taking blood pressure and cholesterol medications by a median of 3.0 percentage points; proportion achieving 80% adherence to medication increased by 5.1 percentage points. Blood pressure and cholesterol outcomes also improved. Nine studies were included in the economic review, with a median intervention cost of \$172 per person per year and a median change in health care cost of -\$127 per person per year. **CONCLUSION:** ROPC for medications to treat hypertension and hyperlipidemia is effective in increasing medication adherence, and, thus, improving blood pressure and cholesterol outcomes. Most ROPC interventions are implemented in combination with evidence-based health care interventions such as team-based care with medication counseling. An overall conclusion about the economics of the intervention could not be reached with the small body of inconsistent cost-benefit evidence.

Njie GJ; Proia KK; Thota AB; Finnie RK; Hopkins DP; Banks SM; Callahan DB; **Pronk NP**; Rask KJ; Lackland DT; **Kottke TE**; Community Preventive Services Task Force. Clinical decision support systems and prevention: a Community Guide cardiovascular disease systematic review [review article]. *Am J Prev Med*. 2015 Nov;49(5):784-95. [Comment in: *Am J Prev Med*. 2015 Nov;49(5):e83-4.]

CONTEXT: Clinical decision support systems (CDSSs) can help clinicians assess cardiovascular disease (CVD) risk and manage CVD risk factors by providing tailored assessments and treatment recommendations based on individual patient data. The goal of this systematic review was to examine the effectiveness of CDSSs in improving screening for CVD risk factors, practices for CVD-related preventive care services such as clinical

tests and prescribed treatments, and management of CVD risk factors. **EVIDENCE ACQUISITION:** An existing systematic review (search period, January 1975-January 2011) of CDSSs for any condition was initially identified. Studies of CDSSs that focused on CVD prevention in that review were combined with studies identified through an updated search (January 2011-October 2012). Data analysis was conducted in 2013. **EVIDENCE SYNTHESIS:** A total of 45 studies qualified for inclusion in the review. Improvements were seen for recommended screening and other preventive care services completed by clinicians, recommended clinical tests completed by clinicians, and recommended treatments prescribed by clinicians (median increases of 3.8, 4.0, and 2.0 percentage points, respectively). Results were inconsistent for changes in CVD risk factors such as systolic and diastolic blood pressure, total and low-density lipoprotein cholesterol, and hemoglobin A1C levels. **CONCLUSIONS:** CDSSs are effective in improving clinician practices related to screening and other preventive care services, clinical tests, and treatments. However, more evidence is needed from implementation of CDSSs within the broad context of comprehensive service delivery aimed at reducing CVD risk and CVD-related morbidity and mortality.

Nynas J; **Narang PD**; Kolikonda MK; Lippmann SB. Depression and anxiety following early pregnancy loss: recommendations for primary care providers. *Prim Care Companion CNS Disord*. 2015;17(1). PMID: PMC4468887.

Abstract: Early pregnancy loss is a shocking and traumatic event for women and their families. Miscarriage usually induces an intense period of emotional distress. This reaction tends to improve over the following several months, but some residual psychological concerns remain. It is important to screen for depression and anxiety in patients following a miscarriage. Most women in this circumstance do become pregnant again, yet mood disturbances can still coexist. When women are having difficulties at conception, worries may be magnified. Most women and physicians see post-miscarriage intervention as desired, and it is important to provide appropriate treatment. Management of depressive and anxiety symptoms after pregnancy loss can benefit future patient well-being.

O'Connor TJ; Mueller B; Ly TV; Jacobson AR; Nelson ER; **Cole PA**. "A to P" screw versus posterolateral plate for posterior malleolus fixation in trimalleolar ankle fractures. *J Orthop Trauma*. 2015 Apr;29(4):e151-6.

OBJECTIVES: To compare radiographic and clinical midterm outcomes of posterior malleolar fractures treated with posterior buttress plating versus anterior to posterior lag screw fixation. **DESIGN:** Retrospective case series. **SETTING:** Level I trauma center. **PATIENTS/PARTICIPANTS:** Between January 2002 and December 2010, patients with posterior malleolar fractures were identified by Current Procedural Terminology code and their charts reviewed for eligibility. **INTERVENTION:** Posterior malleolar fixation using either anterior to posterior (AP) lag screws or posterior buttress plating. **MAIN OUTCOME MEASUREMENTS:** Demographic data, length of follow-up, range of motion, and postoperative Short Musculoskeletal Function Assessment (SMFA) scores were the main outcome measurements. Immediate postoperative radiographs for residual gap/step-off and final follow-up radiographs for the degree of arthritis that developed were evaluated. **RESULTS:** Thirty-seven patients were eligible for the study, and 27 chose to participate. Sixteen patients underwent posterior buttress plating, and 11 underwent AP screw fixation with mean follow-up times of 54.9 and 32 months, respectively. Demographic data were similar between groups. The posterolateral plating group demonstrated superior postoperative SMFA scores compared with the AP screw group with statistically significant differences in the SMFA bother index (26.7 vs. 9.2, $P = 0.03$) and trends toward

improvement in the mobility (28.3 vs. 12.9, $P = 0.08$) and functional indices (20.2 vs. 9.4, $P = 0.08$). There were no significant differences in the range of motion or the development of ankle arthritis over time. **CONCLUSIONS:** Patients with trimalleolar ankle fractures in whom the posterior malleolus was treated with posterolateral buttress plating had superior clinical outcomes at follow-up compared with those treated with AP screws.

Olives TD; Boley SP. Articles you might have missed. *J Med Toxicol.* 2015 Dec;11(4):468-70.

Olives TD; Cole JB. Synthetic drugs of abuse: treating the toxidrome. *Approaches Crit Care.* 2015 Spring;13:16-8.

Pacanowski CR; Sobal J; Levitsky DA; **Sherwood NE**; Keeler CL; Miller AM; Acosta AR; Hansen N; Wang PL; Guilbert SR; Paroly AL; Commesso M; Vermeylen FM. Does measuring body weight impact subsequent response to eating behavior questions? *J Am Coll Nutr.* 2015 Jun;34(3):199-204. PMCID: PMC4732267.

OBJECTIVES: If being weighed impacts perceptions of eating behavior, it is important that the order of questionnaires and weighing be considered in research and practice. A quasi-experimental study was performed to examine whether being weighed immediately prior to completing a questionnaire affects responses to eating behavior questions. It was hypothesized that being weighed would serve as a priming stimulus and increase measures of dietary restraint, disinhibition, and hunger. **METHODS:** Trained researchers collected a sample of volunteers ($n = 355$) in 8 locations in the United States on two Saturdays in the summer of 2011. Half of the participants were weighed immediately prior to completing the Three Factor Eating Questionnaire (TFEQ), with the remaining half weighed immediately after TFEQ completion. **RESULTS:** A priori hypotheses were not supported despite replicating known relationships between weight, dietary restraint and disinhibition. Results indicated that being weighed first produced a difference in differences on disinhibition scores between low restraint score (95% CI = 4.65-6.02) and high restraint score (95% CI = 6.11-7.57) compared to being weighed after questionnaire completion ($p = 0.003$). However, this relationship was not significant when modeling restraint as a continuous variable, questioning the use of dichotomization. **CONCLUSIONS:** Being weighed is unlikely to be a strong enough prime to significantly change scores on eating behavior questionnaires for everyone, but may allow differences in restraint status to become more evident. Researchers assessing dietary restraint should be wary of the possibility of producing different results when treating restraint as continuous or dichotomous, which could lead to different interpretations.

Parashos SA; Elm J; Boyd JT; Chou KL; Dai L; Mari Z; Morgan JC; Sudarsky L; **Wielinski CL.** Validation of an ambulatory capacity measure in Parkinson disease: a construct derived from the Unified Parkinson's Disease Rating Scale. *J Parkinsons Dis.* 2015;5(1):67-73. PMCID: PMC4478048.

BACKGROUND: A construct calculated as the sum of items 13-15, 29, 30 of the Unified Parkinson's Disease Rating Scale (UPDRS) has been used as an "Ambulatory Capacity Measure" (ACM) in Parkinson disease (PD). Its construct validity has never been examined. A similar construct, consisting of the mean value of the same UPDRS items has been used under the acronym PIGD as a measure of postural instability and gait disorder in PD. **OBJECTIVE:** To examine the construct validity of the ACM and PIGD in PD. **METHODS:** We analyzed data

in an existing database of 340 PD patients, Hoehn and Yahr stages (HYS) 1-5 who participated in a study of falls. Number of falls (NOF) was recorded over 4 weeks, and UPDRS (mental, ADL, and motor subscales), HYS, Activities Based Confidence Scale (ABC), Freezing of Gait Questionnaire (FOG), Five Times Sit-to-Stand (FTSS), Timed Up-and Go (TUG), Gait Velocity (GV), and Berg Balance Scale (BBS) evaluations were performed. Internal consistency was assessed by Cronbach's alpha. Construct validity was assessed through correlations of the ACM and PIGD to these measures and to their summed-ranks. A coefficient of determination was calculated through linear regression. RESULTS: Mean age was 71.4, mean age at diagnosis 61.4 years; 46% were women; mean UPDRS subscale scores were: Mental 3.7; ADL 15.7; motor: 27.1; mean ACM was 6.51, and mean PIGD 1.30. Cronbach's alpha was 0.78 for both ACM and PIGD. Spearman correlation coefficients between the ACM/PIGD and ABC, FOG, TUG, GV and BBS were 0.69, 0.72, 0.67, 0.58, and 0.70 respectively. Correlation between the ACM/PIGD and summed-ranks of HYS, NOF, ABC, FOG, FTSS, TUG, GV and BBS was high (Spearman $r = 0.823$, $p < 0.0001$); 68% of the variability in the summed-ranks was explained by ACM/PIGD. CONCLUSION: The ACM and the PIGD are valid global measures and accurately reflect the combined effects of the various components of ambulatory capacity in PD patients with HY stages 1-4.

Pardey PG; Chan-Kang C; Beddow JM; **Dehmer SP**. Long-run and global R&D funding trajectories: the U.S. Farm Bill in a changing context. *Am J Agric Econ*. 2015 Oct;97(5):1312-23.

Parker DL; Bejan A; Brosseau LM; **Skan M; Xi M**. The Collision Auto Repair Safety Study (CARSS): a health and safety intervention. *Am J Ind Med*. 2015 Jan;58(1):88-100.

BACKGROUND: Collision repair employs approximately 205,500 people in 33,400 shops. Workers are exposed to a diverse array of chemical, physical, and ergonomic hazards. METHODS: CARSS was based on a random and purposeful sample. Baseline and one baseline and one-year evaluations consisted of 92 questions addressing issues, such as Right-to-Know, fire protection, painting-related hazards, ergonomics, electrical safety, and personal protective equipment. Owners received a report and selected at least 30% of items found deficient for remediation. In-person and web-based services were provided. RESULTS: Forty-nine shops were evaluated at baseline and 45 at follow-up. At baseline, 54% of items were present. This improved to 71% at follow-up ($P < 0.0001$). Respiratory protection improved 37% ($P < 0.0001$) and Right-to-Know training increased 30% ($P < 0.0001$). Owners completed 61% of items they selected for remediation. CONCLUSIONS: Small businesses' interventions should address the lack of personnel and administrative infrastructure. Tailored information regarding hazards and easy-to-use training and administrative programs overcome many barriers to improvement.

Parker DL; Yamin SC; Brosseau LM; **Xi M; Gordon RZ**; Most IG; Stanley R. National machine guarding program: Part 1. Machine safeguarding practices in small metal fabrication businesses. *Am J Ind Med*. 2015 Nov;58(11):1174-83.

BACKGROUND: Metal fabrication workers experience high rates of traumatic occupational injuries. Machine operators in particular face high risks, often stemming from the absence or improper use of machine safeguarding or the failure to implement lockout procedures. METHODS: The National Machine Guarding Program (NMGP) was a translational research initiative implemented in conjunction with two workers' compensation insurers. Insurance safety consultants trained in machine guarding used standardized checklists to conduct a baseline inspection of machine-related hazards in 221 businesses. RESULTS:

Safeguards at the point of operation were missing or inadequate on 33% of machines. Safeguards for other mechanical hazards were missing on 28% of machines. Older machines were both widely used and less likely than newer machines to be properly guarded. Lockout/tagout procedures were posted at only 9% of machine workstations. **CONCLUSIONS:** The NMGP demonstrates a need for improvement in many aspects of machine safety and lockout in small metal fabrication businesses.

Parker DL; Yamin SC; Brosseau LM; **Xi M; Gordon RZ;** Most IG; Stanley R. National machine guarding program: Part 2. Safety management in small metal fabrication enterprises. *Am J Ind Med.* 2015 Nov;58(11):1184-93.

BACKGROUND: Small manufacturing businesses often lack important safety programs. Many reasons have been set forth on why this has remained a persistent problem. **METHODS:** The National Machine Guarding Program (NMGP) was a nationwide intervention conducted in partnership with two workers' compensation insurers. Insurance safety consultants collected baseline data in 221 businesses using a 33-question safety management audit. Audits were completed during an interview with the business owner or manager. **RESULTS:** Most measures of safety management improved with an increasing number of employees. This trend was particularly strong for lockout/tagout. However, size was only significant for businesses without a safety committee. Establishments with a safety committee scored higher (55% vs. 36%) on the safety management audit compared with those lacking a committee ($P < 0.0001$). **CONCLUSIONS:** Critical safety management programs were frequently absent. A safety committee appears to be a more important factor than business size in accounting for differences in outcome measures.

Parker ED; Sinaiko AR; Daley MF; **Kharbanda EO; Trower NK;** Tavel HM; **Sherwood NE;** Magid DJ; **Margolis KL; O'Connor PJ.** Factors associated with adherence to blood pressure measurement recommendations at pediatric primary care visits, Minnesota and Colorado, 2007-2010. *Prev Chronic Dis.* 2015 Jul 23;12:E118. PMID: PMC4515918. Project Number: A08-087 Pediatric Hypertension.

INTRODUCTION: Elevated blood pressure in childhood may predict increased cardiovascular risk in young adulthood. The Task Force on the Diagnosis, Evaluation and Treatment of High Blood pressure in Children and Adolescents recommends that blood pressure be measured in children aged 3 years or older at all health care visits. Guidelines from both Bright Futures and the Expert Panel of Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents recommend annual blood pressure screening. Adherence to these guidelines is unknown. **METHODS:** We conducted a cross-sectional study to assess compliance with blood pressure screening recommendations in 2 integrated health care delivery systems. We analyzed electronic health records of 103,693 subjects aged 3 to 17 years. Probability of blood pressure measurement documented in the electronic health record was modeled as a function of visit type (well-child vs nonwell-child); patient age, sex, race/ethnicity, and body mass index; health care use; insurance type; and type of office practice or clinic department (family practice or pediatrics). **RESULTS:** Blood pressure was measured at 95% of well-child visits and 69% of nonwell-child outpatient visits. After adjusting for potential confounders, the percentage of nonwell-child visits with measurements increased linearly with patient age ($P < .001$). Overall, the proportion of children with annual blood pressure measurements was high and increased with age. Family practice clinics were more likely to adhere to blood pressure measurement guidelines compared with pediatric clinics ($P < .001$). **CONCLUSION:** These results

show good compliance with recommendations for routine blood pressure measurement in children and adolescents. Findings can inform the development of EHR-based clinical decision support tools to augment blood pressure screening and recognition of prehypertension and hypertension in pediatric patients.

Perkins BA; Halpern EM; Orszag A; Weisman A; Houlden RL; **Bergenstal RM**; Joyce C. Sensor-augmented pump and multiple daily injection therapy in the United States and Canada: post-hoc analysis of a randomized controlled trial. *Can J Diabetes*. 2015 Feb;39(1):50-4.

OBJECTIVE: Effectiveness of advanced technologies for diabetes management may differ depending on national healthcare models or population characteristics. In the setting of a cross-national trial, we aimed to compare efficacy of sensor-augmented pump (SAP) therapy in the United States (US) and Canada. **METHODS:** In the clinical trial Sensor-Augmented Pump Therapy for A1C Reduction (STAR 3), 329 adults with type 1 diabetes were randomly allocated to either SAP or glargine-based multiple daily injection (MDI) therapy at 26 US sites (n=271) and 4 Canadian sites (n=58). A bootstrap analysis was performed to confirm significant differences in baseline characteristics. For the primary analysis, we compared the baseline to 1-year change in glycated hemoglobin (A1C) between Canadian and US subjects. **RESULTS:** At baseline, compared with US subjects, Canadian subjects were more likely to be students (19% vs. 7%, $p<0.01$) and to consume alcohol (91% vs. 63%, $p<0.01$). Although Canadian subjects had greater A1C reductions from baseline compared with US subjects ($p=0.02$), the incremental benefit of SAP was similar in the US (SAP compared with MDI, $-0.93\% \pm 0.73\%$ vs. $-0.31\% \pm 0.81\%$, $p<0.001$) and Canada ($-1.14\% \pm 0.72\%$ vs. $-0.67\% \pm 0.71\%$, $p<0.001$). Mean sensor use was significantly higher in Canada than in the US (79% vs. 68% of the time, $p<0.001$). **CONCLUSIONS:** Despite differences in baseline characteristics and sensor adherence, SAP efficacy was similar between US and Canadian participants. As long as the intervention is administered with a similar level of expertise as was conducted in the trial, it is likely to be applicable in diverse clinical practice settings.

Pina IL; Cohen PD; Larson DB; Marion LN; Sills MR; **Solberg LI**; Zerzan J. A framework for describing health care delivery organizations and systems. *Am J Public Health*. 2015 Apr;105(4):670-9.

Abstract: Describing, evaluating, and conducting research on the questions raised by comparative effectiveness research and characterizing care delivery organizations of all kinds, from independent individual provider units to large integrated health systems, has become imperative. Recognizing this challenge, the Delivery Systems Committee, a subgroup of the Agency for Healthcare Research and Quality's Effective Health Care Stakeholders Group, which represents a wide diversity of perspectives on health care, created a draft framework with domains and elements that may be useful in characterizing various sizes and types of care delivery organizations and may contribute to key outcomes of interest. The framework may serve as the door to further studies in areas in which clear definitions and descriptions are lacking.

Piper MA; Evans CV; Burda BU; **Margolis KL**; O'Connor E; Whitlock EP. Diagnostic and predictive accuracy of blood pressure screening methods with consideration of rescreening intervals: a systematic review for the U.S. Preventive Services Task Force [systematic review]. *Ann Intern Med*. 2015 Feb 3;162(3):192-204. [Comment in: *Ann Intern Med*. 2015 Feb 3;162(3):233-4. *Ann Intern Med*. 2015 Aug 18;163(4):JC14.]

BACKGROUND: Elevated blood pressure (BP) is the largest contributing risk factor to all-cause and

cardiovascular mortality. **PURPOSE:** To update a systematic review on the benefits and harms of screening for high BP in adults and to summarize evidence on rescreening intervals and diagnostic and predictive accuracy of different BP methods for cardiovascular events. **DATA SOURCES:** Selected databases searched through 24 February 2014. **STUDY SELECTION:** Fair- and good-quality trials and diagnostic accuracy and cohort studies conducted in adults and published in English. **DATA EXTRACTION:** One investigator abstracted data, and a second checked for accuracy. Study quality was dual-reviewed. **DATA SYNTHESIS:** Ambulatory BP monitoring (ABPM) predicted long-term cardiovascular outcomes independently of office BP (hazard ratio range, 1.28 to 1.40, in 11 studies). Across 27 studies, 35% to 95% of persons with an elevated BP at screening remained hypertensive after nonoffice confirmatory testing. Cardiovascular outcomes in persons who were normotensive after confirmatory testing (isolated clinic hypertension) were similar to outcomes in those who were normotensive at screening. In 40 studies, hypertension incidence after rescreening varied considerably at each yearly interval up to 6 years. Intrastudy comparisons showed at least 2-fold higher incidence in older adults, those with high-normal BP, overweight and obese persons, and African Americans. **LIMITATION:** Few diagnostic accuracy studies of office BP methods and protocols in untreated adults. **CONCLUSION:** Evidence supports ABPM as the reference standard for confirming elevated office BP screening results to avoid misdiagnosis and overtreatment of persons with isolated clinic hypertension. Persons with BP in the high-normal range, older persons, those with an above-normal body mass index, and African Americans are at higher risk for hypertension on rescreening within 6 years than are persons without these risk factors.

Podgaetz E; **Harmon KR**; Andrade RS; Dincer HE. Endobronchial excision of a large near-occlusive tracheal tumor: operative and anesthetic considerations. *Ann Am Thorac Soc.* 2015 Dec;12(12):1881-4.

Polsky S; Donahoo WT; Lyons EE; Funk KL; **Elliott TE**; Williams R; Arterburn DE; Portz JD; Bayliss E. Evaluation of care management intensity and bariatric surgical weight loss. *Am J Manag Care.* 2015 Mar;21(3):182-9.

OBJECTIVES: To examine the effect of pre- and postoperative care management on weight loss following bariatric surgery. **STUDY DESIGN:** We conducted a retrospective cohort study supplemented by cross-sectional surveys across 9 bariatric surgery centers. **METHODS:** Based on the intensity of patient contact, care management intensity (CMI) was defined as high, moderate, or low for preoperative programs, and high or low for postoperative programs. Multivariable linear regression assessed 1- and 2-year postoperative weight loss as a function of CMI. **RESULTS:** In the 9 centers, 4433 individuals underwent Roux-en-Y gastric bypass or adjustable gastric band placement between 2005 and 2009. Two sites had low, 5 had moderate, and 2 had high preoperative CMI; 5 sites had low and 4 had high postoperative CMI. In analyses stratified by procedure and adjusted for multiple covariates including site, we found no statistically significant associations between either preoperative or postoperative CMI and post operative change in body mass index at year 1 or year 2. Results were limited by heterogeneity of care management across sites and an inability to assess adherence to care management programs. **CONCLUSIONS:** Prospective investigations that incorporate quantifiable measures of CMI and measure individual adherence to components of care management programs are needed to more accurately determine the effect of care management on weight loss. Additional investigations should examine the effect of CMI on other relevant outcomes, such as nutritional status and quality of life, that may be more directly affected by care management.

Powers MA; Bardsley J; Cypress M; Duker P; Funnell MM; Fischl AH; Maryniuk MD; Siminerio L; Vivian E. Diabetes self-management education and support in type 2 diabetes: a joint position statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics [review article]. *Diabetes Educ.* 2015 Aug;41(4):417-30.

Powers MA; Bardsley J; Cypress M; Duker P; Funnell MM; Fischl AH; Maryniuk MD; Siminerio L; Vivian E. Diabetes self-management education and support in type 2 diabetes: a joint position statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics [review article]. *J Acad Nutr Diet.* 2015 Aug;115(8):1323-34.

Powers MA; Bardsley J; Cypress M; Duker P; Funnell MM; Hess Fischl A; Maryniuk MD; Siminerio L; Vivian E. Diabetes self-management education and support in type 2 diabetes: a joint position statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics [review article]. *Diabetes Care.* 2015 Jul;38(7):1372-82. [Comment in: *Diabetes Care.* 2016 Jan;39(1):e17.]

Prekker ME; Gary BM; **Patel RA**; **Olives TD**; Driver B; Dunlop SJ; Miner JR; Gordon S; Schut R; Gray RO. A comparison of routine, opt-out HIV screening with the expected yield from physician-directed HIV testing in the ED. *Am J Emerg Med.* 2015 Apr;33(4):506-11.

OBJECTIVES: The Centers for Disease Control and Prevention recommends routine opt-out HIV screening in health care settings. Our goal was to evaluate the feasibility and yield of this strategy in the emergency department (ED) and to compare it to the expected yield of physician-directed testing. **METHODS:** This is a cross-sectional study in an urban ED during random shifts over 1 year. Patients were ineligible for screening if they were younger than 18 years or older than 64, a prisoner, a victim of sexual assault, in an ED resuscitation room, or had altered mental status. Research associates administered rapid HIV tests and conducted standardized interviews. The patients' ED physician, blinded to the HIV result, was asked if they would have ordered a rapid HIV test if it had been available. **RESULTS:** Of 7756 ED patients, 3957 (51%) were eligible for HIV screening, and 2811 (71%) of those did not opt out. Routine testing yielded 9 new HIV cases (0.32% of those tested; 95% confidence interval, 0.16%-0.63%). Physician-directed testing would have missed most of these infections: 2 of the 785 patients identified by physicians for testing would have been newly diagnosed with HIV (0.25%; 95% confidence interval, 0.04%-1.0%). Of the 9 new HIV cases, 5 established HIV care, and their median CD4 count was 201 cells/ μ L (range, 71-429 cells/ μ L). **CONCLUSIONS:** Routine opt-out HIV screening was feasible and accepted by a majority of ED patients. The yield of this strategy only modestly exceeded what may have been observed with physician-directed testing.

Probstfield JL; Hirsch IB; O'Brien KD; Davis BR; **Bergenstal RM**; Kingry C; Khakpour D; Pressel SL; Branch KR; Riddle MC; FLAT-SUGAR Trial Investigators. Design of FLAT-SUGAR: randomized trial of prandial insulin versus prandial GLP-1 receptor agonist together with basal insulin and metformin for high-risk type 2 diabetes. *Diabetes Care.* 2015 Aug;38(8):1558-66.

OBJECTIVE: Glycemic variability may contribute to adverse medical outcomes of type 2 diabetes, but prior therapies have had limited success in controlling glycemic fluctuations, and the hypothesis has not been adequately tested. **RESEARCH DESIGN AND METHODS:** People with insulin-requiring type 2 diabetes and

high cardiovascular risk were enrolled during a run-in period on basal-bolus insulin (BBI), and 102 were randomized to continued BBI or to basal insulin with a prandial GLP-1 receptor agonist (GLIPULIN) group, each seeking to maintain HbA(1c) levels between 6.7% and 7.3% (50-56 mmol/mol) for 6 months. The primary outcome measure was glycemic variability assessed by continuous glucose monitoring; other measures were HbA(1c), weight, circulating markers of inflammation and cardiovascular risk, albuminuria, and electrocardiographic patterns assessed by Holter monitoring. RESULTS: At randomization, the mean age of the population was 62 years, median duration of diabetes 15 years, mean BMI 34 kg/m(2), and mean HbA(1c) 7.9% (63 mmol/mol). Thirty-three percent had a prior cardiovascular event, 18% had microalbuminuria, and 3% had macroalbuminuria. At baseline, the continuous glucose monitoring coefficient of variation for glucose levels was similar in both groups. CONCLUSIONS: FLAT-SUGAR is a proof-of-concept study testing whether, in a population of individuals with type 2 diabetes and high cardiovascular risk, the GLIPULIN regimen can limit glycemic variability more effectively than BBI, reduce levels of cardiovascular risk markers, and favorably alter albuminuria and electrocardiographic patterns. We successfully randomized a population that has sufficient power to answer the primary question, address several secondary ones, and complete the protocol as designed.

Pronk NP. Design recommendations for active workplaces. *Ergonomics in Design*. 2015 Jul;23(3):36-40.

Pronk NP. Fitness of the US workforce. *Annu Rev Public Health*. 2015 Mar 18;36:131-49.

Abstract: Fitness matters for the prevention of premature death, chronic diseases, productivity loss, excess medical care costs, loss of income or family earnings, and other social and economic concerns. The workforce may be viewed as a corporate strategic asset, yet its fitness level appears to be relatively low and declining. Over the past half-century, obesity rates have doubled, physical activity levels are below par, and cardiorespiratory fitness often does not meet minimum acceptable job standards. During this time, daily occupational energy expenditure has decreased by more than 100 calories. Employers should consider best practices and design workplace wellness programs accordingly. Particular attention should be paid to human-centered cultures. Research should address ongoing surveillance needs regarding fitness of the US workforce and close gaps in the evidence base for fitness and business-relevant outcomes. Policy priorities should consider the impact of both state and federal regulations, adherence to current regulations that protect and promote worker health, and the introduction of incentives that allow employers to optimize the fitness of their workforce through supportive legislation and organizational policies.

Pronk NP. Kenneth H. Cooper: health promotion pioneer (game changer). *Am J Health Promot*. 2015 Sep-Oct;30(1):TAHP-9.

Pronk NP. Obesity and corporate America: getting to solutions. *ACSMs Health Fitness J*. 2015 Sep-Oct;19(5):50-3.

Abstract: This column discusses the consequences of obesity in the workplace and offers solutions on how to improve the health of the employee and the productivity of the company.

Pronk NP. Workforce fitness: description, contextual issues, and implications for public health. *Front Public Health Serv Syst Res.* 2015 Sep;4(5):19-24.

Abstract: Workforce fitness matters for the prevention of premature death, chronic diseases, productivity loss, excess medical care costs, loss of income or family earnings, and other social and economic concerns. Yet fitness levels appear to be relatively low and declining. Over the past half century obesity has doubled, physical activity levels are below par, and cardiorespiratory fitness often does not meet minimally acceptable job standards. During this time, daily occupational energy expenditure has decreased by more than 100 calories. It is recommended for employers to consider best practices and design workplace wellness programs accordingly. Regulations that protect and promote worker health, and the introduction of incentives for employers to optimize the fitness of their workforce represent important public health strategies.

Pronk NP; Baase C; Noyce J; Stevens DE. Corporate America and community health: exploring the business case for investment. *J Occup Environ Med.* 2015 May;57(5):493-500.

Abstract: OBJECTIVES: The principal aim of this project was to learn from corporate executives about the most important components of a business case for employer leadership in improving community health. METHODS: We used dialogue sessions to gain insight into this issue. RESULTS: The strongest elements included metrics and measurement, return on investment, communications, shared values, shared vision, shared definitions, and leadership. Important barriers included lack of understanding, lack of clear strategy, complexity of the problem, trust, lack of resources and leadership, policies and regulations, and leadership philosophy. Substantial variability was observed in the degree of understanding of the relationship between corporate health and community health. CONCLUSIONS: The business case for intentional and strategic corporate investment in community health occurs along a continuum has a set of clearly defined elements that address why investment may make sense, but also asks questions about the "what-to-do" and the "how-to-do-it."

Pronk NP; Lagerstrom D; **Haws JK.** LifeWorks@TURCK: a best practice case study on workplace well-being program design. *ACSMs Health Fitness J.* 2015 May-Jun;19(3):43-8.

Abstract: Health and education are the most important factors related to human capital. They form the basis of an individual's and a population's productivity and associate population health as a key ingredient to poverty reduction, economic growth, and long-term economic development of a region or entire societies. As such, both factors are extremely important to business and industry because they prepare the future workforce and (a) optimize the performance of current employees at work and in their home life, (b) positively influence people's lives in general, and (c) reduce overdependency on medical care resources. It is therefore not surprising that during times of ever-increasing medical care expenditures, of which much of the burden is borne by business and industry, employers look to workplace health protection and promotion to better manage their costs. Literature reviews also support the notion that workplace wellness programs can generate savings in medical care expenditures and reduce productivity loss. However, criticism of these claims has surfaced in recent years as several analyses indicate that the savings may not be as robust as reported. So, where does this inconsistent view of results come from? Why do conflicting results emerge from systematic reviews conducted by highly credible sources? The most recent National Worksite Health

Promotion survey points out that only 6.9% of companies have programs that may be considered comprehensive in design. Program design matters in producing results, and programs designed according to best practice principles tend to produce better outcomes. Therefore, a differentiation should be made between well-designed programs and those that do not adhere to well-established known practices related to successful programs.

Pronk NP; Remington PL; Community Preventive Services Task Force. Combined diet and physical activity promotion programs for prevention of diabetes: Community Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2015 Sep 15;163(6):465-8. [Comment in: *Ann Intern Med.* 2015 Sep 15;163(6):475-6.]

DESCRIPTION: Community Preventive Services Task Force recommendation on the use of combined diet and physical activity promotion programs to reduce progression to type 2 diabetes in persons at increased risk. **METHODS:** The Task Force commissioned an evidence review that assessed the benefits and harms of programs to promote and support individual improvements in diet, exercise, and weight and supervised a review on the economic efficiency of these programs in clinical trial, primary care, and primary care-referable settings. **POPULATION:** Adolescents and adults at increased risk for progression to type 2 diabetes. **RECOMMENDATION:** The Task Force recommends the use of combined diet and physical activity promotion programs by health care systems, communities, and other implementers to provide counseling and support to clients identified as being at increased risk for type 2 diabetes. Economic evidence indicates that these programs are cost-effective.

Ralles S; Agel J; Obermeier M; Tompkins MA. Incidence of secondary intra-articular injuries with time to anterior cruciate ligament reconstruction. *Am J Sports Med.* 2015 Jun;43(6):1373-9.

BACKGROUND: Precise locations of chondral and meniscal damage with increased time to anterior cruciate ligament reconstruction (ACLR) have not been well described. **PURPOSE/HYPOTHESIS:** The purpose of the study was to determine the relationship between delay in primary ACLR and incidence of secondary intra-articular injury. The hypothesis was that patients with increased time between initial injury and ACLR will exhibit greater incidence of secondary intra-articular injury when compared with those who receive surgical intervention promptly after injury. A second hypothesis was that patients with higher preinjury activity levels or older age will exhibit greater secondary injury when compared with those with minimal preinjury activity levels and younger age. **STUDY DESIGN:** Cohort study; Level of evidence, 3. **METHODS:** A retrospective review was performed on 1434 patients with an anterior cruciate ligament deficiency who underwent primary ACLR at a single institution between 2009 and 2013. Patients were grouped according to time to surgery after initial injury: 0-3, 4-12, and >12 months. Operative notes were used to analyze 10 variables across time-to-surgery groups: cartilage damage in the patella, trochlea, medial femoral condyle, lateral femoral condyle, medial tibial plateau, and lateral tibial plateau; medial and lateral meniscal injury; and the incidence of procedures involving either the meniscus or cartilage. Patient age and preinjury activity level were also analyzed for the 10 variables based on time-to-surgery groups. **RESULTS:** An association was noted between time to surgery and increased incidence of injury in the trochlea, lateral femoral condyle, medial tibial plateau, and medial meniscus ($P < .001$). Different significant findings within each age group were observed, but overall positive findings were seen in the same 4 locations described above. On the basis

of preinjury activity level, the less active patients were most at risk for medial meniscal and trochlear injury, while the more active patients were most at risk for medial tibial plateau injury with increased time from injury to ACLR. **CONCLUSION:** Increasing time from injury to ACLR was associated with increased incidence of secondary injury seen in the trochlea, lateral femoral condyle, medial tibial plateau, and medial meniscus. Separate analyses of patient age and preinjury activity level showed similar findings, thus supporting the primary analysis.

Rasimas JJ; Kivovich V; Sachdeva KK; Donovan JW. Antagonizing the errors of history: bedside experience with Flumazenil. *J Amer Assoc Emerg Psychiatr.* 2015 May;13(1):17-34.

Abstract: Sedatives are ubiquitous in the treatment of a variety of different conditions, with benzodiazepines being the chemical class most widely employed. Oversedation with negative effects on cognition, behavior, and functional status are the consequences of toxicity. Although a direct antidote is available, it is rarely used due to fears of withdrawal and seizures. Flumazenil is a benzodiazepine receptor antagonist approved for treatment of sedation and/or coma secondary to effects of GABA-ergic substances. It has been proposed as part of a “coma cocktail” to be given in cases of unresponsiveness of unknown etiology, and has also been effective in reversing paradoxical reactions to benzodiazepines, but flumazenil remains underutilized in clinical practice. At one toxicology center, however, flumazenil is routinely employed in the emergency department and acute hospital setting. It is given as an IV dose of 0.5 mg over 30 seconds, with repeat doses q1-2h PRN to sedated patients with relaxed autonomic indices and peripheral neurologic status. The following reports a six-year retrospective review of the practice and a oneyear close observational study of bedside use of the antidote. 731 patients were treated with flumazenil in the two methods of this study. The overall positive response rate was over 80%. There were no instances of arrhythmias or seizures. No major adverse events were documented for the retrospective study period. In the prospective year, there were 12 instances of side effects to the antidote out of 212 patients treated. No seizures, arrhythmias, or episodes of emesis were observed. Three patients experienced drooling, 7 experienced transient anxiety, and there were 2 separate episodes of odd behavior upon awakening from coma in a patient with CNS disease and personality disorder. Comorbid anxiety disorders were associated with anxiety upon arousal after flumazenil treatment, but no patient required medical intervention for this effect. Chronic use of benzodiazepines and underlying seizure disorders were not contraindications to flumazenil therapy. The antidote was employed in cases of accidental, purposeful, and iatrogenic toxicity to good effect without precipitation of problematic withdrawal. We conclude that flumazenil is a safe diagnostic and therapeutic antidote for cases of suspected toxic sedation. The antidote may prevent airway obstruction and aspiration and facilitate patients’ communication with medical providers. Iatrogenic interventions such as intubation and catheterization may be avoided. Concerns about its use in patients with seizure disorders and/or chronic use of benzodiazepines are unfounded based on our data. Side effects are rare and mild, and can be managed with caregiver presence and behavioral interventions.

Regan EA; Lynch DA; Curran-Everett D; Curtis JL; Austin JH; Grenier PA; Kauczor HU; Bailey WC; DeMeo DL; Casaburi RH; Friedman P; Van Beek EJ; Hokanson JE; Bowler RP; Beaty TH; Washko GR; Han MK; Kim V; Kim SS; Yagihashi K; Washington L; **McEvoy CE**; Tanner C; Mannino DM; Make BJ; Silverman EK; Crapo JD. Clinical and radiologic disease in smokers with normal spirometry. *JAMA Intern Med.* 2015 Sep;175(9):1539-49. PMID: PMC4564354. [Erratum in: *JAMA Intern Med.* 2015 Sep;175(9):1588.]

IMPORTANCE: Airflow obstruction on spirometry is universally used to define chronic obstructive pulmonary disease (COPD), and current or former smokers without airflow obstruction may assume that they are disease free. **OBJECTIVE:** To identify clinical and radiologic evidence of smoking-related disease in a cohort of current and former smokers who did not meet spirometric criteria for COPD, for whom we adopted the discarded label of Global Initiative for Obstructive Lung Disease (GOLD) 0. **DESIGN, SETTING, AND PARTICIPANTS:** Individuals from the Genetic Epidemiology of COPD (COPDGene) cross-sectional observational study completed spirometry, chest computed tomography (CT) scans, a 6-minute walk, and questionnaires. Participants were recruited from local communities at 21 sites across the United States. The GOLD 0 group (n = 4388) (ratio of forced expiratory volume in the first second of expiration [FEV1] to forced vital capacity >0.7 and FEV1 \geq 80% predicted) from the COPDGene study was compared with a GOLD 1 group (n = 794), COPD groups (n = 3690), and a group of never smokers (n = 108). Recruitment began in January 2008 and ended in July 2011. **MAIN OUTCOMES AND MEASURES:** Physical function impairments, respiratory symptoms, CT abnormalities, use of respiratory medications, and reduced respiratory-specific quality of life. **RESULTS:** One or more respiratory-related impairments were found in 54.1% (2375 of 4388) of the GOLD 0 group. The GOLD 0 group had worse quality of life (mean [SD] St George's Respiratory Questionnaire total score, 17.0 [18.0] vs 3.8 [6.8] for the never smokers; $P < .001$) and a lower 6-minute walk distance, and 42.3% (127 of 300) of the GOLD 0 group had CT evidence of emphysema or airway thickening. The FEV1 percent predicted distribution and mean for the GOLD 0 group were lower but still within the normal range for the population. Current smoking was associated with more respiratory symptoms, but former smokers had greater emphysema and gas trapping. Advancing age was associated with smoking cessation and with more CT findings of disease. Individuals with respiratory impairments were more likely to use respiratory medications, and the use of these medications was associated with worse disease. **CONCLUSIONS AND RELEVANCE:** Lung disease and impairments were common in smokers without spirometric COPD. Based on these results, we project that there are 35 million current and former smokers older than 55 years in the United States who may have unrecognized disease or impairment. The effect of chronic smoking on the lungs and the individual is substantially underestimated when using spirometry alone.

Rhodes DJ; Radecki Breitkopf C; **Ziegenfuss JY**; Jenkins SM; Vachon CM. Awareness of breast density and its impact on breast cancer detection and risk. *J Clin Oncol.* 2015 Apr 1;33(10):1143-50. PMID: PMC4551864.

PURPOSE: Legislation mandating disclosure of breast density (BD) information has passed in 21 states; however, actual awareness of BD and knowledge of its impact on breast cancer detection and risk are unknown. **METHODS:** We conducted a national cross-sectional survey administered in English and Spanish using a probability-based sample of screening-age women, with oversampling of Connecticut, the only state with BD legislation in effect for > 1 year before the survey. **RESULTS:** Of 2,311 women surveyed, 65% responded. Overall, 58% of women had heard of BD, 49% knew that BD affects breast cancer detection, and

53% knew that BD affects cancer risk. After multivariable adjustment, increased BD awareness was associated with white non-Hispanic race/ethnicity (Hispanic v white non-Hispanic: odds ratio [OR], 0.23; $P < .001$), household income (OR, 1.07 per category increase; $P < .001$), education (OR, 1.19 per category increase; $P < .001$), diagnostic evaluation after a mammogram (OR, 2.64; $P < .001$), and postmenopausal hormone therapy (OR, 1.69; $P = .002$). Knowledge of the masking effect of BD was associated with higher household income (OR, 1.10; $P < .001$), education (OR, 1.22; $P = .01$), prior breast biopsy (OR, 2.16; $P < .001$), and residing in Connecticut (Connecticut v other states: OR, 3.82; $P = .003$). Connecticut residents were also more likely to have discussed their BD with a health care provider (67% v 43% for residents of other US states; $P = .001$). **CONCLUSION:** Disparities in BD awareness and knowledge exist by race/ethnicity, education, and income. BD legislation seems to be effective in increasing knowledge of BD impact on breast cancer detection. These findings support continued and targeted efforts to improve BD awareness and knowledge among women eligible for screening mammography.

Rindal DB; Gordan VV; Litaker MS; Bader JD; Fellows JL; Qvist V; Wallace-Dawson MC; Anderson ML; Gilbert GH; Dental PBRN Collaborative Group. Methods dentists use to diagnose primary caries lesions prior to restorative treatment: Findings from The Dental PBRN. *Tex Dent J*. 2015 Feb;132(2):102-9. Project Number: A04-081 Dental PBRN.

OBJECTIVE: To (1) quantify the diagnostic techniques used by Dental Practice-Based Research Network (DPBRN) dentists before they decide to treat primary caries lesions surgically and (2) examine whether certain dentist, practice, and patient characteristics are associated with their use. **METHODS:** A total of 228 DPBRN dentists recorded information on 5,676 consecutive restorations inserted due to primary caries lesions on 3,751 patients. Practitioner-investigators placed a mean of 24.9 (SD = 12.4) restorations. Lesions were categorized as posterior proximal, anterior proximal, posterior occlusal, posterior smooth, or anterior smooth. Techniques used to diagnose the lesion were categorized as clinical assessment, radiographs, and/or optical. Statistical analysis utilized generalized mixed-model ANOVA to account for the hierarchical structure of the data. **RESULTS:** By lesion category, the diagnostic technique combinations used most frequently were clinical assessment plus radiographs for posterior proximal (47%), clinical assessment for anterior proximal (51%), clinical assessment for posterior occlusal (46%), clinical assessment for posterior smooth (77%), and clinical assessment for anterior smooth (80%). Diagnostic technique was significantly associated with lesion category after adjusting for clustering in dentists ($p < 0.0001$). **CONCLUSION:** These results--obtained during actual clinical procedures rather than from questionnaire-based hypothetical scenarios--quantified the diagnostic techniques most commonly used during the actual delivery of routine restorative care. Diagnostic technique varied by lesion category and with certain practice and patient characteristics.

Rohman E; Steubs JT; **Tompkins MA.** Changes in involved and uninvolved limb function during rehabilitation after anterior cruciate ligament reconstruction: implications for Limb Symmetry Index measures. *Am J Sports Med*. 2015 Jun;43(6):1391-8.

BACKGROUND: Functional testing is used to assess anterior cruciate ligament (ACL) reconstruction rehabilitation, with the goal of symmetric ability. The pattern of change in the uninvolved limb's function during rehabilitation is not established. **HYPOTHESES:** (1) Involved and uninvolved limb ability increases during rehabilitation, but the uninvolved limb ability increases to a lesser degree. (2) Hop tests will show

larger initial asymmetry and will improve the most with rehabilitation. **STUDY DESIGN:** Cohort study; Level of evidence, 3. **METHODS:** This was a retrospective case series of 122 patients who underwent ACL reconstruction at our ambulatory surgery center and received multiple postoperative Standard Functional Tests (SFTs) between October 2009 and October 2013. Ten of the 12 individual tests within the SFT battery were analyzed. The patients' earliest and latest SFTs were compared for changes in Limb Symmetry Index (LSI) and absolute function in each limb. We also analyzed the subgroup with SFTs (n = 38) at both 4 and 6 months postoperatively. **RESULTS:** In all patients with multiple SFTs, involved limb performance increased in all tests except eyes-closed stork. Uninvolved limb performance increased in 4 SFT component tests and decreased in none. LSI significantly improved in 6 tests, all of which also showed involved limb improvement that was significant. Of these 6 tests, 5 showed initial LSI below 90%: single-leg squat, retro step-up, single-leg hop, crossover triple hop, and timed hop. Retro step-up and single-leg hop showed LSI improvements greater than 10 percentage points. In patients with 4- and 6-month data, involved limb performance increased in all tests except single-leg triple hop. Uninvolved limb performance increased in 5 SFT component tests and decreased in none. LSI significantly improved in 4 tests, all of which had initial LSI below 90%, and showed involved limb improvement that was significant. Retro step-up, single-leg hop, and crossover triple hop showed LSI improvements greater than 10 percentage points. **CONCLUSION:** During ACL reconstruction rehabilitation, LSI improvements indicated absolute increases in involved limb ability and were not attributable to uninvolved limb deterioration. The single-leg squat, retro step-up, single-leg hop, crossover triple hop, and timed hop are suggested as highly useful tests, since all showed initial LSI below 90%, with significant LSI improvement after rehabilitation.

Rolnick SJ; Jackson JM; DeFor TA; Flottemesch TJ. Fluoride varnish application in the primary care setting: a clinical study. *J Clin Pediatr Dent.* 2015 Summer;39(4):311-4.

OBJECTIVES: The study objectives were twofold: 1. To examine how an intervention to apply fluoride varnish (FV) in a primary health setting to all young, low-income children was implemented and sustained and 2. To assess the feasibility of tracking medical care utilization in this population. **STUDY DESIGN:** The study included children age 1-5, insured through a government program, seen (7/1/2010-4/30/2012). Data on age, race, sex, clinic encounter, eligibility for and receipt of FV was obtained. The level of data in primary care, specialty care, urgent care and hospitalizations to assess feasibility of future patient tracking was also acquired. **RESULTS:** Of 12,067 children, 85% received FV. Differences were found by age (youngest had highest rates). Small differences by race (81%-88%, highest in Blacks) was found. No differences were found by sex. Ability to track over time was mixed. Approximately 50% had comprehensive data. However, primary care visit and hospitalization data was available on a larger percentage. **CONCLUSIONS:** FV programs can be introduced in the primary care setting and sustained. Further, long-term follow up is possible. Future study of such cohorts capturing health and cost benefits of oral health prevention efforts is needed.

Rosenbloom MH; Tartaglia MC; Forner SA; Wong KK; Kuo A; Johnson DY; Colacurcio V; Andrews BD; Miller BL; DeArmond SJ; Geschwind MD. Metabolic disorders with clinical and radiologic features of sporadic Creutzfeldt-Jakob disease. *Neurol Clin Pract.* 2015 Apr;5(2):108-15. PMID: PMC4404281.

Abstract: Two patients with metabolic disorders presented with clinical and radiologic features suggestive of sporadic Creutzfeldt-Jakob disease (sCJD). Case 1 was a 50-year-old man with rapid decline in cognitive,

behavioral, and motor function following new-onset seizures. MRI was read as consistent with CJD, and he was referred for a treatment trial, but it was determined that he recently experienced rapid correction of hyponatremia resulting in extrapontine myelinolysis. Case 2 was a 66-year-old woman with poorly controlled diabetes mellitus who was found unconscious after a suspected insulin overdose. Examination showed altered mental status and neuroimaging was remarkable for cortical/striatal hyperintensities suggestive of sCJD. On autopsy, she had hypoglycemic/hypoxic nerve cell loss. Although characteristic MRI findings have high sensitivity and specificity for sCJD, potentially reversible metabolic disorders sometimes present rapidly and can resemble sCJD both clinically and radiologically. These cases highlight the importance of establishing a broad differential diagnosis when evaluating a patient with suspected sCJD.

Salzman JG; Frascone RJ; Burkhardt N; Holcomb R; Wewerka SS; Swor RA; Mahoney BD; Wayne MA; Domeier RM; Olinger ML; Aufderheide TP; Lurie KG. The association of health status and providing consent to continued participation in an out-of-hospital cardiac arrest trial performed under exception from informed consent. *Acad Emerg Med.* 2015 Mar;22(3):347-53.

OBJECTIVES: Emergency medical research performed under federal regulation 21 section sign CFR 50.24 provides a means to protect human subjects and investigate novel time-sensitive treatments. Although prospective individual consent is not required for studies conducted under this regulation, consent from a legally authorized representative (LAR) or the patient at the earliest feasible opportunity is required to obtain short- and long-term outcome data. The objective of this study was to determine which demographic, cardiac arrest, and patient outcome characteristics predicted the likelihood of obtaining informed consent following enrollment under exception from informed consent in a multicenter cardiac arrest study.

METHODS: This investigation was an analysis of data collected during a multisite, randomized, controlled, out-of-hospital cardiac arrest clinical trial performed under 21 section sign CFR 50.24. Research personnel attempted to obtain informed consent from LARs and subjects for medical records review of primary outcome data, as well as consent for neurologic outcome assessments up to 1 year post-cardiac arrest. Hospital discharge and neurologic status were obtained from public records and/or medical records up until the time consent was formally denied, in accordance with federal regulations and guidance. Local institutional review boards also allowed medical records review for cases where consent was neither obtained nor declined despite multiple consent attempts. Patient demographic, cardiac arrest, and clinical outcome characteristics were analyzed in univariate multinomial regression models, with consent status (obtained, denied, neither obtained nor denied) as the dependent variable. A multivariate multinomial logistic regression was then performed. An exploratory secondary analysis following the same process was performed after assigning patients who neither consented nor declined to the declined consent group.

RESULTS: Among a total study population of 1,655 cardiac arrest subjects, 457 were transported and had consent attempted (27.6%). The survival status and neurologic function at the time of hospital discharge were known in 440 of 457 (96%) subjects. In the multivariate analysis, initial rhythm of ventricular fibrillation/ventricular tachycardia (VF/VT) and survival with good neurologic outcome were strong predictors of obtaining consent (odds ratio [OR] = 3.15, 95% confidence interval [CI] = 1.73 to 5.75; OR = 7.64, 95% CI = 2.28 to 25.63, respectively). The exploratory secondary analysis also showed initial rhythm of VF/VT and survival with good neurologic outcome as strong predictors of obtaining consent (OR = 1.86, 95% CI = 1.17 to 2.95; OR = 4.52, 95% CI = 2.21 to 9.26, respectively). **CONCLUSIONS:** Initial arrest rhythm and survival with good neurologic outcome were highly predictive of obtaining consent in this cardiac arrest trial.

This phenomenon could result in underrepresentation of outcome data in the study arm with the worse outcome and represents a significant potential confounder in studies performed under 21 section sign CFR 50.24. Future revisions to the exception from informed consent regulations should allow access to critical survival data recorded as part of standard documentation, regardless of patient consent status.

Samary CS; Santos RS; Santos CL; Felix NS; Bentes M; Barboza T; Capelozzi VL; Morales MM; Garcia CS; Souza SA; **Marini JJ**; Gama de Abreu M; Silva PL; Pelosi P; Rocco PR. Biological impact of transpulmonary driving pressure in experimental acute respiratory distress syndrome. *Anesthesiology*. 2015 Aug;123 (2):423-33.

BACKGROUND: Ventilator-induced lung injury has been attributed to the interaction of several factors: tidal volume (VT), positive end-expiratory pressure (PEEP), transpulmonary driving pressure (difference between transpulmonary pressure at end-inspiration and end-expiration, DeltaP,L), and respiratory system plateau pressure (Pplat,rs). **METHODS:** Forty-eight Wistar rats received Escherichia coli lipopolysaccharide intratracheally. After 24 h, animals were randomized into combinations of VT and PEEP, yielding three different DeltaP,L levels: DeltaP,LLOW (VT = 6 ml/kg, PEEP = 3 cm H2O); DeltaP,LMEAN (VT = 13 ml/kg, PEEP = 3 cm H2O or VT = 6 ml/kg, PEEP = 9.5 cm H2O); and DeltaP,LHIGH (VT = 22 ml/kg, PEEP = 3 cm H2O or VT = 6 ml/kg, PEEP = 11 cm H2O). In other groups, at low VT, PEEP was adjusted to obtain a Pplat,rs similar to that achieved with DeltaP,LMEAN and DeltaP,LHIGH at high VT. **RESULTS:** At DeltaP,LLOW, expressions of interleukin (IL)-6, receptor for advanced glycation end products (RAGE), and amphiregulin were reduced, despite morphometric evidence of alveolar collapse. At DeltaP,LHIGH (VT = 6 ml/kg and PEEP = 11 cm H2O), lungs were fully open and IL-6 and RAGE were reduced compared with DeltaP,LMEAN (27.4 +/- 12.9 vs. 41.6 +/- 14.1 and 0.6 +/- 0.2 vs. 1.4 +/- 0.3, respectively), despite increased hyperinflation and amphiregulin expression. At DeltaP,LMEAN (VT = 6 ml/kg and PEEP = 9.5 cm H2O), when PEEP was not high enough to keep lungs open, IL-6, RAGE, and amphiregulin expression increased compared with DeltaP,LLOW (41.6 +/- 14.1 vs. 9.0 +/- 9.8, 1.4 +/- 0.3 vs. 0.6 +/- 0.2, and 6.7 +/- 0.8 vs. 2.2 +/- 1.0, respectively). At Pplat,rs similar to that achieved with DeltaP,LMEAN and DeltaP,LHIGH, higher VT and lower PEEP reduced IL-6 and RAGE expression. **CONCLUSION:** In the acute respiratory distress syndrome model used in this experiment, two strategies minimized ventilator-induced lung injury: (1) low VT and PEEP, yielding low DeltaP,L and Pplat,rs; and (2) low VT associated with a PEEP level sufficient to keep the lungs open.

Sandhu A; Ho PM; **Asche SE**; Magid DJ; **Margolis KL**; **Sperl-Hillen JM**; **Rush WA**; Price DW; **Ekstrom HL**; Tavel HM; **Godlevsky OV**; **O'Connor PJ**. Recidivism to uncontrolled blood pressure in patients with previously controlled hypertension. *Am Heart J*. 2015 Jun;169(6):791-7. Project Number: A07-090 PPL.

Abstract: **BACKGROUND:** Control of hypertension has improved nationally with focus on identifying and treating elevated blood pressures (BPs) to guideline recommended levels. However, once BP control is achieved, the frequency in which BP falls out of control and the factors associated with BP recidivism is unknown. In this retrospective cohort study conducted at 2 large, integrated health care systems we sought to examine rates and predictors of BP recidivism in adults with controlled hypertension. No change for methods, results and conclusion. **METHODS:** Patients with a prior diagnosis of hypertension based on a combination of International Classification of Diseases, Ninth Revision, codes, receipt of antihypertensive medications, and/or elevated BP readings were eligible to be included. We defined controlled hypertension as normotensive BP readings (<140/90 mmHg or <130/80 mmHg in those with diabetes) at 2 consecutive

primary care visits. We then followed up patients for BP recidivism defined by the date of the second of 2 consecutive BP readings $>140/90$ mmHg ($>130/80$ mmHg for diabetes or chronic kidney disease) during a median follow-up period of 16.6 months. Cox proportional hazards regression assessed the association between patient characteristics, comorbidities, medication adherence, and provider medication management with time to BP recidivism. **RESULTS:** A total of 23,321 patients with controlled hypertension were included in this study. The proportion of patients with hypertension recidivism was 24.1% over the 16.6-month study period. For those with BP recidivism, the median time to relapse was 7.3 months. In multivariate analysis, those with diabetes (hazard ratio [HR] 3.99, CI 3.67-4.33), high normal baseline BP (for systolic BP HR 1.03, CI 1.03-1.04), or low antihypertensive medication adherence (HR 1.20, CI 1.11-1.29) had significantly higher rates of hypertension recidivism. Limitations of this work include demographics of our patient sample, which may not reflect other communities in addition to the intrinsic limitations of office-based BP measurements. **CONCLUSIONS:** Hypertensive recidivism occurs in a significant portion of patients with previously well-controlled BP and accounts for a substantial fraction of patients with poorly controlled hypertension. Systematic identification of those most at risk for recidivism and implementation of strategies to minimize hypertension recidivism may improve overall levels of BP control and hypertension-related quality measures.

Sandoval Y; Brilakis ES; **Canoniero MJ**; Yannopoulos D; Garcia S. Complete versus incomplete coronary revascularization of patients with multivessel coronary artery disease. *Curr Treat Options Cardiovasc Med*. 2015 Mar;17(3):366.

OPINION STATEMENT: The treatment of patients with multivessel coronary artery disease in need of a revascularization procedure is influenced by the clinical situation (stable vs. unstable), comorbid conditions (diabetes mellitus), and anatomical variables (proximal left anterior artery stenosis, left ventricular dysfunction). Given the invasive nature of coronary artery bypass graft (CABG) operations, surgeons have embraced the concept of complete anatomical revascularization in one procedural stage since the inception of CABG surgery. However, achieving complete coronary revascularization has been more challenging with percutaneous coronary intervention (PCI), and as a result, incomplete procedures are far more common than complete ones. Data continue to emerge on the potential benefits of complete revascularization on clinical outcomes and suggest that complete revascularization should be the goal of therapy whenever possible. The heart team should carefully review the degree to which each revascularization modality can achieve this goal during procedural planning.

Schauer DP; Arterburn DE; Livingston EH; Coleman KJ; Sidney S; Fisher D; **O'Connor PJ**; Fischer D; Eckman MH. Impact of bariatric surgery on life expectancy in severely obese patients with diabetes: a decision analysis. *Ann Surg*. 2015 May;261(5):914-9. PMID: PMC4388039. Project Number: A08-159 DEcIDE Bariatric.

OBJECTIVE: To create a decision analytic model to estimate the balance between treatment risks and benefits for severely obese patients with diabetes. **BACKGROUND:** Bariatric surgery leads to many desirable metabolic changes, but long-term impact of bariatric surgery on life expectancy in patients with diabetes has not yet been quantified. **METHODS:** We developed a Markov state transition model with multiple Cox proportional hazards models and logistic regression models as inputs to compare bariatric surgery versus no surgical treatment for severely obese diabetic patients. The model is informed by data from 3 large cohorts:

(1) 159,000 severely obese diabetic patients (4185 had bariatric surgery) from 3 HMO Research Network sites; (2) 23,000 subjects from the Nationwide Inpatient Sample; and (3) 18,000 subjects from the National Health Interview Survey linked to the National Death Index. RESULTS: In our main analyses, we found that a 45-year-old woman with diabetes and a body mass index (BMI) of 45 kg/m gained an additional 6.7 years of life expectancy with bariatric surgery (38.4 years with surgery vs 31.7 years without surgery). Sensitivity analyses revealed that the gain in life expectancy decreased with increasing BMI, until a BMI of 62 kg/m is reached, at which point nonsurgical treatment was associated with greater life expectancy. Similar results were seen for both men and women in all age groups. CONCLUSIONS: For most severely obese patients with diabetes, bariatric surgery seems to improve life expectancy; however, surgery may reduce life expectancy for the super obese with BMIs over 62 kg/m.

Schmittiel JA; **Desai JR**; Schroeder EB; Paolino AR; Nichols GA; Lawrence JM; **O'Connor PJ**; **Ohnsorg KA**; Newton KM; Steiner JF. Methods for engaging stakeholders in comparative effectiveness research: A patient-centered approach to improving diabetes care. *Healthc (Amst)*. 2015 Jun;3(2):80-8. Project Number: A13-132 SUPREME 2.

Schnell O; Barnard K; **Bergenstal RM**; Bosi E; Garg S; Guerci B; Haak T; Hirsch IB; Ji L; Joshi SR; Kamp M; Laffel L; Mathieu C; Polonsky WH; Snoek F; Home P. Clinical utility of SMBG: recommendations on the use and reporting of SMBG in clinical research. *Diabetes Care*. 2015 Sep;38(9):1627-33.

Schousboe JT; Ensrud KE. Diagnostic criteria for osteoporosis should not be expanded. *Lancet Diabetes Endocrinol*. 2015 Apr;3(4):236-8.

Schroeder EB; **Desai JR**; Schmittiel JA; Paolino AR; Schneider JL; Goodrich GK; Lawrence JM; Newton KM; Nichols GA; **O'Connor PJ**; Fitz-Randolph M; Steiner JF. An innovative approach to informing research: gathering perspectives on diabetes care challenges from an online patient community. *Interact J Med Res*. 2015 Jun;4(2):e13. PMCID: PMC4526969.

BACKGROUND: Funding agencies and researchers increasingly recognize the importance of patient stakeholder engagement in research. Despite calls for greater patient engagement, few studies have engaged a broad-based online community of patient stakeholders in the early stages of the research development process. OBJECTIVE: The objective of our study was to inform a research priority-setting agenda by using a Web-based survey to gather perceptions of important and difficult aspects of diabetes care from patient members of a social networking site-based community. METHODS: Invitations to participate in a Web-based survey were sent by email to members of the PatientsLikeMe online diabetes community. The survey asked both quantitative and qualitative questions addressing individuals' level of difficulty with diabetes care, provider communication, medication management, diet and exercise, and relationships with others. Qualitative responses were analyzed using content analysis. RESULTS: Of 6219 PatientsLikeMe members with diabetes who were sent survey invitations, 1044 (16.79%) opened the invitation and 320 (5.15% of 6219; 30.65% of 1044) completed the survey within 23 days. Of the 320 respondents, 33 (10.3%) reported having Type 1 diabetes; 107 (33.4%), Type 2 diabetes and taking insulin; and 180 (56.3%), Type 2 diabetes and taking oral agents or controlling their diabetes with lifestyle modifications. Compared to 2005-2010 National Health and Nutrition Examination Survey data for

individuals with diabetes, our respondents were younger (mean age 55.8 years, SD 9.9 vs 59.4 years, SE 0.5); less likely to be male (111/320, 34.6% vs 48.4%); and less likely to be a racial or ethnic minority (40/312, 12.8% vs 37.5%). Of 29 potential challenges in diabetes care, 19 were categorized as difficult by 20% or more of respondents. Both quantitative and qualitative results indicated that top patient challenges were lifestyle concerns (diet, physical activity, weight, and stress) and interpersonal concerns (trying not to be a burden to others, getting support from family/friends). In our quantitative analysis, similar concerns were expressed across patient subgroups. **CONCLUSIONS:** Lifestyle and interpersonal factors were particularly challenging for our online sample of adults with Type 1 or Type 2 diabetes. Our study demonstrates the innovative use of social networking sites and online communities to gather rapid, meaningful, and relevant patient perspectives that can be used to inform the development of research agendas.

Schroeder EB; Powers JD; **O'Connor PJ**; Nichols GA; Xu S; **Desai JR**; Karter AJ; Morales LS; Newton KM; Pathak RD; **Vazquez-Benitez G**; Raebel MA; Butler MG; Lafata JE; Reynolds K; Thomas A; Waitzfelder BE; Steiner JF; SUPREME-DM Study Group. Prevalence of chronic kidney disease among individuals with diabetes in the SUPREME-DM Project, 2005-2011. *J Diabetes Complications*. 2015 Jul;29(5):637-43. Project Number: A13-132 SUPREME DM.

AIMS: Diabetes is a leading cause of chronic kidney disease (CKD). Different methods of CKD ascertainment may impact prevalence estimates. We used data from 11 integrated health systems in the United States to estimate CKD prevalence in adults with diabetes (2005-2011), and compare the effect of different ascertainment methods on prevalence estimates. **METHODS:** We used the SUPREME-DM DataLink (n = 879,312) to estimate annual CKD prevalence. Methods of CKD ascertainment included: diagnosis codes alone, impaired estimated glomerular filtration rate (eGFR) alone (eGFR < 60 mL/min/1.73 m²), albuminuria alone (spot urine albumin creatinine ratio > 30 mg/g or equivalent), and combinations of these approaches. **RESULTS:** CKD prevalence was 20.0% using diagnosis codes, 17.7% using impaired eGFR, 11.9% using albuminuria, and 32.7% when one or more method suggested CKD. The criteria had poor concordance. After age- and sex-standardization to the 2010 U.S. Census population, prevalence using diagnosis codes increased from 10.7% in 2005 to 14.3% in 2011 (P < 0.001). The prevalence using eGFR decreased from 9.7% in 2005 to 8.6% in 2011 (P < 0.001). **CONCLUSIONS:** Our data indicate that CKD prevalence and prevalence trends differ according to the CKD ascertainment method, highlighting the necessity for multiple sources of data to accurately estimate and track CKD prevalence.

Schwartz AV; Chen H; Ambrosius WT; Sood A; Josse RG; Bonds DE; Schnall AM; Vittinghoff E; Bauer DC; Banerji MA; Cohen RM; Hamilton BP; Isakova T; Sellmeyer DE; Simmons DL; Shibli-Rahhal A; Williamson JD; **Margolis KL**. Effects of TZD use and discontinuation on fracture rates in ACCORD Bone Study. *J Clin Endocrinol Metab*. 2015 Nov;100(11):4059-66. Project Number: A06-045 ACCORD BONE.

CONTEXT: In trials, thiazolidinediones (TZDs) increase fracture risk in women, but the effects of discontinuation are unknown. **OBJECTIVE:** The objective was to investigate the effects of TZD use and discontinuation on fractures in women and men. **DESIGN:** This was a longitudinal observational cohort study using data from the Action to Control Cardiovascular Risk in Diabetes (ACCORD) trial bone ancillary study. Duration of TZD use and discontinuation during ACCORD, assessed every 2-4 months at clinic visits, were modeled as time-varying covariates in proportional hazards models for occurrence of first non-spine fracture. **PARTICIPANTS:** We studied a total of 6865 participants in ACCORD BONE. **MAIN OUTCOME**

MEASURES: Main outcome measures were centrally adjudicated non-spine fracture. **RESULTS:** Average age was 62.4 (SD, 6.6) years; average duration of diabetes was 11.1 (SD, 7.8) years. Rosiglitazone was used by 74% and pioglitazone by 13% of participants. During a mean follow-up of 4.8 (SD, 1.5) years, 262 men and 287 women experienced at least one non-spine fracture. The fracture rate was higher in women with 1-2 years of TZD use (hazard ratio [HR] = 2.32; 95% confidence interval [CI], 1.49, 3.62) or >2 years of TZD use (HR = 2.01; 95% CI, 1.35, 2.98), compared with no use. The fracture rate was reduced in women who had discontinued TZD use for 1-2 years (HR = 0.57; 95% CI, 0.35, 0.92) or > 2 years (HR = 0.42; 95% CI, 0.24, 0.74) compared with current users. TZD use and discontinuation were not associated with non-spine fractures in men. **CONCLUSIONS:** TZD use was associated with increased non-spine fractures in women, but not men, with type 2 diabetes. When women discontinued TZD use, the fracture effects were attenuated.

Seburg EM; McMorris BJ; Garwick AW; Scal PB. Disability and discussions of health-related behaviors between youth and health care providers. *J Adolesc Health*. 2015 Jul;57(1):81-6.

PURPOSE: The purpose of this study was to examine the likelihood of discussing health-related behaviors with health care providers (HCPs), comparing youth with and without mobility limitations (MLs). **METHODS:** Analyses were conducted using baseline data from the MyPath study. Adolescents and young adults between the ages of 16 and 24 years completed a survey about their health care and health-related experiences. Analyses assessed the relationship between mobility status and discussing health-related behaviors with an HCP. Secondary analyses examined the extent to which adolescents and young adults' engagement in these behaviors was associated with these discussions. **RESULTS:** Overall, we found low rates of discussions about the following topics: substance use, sexual and reproductive health, healthy eating, weight, and physical activity. Adolescents and young adults with MLs were less likely to report discussing substance use and sexual and reproductive health, but were more likely to discuss healthy eating, weight, and physical activity than peers without MLs. Those adolescents and young adults who reported substance use had higher odds of discussing this topic and those who reported having sexual intercourse had higher odds of discussing sexual and reproductive health. **CONCLUSIONS:** Results suggest mobility status and a young person's engagement in health risk and promoting behaviors are associated with the likelihood of discussing these behaviors with an HCP. It is important that HCPs view adolescents and young adults with MLs as needing the same counseling and guidance about health-related behaviors as any young person presenting him/herself for treatment.

Seburg EM; Olson-Bullis BA; Bredson DM; Hayes MG; Sherwood NE. A review of primary care-based childhood obesity prevention and treatment interventions [review article]. *Curr Obes Rep*. 2015 Jun;4(2):157-73. PMID: PMC4512668. Project Number: A08-132 Healthy Homes/Kids 5-9.

Abstract: Effective obesity prevention and treatment interventions targeting children and their families are needed to help curb the obesity epidemic. Pediatric primary care is a promising setting for these interventions, and a growing number of studies are set in this context. This review aims to identify randomized controlled trials of pediatric primary care-based obesity interventions. A literature search of 3 databases retrieved 2947 publications, of which 2899 publications were excluded after abstract (n=2722) and full-text review (n=177). Forty-eight publications, representing 31 studies, were included in the review. Eight studies demonstrated a significant intervention effect on child weight outcomes (e.g., BMI z-score,

weight-for-length percentile). Effective interventions were mainly treatment interventions, and tended to focus on multiple behaviors, contain weight management components, and include monitoring of weight-related behaviors (e.g., dietary intake, physical activity, or sedentary behaviors). Overall, results demonstrate modest support for the efficacy of obesity treatment interventions set in primary care.

Senso MM; Trost SG; Crain AL; Seburg EM; Anderson JD; Sherwood NE. Activity patterns of preschool-aged children at risk for obesity. *J Phys Act Health*. 2015 Jun;12(6):861-8. PMID: PMC4329288.

BACKGROUND: Although the prevalence of obesity in young children highlights the importance of early interventions to promote physical activity (PA), there are limited data on activity patterns in this age group. The purpose of this study is to describe activity patterns in preschool-aged children and explore differences by weight status. **METHODS:** Analyses use baseline data from Healthy Homes/Healthy Kids- Preschool, a pilot obesity prevention trial of preschool-aged children overweight or at risk for overweight. A modified parent-reported version of the previous-day PA recall was used to summarize types of activity. Accelerometry was used to summarize daily and hourly activity patterns. **RESULTS:** "Playing with toys" accounted for the largest proportion of a child's previous day, followed by "meals and snacks," and "chores." Accelerometry-measured daily time spent in sedentary behavior, light PA, and moderate-to-vigorous PA (MVPA) was 412, 247, and 69 minutes, respectively. Percent of hourly time spent in MVPA ranged from 3% to 13%, peaking in the late morning and evening hours. There were no statistically significant MVPA differences by weight status. **CONCLUSIONS:** This study extends our understanding of activity types, amounts, and patterns in preschool-age children and warrants further exploration of differences in physical activity patterns by weight status.

Sharp ME; Caccappolo E; Mejia-Santana H; Tang MX; Rosado L; Orbe Reilly M; Ruiz D; Louis ED; Comella C; **Nance MA**; Bressman S; Scott WK; Tanner C; Waters C; Fahn S; Cote L; Ford B; Rezak M; Novak K; Friedman JH; Pfeiffer RF; Payami H; Molho E; Factor SA; Nutt JG; Serrano C; Arroyo M; Pauciulo MW; Nichols WC; Clark LN; Alcalay RN; Marder KS. The relationship between obsessive-compulsive symptoms and PARKIN genotype: The CORE-PD study. *Mov Disord*. 2015 Feb;30(2):278-83. PMID: PMC4318772.

BACKGROUND: Few studies have systematically investigated the association between PARKIN genotype and psychiatric co-morbidities of Parkinson's disease (PD). PARKIN-associated PD is characterized by severe nigral dopaminergic neuronal loss, a finding that may have implications for behaviors rooted in dopaminergic circuits such as obsessive-compulsive symptoms (OCS). **METHODS:** The Schedule of Compulsions and Obsessions Patient Inventory (SCOPI) was administered to 104 patients with early-onset PD and 257 asymptomatic first-degree relatives. Carriers of one and two PARKIN mutations were compared with noncarriers. **RESULTS:** Among patients, carriers scored lower than noncarriers in adjusted models (one-mutation: 13.9 point difference, $P = 0.03$; two-mutation: 24.1, $P = 0.001$), where lower scores indicate less OCS. Among asymptomatic relatives, a trend toward the opposite was seen: mutation carriers scored higher than noncarriers (one mutation, $P = 0.05$; two mutations, $P = 0.13$). **CONCLUSIONS:** First, a significant association was found between PARKIN mutation status and obsessive-compulsive symptom level in both PD and asymptomatic patients, suggesting that OCS might represent an early non-motor dopamine-dependent feature. Second, irrespective of disease status, heterozygotes were significantly different from noncarriers, suggesting that PARKIN heterozygosity may contribute to phenotype.

Shepherd JA; **Schousboe JT**; Broy SB; Engelke K; Leslie WD. Executive summary of the 2015 ISCD Position Development Conference on Advanced Measures from DXA and QCT: fracture prediction beyond BMD. *J Clin Densitom.* 2015 Jul-Sep;18(3):274-86.

Abstract: There have been many scientific advances in fracture risk prediction beyond bone density. The International Society for Clinical Densitometry (ISCD) convened a Position Development Conference (PDC) on the use of dual-energy X-ray absorptiometry beyond measurement of bone mineral density for fracture risk assessment, including trabecular bone score and hip geometry measures. Previously, no guidelines for nonbone mineral density DXA measures existed. Furthermore, there have been advances in the analysis of quantitative computed tomography (QCT) including finite element analysis, QCT of the hip, DXA-equivalent hip measurements, and opportunistic screening that were not included in the previous ISCD positions. The topics and questions for consideration were developed by the ISCD Board of Directors and the Scientific Advisory Committee and were designed to address the needs of clinical practitioners. Three task forces were created and asked to conduct comprehensive literature reviews to address specific questions. The task forces included participants from many countries and a variety of interests including academic institutions and private health care delivery organizations. Representatives from industry participated as consultants to the task forces. Task force reports with proposed position statements were then presented to an international panel of experts with backgrounds in bone densitometry. The PDC was held in Chicago, Illinois, USA, contemporaneously with the Annual Meeting of the ISCD, February 26 through February 28, 2015. This Executive Summary describes the methodology of the 2015 PDC on advanced measures from DXA and QCT and summarizes the approved official positions. Six separate articles in this issue will detail the rationale, discussion, and additional research topics for each question the task forces addressed.

Sherwood NE; JaKa MM; Crain AL; Martinson BC; Hayes MG; Anderson JD. Pediatric primary care-based obesity prevention for parents of preschool children: a pilot study. *Child Obes.* 2015 Dec;11(6):674-82. PMID: PMC4677530. Project Number: A08-149.

BACKGROUND: The Healthy Homes/Healthy Kids Preschool (HHHK-Preschool) pilot program is an obesity prevention intervention integrating pediatric care provider counseling and a phone-based program to prevent unhealthy weight gain among 2- to 4-year-old children at risk for obesity (BMI percentile between the 50th and 85th percentile and at least one overweight parent) or currently overweight (85th percentile \leq BMI < 95th percentile). The aim of this randomized, controlled pilot study was to evaluate the feasibility, acceptability, and potential efficacy of the HHHK-Preschool intervention. **METHODS:** Sixty parent-child dyads recruited from pediatric primary care clinics were randomized to: (1) the Busy Bodies/Better Bites Obesity Prevention Arm or the (2) Healthy Tots/Safe Spots safety/injury prevention Contact Control Arm. Baseline and 6-month data were collected, including measured height and weight, accelerometry, previous day dietary recalls, and parent surveys. Intervention process data (e.g., call completion) were also collected. **RESULTS:** High intervention completion and satisfaction rates were observed. Although a statistically significant time by treatment interaction was not observed for BMI percentile or BMI z-score, post-hoc examination of baseline weight status as a moderator of treatment outcome showed that the Busy Bodies/Better Bites obesity prevention intervention appeared to be effective among children who were in the overweight category at baseline relative to those who were categorized as at risk for obesity ($p = 0.04$). **CONCLUSIONS:** HHHK-Preschool pilot study results support the feasibility, acceptability, and potential

efficacy in already overweight children of a pediatric primary care-based obesity prevention intervention integrating brief provider counseling and parent-targeted phone coaching. What's New: Implementing pediatric primary care-based obesity interventions is challenging. Previous interventions have primarily involved in-person sessions, a barrier to sustained parent involvement. HHHK-preschool pilot study results suggest that integrating brief provider counseling and parent-targeted phone coaching is a promising approach.

Shin A; Sandin S; Lof M; **Margolis KL**; Kim K; Couto E; Adami HO; Weiderpass E. Alcohol consumption, body mass index and breast cancer risk by hormone receptor status: Women's Lifestyle and Health Study. *BMC Cancer*. 2015;15:881. PMCID: PMC4640363.

BACKGROUND: We aimed to estimate the effect of alcohol consumption on breast cancer risk and to test whether overweight and obesity modifies this association. **METHODS:** We included in the analysis 45,233 women enrolled in the Swedish Women's Lifestyle and Health study between 1991 and 1992. Participants were followed for occurrence of breast cancer and death until December 2009. Poisson regression models were used, and analyses were done for overall breast cancer and for estrogen receptor positive or negative (ER+, ER-) and progesterone receptor positive and negative (PR+, PR-) tumors separately. **RESULTS:** A total of 1,385 breast cancer cases were ascertained during the follow-up period. Overall, we found no statistically significant association between alcohol intake and breast cancer risk after adjustment for confounding, with an estimated relative risk (RR) of 1.01 (95 % CI: 0.98-1.04) for an increment in alcohol consumption of 5 g/day. A statistically significant elevated breast cancer risk associated with higher alcohol consumption was found only among women with BMI ≤ 25 (RR 1.03, 95 % CI 1.0-1.05 per 5 g/day increase). **CONCLUSION:** An increase in breast cancer risk with higher alcohol consumption was found for breast cancers in women with a BMI ≤ 25 kg/m².

Shueb SS; **Nixdorf DR**; John MT; Alonso BF; Durham J. What is the impact of acute and chronic orofacial pain on quality of life? *J Dent*. 2015 Oct;43(10):1203-10.

OBJECTIVES: Orofacial pain (OFP) is thought to substantially reduce oral health-related quality of life (OHRQoL). Little has been reported about the impact of acute dental pain and persistent (chronic) orofacial pain conditions, other than temporomandibular disorders (TMD), on OHRQoL. The aim of this study was to examine and compare OHRQoL impairment among four OFP conditions: TMD, acute dental pain (ADP), trigeminal neuralgia (TN) and persistent dentoalveolar pain disorder (PDAP). **METHODS:** OHRQoL was measured using the OHIP-49 in a convenience sample of subjects with four OFP conditions (TMD (n=41), ADP (n=41), TN (n=21), PDAP (n=22) and a pain-free control group (n=21)). The mean OHIP-49 summary score described the level of impact and inferential and descriptive statistics were used to examine any differences inter-condition. The mean of the OHIP-14 and 5 were also measured by extracting the corresponding items from the OHIP-49. **RESULTS:** All pain conditions presented with statistically significant ($P < 0.001$) and clinically relevant (measured by effect sizes and the OHIP's minimal important difference) impairment when compared to the control group ($P < 0.001$). The OHRQoL for the four OFP conditions had similar levels of impairment (TMD=62.3, ADP=55.5, TN=58.1 and PDAP=69.8). **CONCLUSION:** TMD, ADP, TN and PDAP have substantial impact on OHRQoL as measured by the OHIP-49 and the extracted items for the OHIP-14 and 5. Differences among the four groups of orofacial pain conditions are likely not to be substantial.

Sikka RS; Dhami R; Dunlay R; **Boyd JL**. Isolated fibular collateral ligament injuries in athletes. *Sports Med Arthrosc.* 2015 Mar;23(1):17-21.

Abstract: Isolated injuries to the fibular collateral ligament (FCL) are rare. Although recent data suggest that operative and nonoperative treatment can both result in good functional outcomes, limited data exist on return to play for nonoperative treatment of FCL injuries and the value of magnetic resonance imaging in predicting prognosis. In this article, we present a review of the current literature and present a focused review regarding the diagnosis, treatment, and prognosis of FCL injuries, as well as the senior authors experience and a cohort of National Football League players. Magnetic resonance imaging can be useful to predict the length of disability in isolated FCL injuries, and both operative and nonoperative management of isolated FCL injuries successfully resulted in return to play in all players in several series of elite athletes; however, nonoperative management may result in faster return to play. Evaluation of potential concomitant injury is imperative in treatment of FCL injuries.

Sikka RS; Fetzer G; Hunkele T; Sugarman E; **Boyd JL**. Femur fractures in professional athletes: a case series. *J Athl Train.* 2015 Apr;50(4):442-8.

OBJECTIVE: To discuss return to play after femur fractures in several professional athletes. BACKGROUND: Femur fractures are rare injuries and can be associated with significant morbidity and mortality. No reports exist, to our knowledge, on return to play after treatment of isolated femur fractures in professional athletes. Return to play is expected in patients with femur fractures, but recovery can take more than 1 year, with an expected decrease in performance. TREATMENT: Four professional athletes sustained isolated femur fractures during regular-season games. Two athletes played hockey, 1 played football, and 1 played baseball. Three players were treated with anterograde intramedullary nails, and 1 was treated with retrograde nailing. All players missed the remainder of the season. At an average of 9.5 months (range, 7-13 months) from the time of injury, all athletes were able to return to play. One player required the removal of painful hardware, which delayed his return to sport. Final radiographs revealed that all fractures were well healed. No athletes had subjective complaints or concerns that performance was affected by the injury at an average final follow-up of 25 months (range, 22-29 months). UNIQUENESS: As the size and speed of players increase, on-field trauma may result in significant injury. All players returned to previous levels of performance or exceeded previous statistical performance levels. CONCLUSIONS: In professional athletes, return to play from isolated femur fractures treated with either an anterograde or retrograde intramedullary nail is possible within 1 year. Return to the previous level of performance is possible, and it is important to develop management protocols, including rehabilitation guidelines, for such injuries. However, return to play may be delayed by subsequent procedures, including hardware removal.

Silva BC; Broy SB; Boutroy S; **Schousboe JT**; Shepherd JA; Leslie WD. Fracture risk prediction by non-BMD DXA measures: the 2015 ISCD Official Positions Part 2: trabecular bone score. *J Clin Densitom.* 2015 Jul-Sep;18(3):309-30.

Abstract: Bone mineral density (BMD) as measured by dual-energy X-ray absorptiometry (DXA) is the gold standard for the diagnosis and management of osteoporosis. However, BMD explains only 60%-80% of bone strength, and a number of skeletal features other than BMD contribute to bone strength and fracture risk. Advanced imaging modalities can assess some of these skeletal features, but compared to standard DXA,

these techniques have higher costs and limited accessibility. A major challenge, therefore, has been to incorporate in clinical practice a readily available, noninvasive technology that permits improvement in fracture-risk prediction beyond that provided by the combination of standard DXA measurements and clinical risk factors. To this end, trabecular bone score (TBS), a gray-level textural index derived from the lumbar spine DXA image, has been investigated. The purpose of this International Society for Clinical Densitometry task force was to review the evidence and develop recommendations on how to incorporate TBS in clinical practice. Clinical applications of TBS for fracture risk assessment, treatment initiation, monitoring of treatment, and use of TBS in special conditions related to greater fracture risk, were addressed. We present the official positions approved by an expert panel following careful review of the recommendations and evidence presented by the TBS task force.

Simon GE; Coleman KJ; Waitzfelder BE; Beck AL; **Rossum RC**; Stewart C; Penfold RB. Adjusting antidepressant quality measures for race and ethnicity. *JAMA Psychiatry*. 2015 Oct;72(10):1055-6.

Simon GE; **Rossum RC**; Beck AL; Waitzfelder BE; Coleman KJ; Stewart C; Operskalski B; Penfold RB; Shortreed SM. Antidepressants are not overprescribed for mild depression. *J Clin Psychiatry*. 2015 Dec;76(12):1627-32.

OBJECTIVE: To evaluate overprescribing of antidepressant medication for minimal or mild depression. **METHOD:** Electronic records data from 4 large health care systems identified outpatients aged 18 years or older starting a new episode of antidepressant treatment in 2011 with an ICD-9 diagnosis of depressive disorder (296.2, 296.3, 311, or 300.4). Patient Health Questionnaire-9 (PHQ-9) depression severity scores at time of treatment initiation were used to examine the distribution of baseline severity and the association between baseline severity and patients' demographic and clinical characteristics. **RESULTS:** Of 19,751 adults beginning treatment in 2011, baseline PHQ-9 scores were available for 7,051. In those with a baseline score, 85% reported moderate or severe symptoms (PHQ-9 score of 10 or more), 12% reported mild symptoms (PHQ-9 score of 5 to 9), and 3% reported minimal symptoms (PHQ-9 score of less than 5). The proportion reporting minimal or mild symptoms when starting treatment increased with age, ranging from 11% in those under age 65 years to 26% in those aged 65 and older. The proportion with minimal or mild symptoms was also moderately higher among patients living in wealthier neighborhoods and those treated by psychiatrists. Nevertheless, across all subgroups defined by sex, race/ethnicity, prescriber specialty, and treatment history, the proportions with minimal or mild symptoms did not exceed 18%. Secondary analyses, including weighting and subgroup analyses, found no evidence that estimates of baseline severity were biased by missing PHQ-9 scores. **CONCLUSIONS:** In these health systems, prescribing of antidepressant medication for minimal or mild depression is much less common than suggested by previous reports. Given that this practice may sometimes be clinically appropriate, our findings indicate that overprescribing of antidepressants for mild depression is not a significant public health concern.

Simpson RW; Berman MA; Foulis PR; Divaris DX; Birdsong GG; Mirza J; Moldwin R; Spencer S; Srigley JR; Fitzgibbons PL. Cancer biomarkers: the role of structured data reporting [review article]. *Arch Pathol Lab Med*. 2015 May;139(5):587-93.

CONTEXT: The College of American Pathologists has been producing cancer protocols since 1986 to aid pathologists in the diagnosis and reporting of cancer cases. Many pathologists use the included cancer case summaries as templates for dictation/data entry into the final pathology report. These summaries are now

available in a computer-readable format with structured data elements for interoperability, packaged as "electronic cancer checklists." Most major vendors of anatomic pathology reporting software support this model. OBJECTIVES: To outline the development and advantages of structured electronic cancer reporting using the electronic cancer checklist model, and to describe its extension to cancer biomarkers and other aspects of cancer reporting. DATA SOURCES: Peer-reviewed literature and internal records of the College of American Pathologists. CONCLUSIONS: Accurate and usable cancer biomarker data reporting will increasingly depend on initial capture of this information as structured data. This process will support the standardization of data elements and biomarker terminology, enabling the meaningful use of these datasets by pathologists, clinicians, tumor registries, and patients.

Siraj ES; Rubin DJ; Riddle MC; Miller ME; Hsu FC; Ismail-Beigi F; Chen SH; Ambrosius WT; Thomas A; Bestermann W; Buse JB; Genuth S; Joyce C; Kovacs CS; **O'Connor PJ**; Sigal RJ; Solomon S. Insulin dose and cardiovascular mortality in the ACCORD Trial. *Diabetes Care*. 2015 Nov;38(11):2000-8. Project Number: ACCORD.

OBJECTIVE: In the ACCORD trial, intensive treatment of patients with type 2 diabetes and high cardiovascular (CV) risk was associated with higher all-cause and CV mortality. Post hoc analyses have failed to implicate rapid reduction of glucose, hypoglycemia, or specific drugs as the causes of this finding. We hypothesized that exposure to injected insulin was quantitatively associated with increased CV mortality. RESEARCH DESIGN AND METHODS: We examined insulin exposure data from 10,163 participants with a mean follow-up of 5 years. Using Cox proportional hazards models, we explored associations between CV mortality and total, basal, and prandial insulin dose over time, adjusting for both baseline and on-treatment covariates including randomized intervention assignment. RESULTS: More participants allocated to intensive treatment (79%) than standard treatment (62%) were ever prescribed insulin in ACCORD, with a higher mean updated total daily dose (0.41 vs. 0.30 units/kg) ($P < 0.001$). Before adjustment for covariates, higher insulin dose was associated with increased risk of CV death (hazard ratios [HRs] per 1 unit/kg/day 1.83 [1.45, 2.31], 2.29 [1.62, 3.23], and 3.36 [2.00, 5.66] for total, basal, and prandial insulin, respectively). However, after adjustment for baseline covariates, no significant association of insulin dose with CV death remained. Moreover, further adjustment for severe hypoglycemia, weight change, attained A1C, and randomized treatment assignment did not materially alter this observation. CONCLUSIONS: These analyses provide no support for the hypothesis that insulin dose contributed to CV mortality in ACCORD.

Smiley CJ; Tracy SL; Abt E; **Michalowicz BS**; John MT; Gunsolley J; Cobb CM; Rossmann J; Harrel SK; Forrest JL; Hujoel PP; Noraian KW; Greenwell H; Frantsve-Hawley J; Estrich C; Hanson N. Evidence-based clinical practice guideline on the nonsurgical treatment of chronic periodontitis by means of scaling and root planing with or without adjuncts. *J Am Dent Assoc*. 2015 Jul;146(7):525-35.

BACKGROUND: A panel of experts convened by the American Dental Association Council on Scientific Affairs presents an evidence-based clinical practice guideline on nonsurgical treatment of patients with chronic periodontitis by means of scaling and root planing (SRP) with or without adjuncts. METHODS: The authors developed this clinical practice guideline according to the American Dental Association's evidence-based guideline development methodology. This guideline is founded on a systematic review of the evidence that included 72 research articles providing clinical attachment level data on trials of at least 6 months' duration

and published in English through July 2014. The strength of each recommendation (strong, in favor, weak, expert opinion for, expert opinion against, and against) is based on an assessment of the level of certainty in the evidence for the treatment's benefit in combination with an assessment of the balance between the magnitude of the benefit and the potential for adverse effects. **PRACTICAL IMPLICATIONS AND CONCLUSIONS:** For patients with chronic periodontitis, SRP showed a moderate benefit, and the benefits were judged to outweigh potential adverse effects. The authors voted in favor of SRP as the initial nonsurgical treatment for chronic periodontitis. Although systemic subantimicrobial-dose doxycycline and systemic antimicrobials showed similar magnitudes of benefits as adjunctive therapies to SRP, they were recommended at different strengths (in favor for systemic subantimicrobial-dose doxycycline and weak for systemic antimicrobials) because of the higher potential for adverse effects with higher doses of antimicrobials. The strengths of 2 other recommendations are weak: chlorhexidine chips and photodynamic therapy with a diode laser. Recommendations for the other local antimicrobials (doxycycline hyclate gel and minocycline microspheres) were expert opinion for. Recommendations for the nonsurgical use of other lasers as SRP adjuncts were limited to expert opinion against because there was uncertainty regarding their clinical benefits and benefit-to-adverse effects balance. Note that expert opinion for does not imply endorsement but instead signifies that evidence is lacking and the level of certainty in the evidence is low.

Smiley CJ; Tracy SL; Abt E; **Michalowicz BS**; John MT; Gunsolley J; Cobb CM; Rossmann J; Harrel SK; Forrest JL; Hujoel PP; Noraian KW; Greenwell H; Frantsve-Hawley J; Estrich C; Hanson N. Systematic review and meta-analysis on the nonsurgical treatment of chronic periodontitis by means of scaling and root planing with or without adjuncts [review article]. *J Am Dent Assoc.* 2015 Jul;146(7):508-24.e5.

BACKGROUND: Conduct a systematic review and meta-analysis on nonsurgical treatment of patients with chronic periodontitis by means of scaling and root planing (SRP) with or without adjuncts. **METHODS:** A panel of experts convened by the American Dental Association Council on Scientific Affairs conducted a search of PubMed (MEDLINE) and Embase for randomized controlled trials of SRP with or without the use of adjuncts with clinical attachment level (CAL) outcomes in trials at least 6 months in duration and published in English through July 2014. The authors assessed individual study bias by using the Cochrane Risk of Bias Tool and conducted meta-analyses to obtain the summary effect estimates and their precision and to assess heterogeneity. The authors used funnel plots and Egger tests to assess publication bias when there were more than 10 studies. The authors used a modified version of the US Preventive Services Task Force methods to assess the overall level of certainty in the evidence. **RESULTS:** The panel included 72 articles on the effectiveness of SRP with or without the following: systemic antimicrobials, a systemic host modulator (subantimicrobial-dose doxycycline), locally delivered antimicrobials (chlorhexidine chips, doxycycline hyclate gel, and minocycline microspheres), and a variety of nonsurgical lasers (photodynamic therapy with a diode laser, a diode laser, neodymium:yttrium-aluminum-garnet lasers, and erbium lasers). **CONCLUSIONS AND PRACTICAL IMPLICATIONS:** With a moderate level of certainty, the panel found approximately a 0.5-millimeter average improvement in CAL with SRP. Combinations of SRP with assorted adjuncts resulted in a range of average CAL improvements between 0.2 and 0.6 mm over SRP alone. The panel judged the following 4 adjunctive therapies as beneficial with a moderate level of certainty: systemic subantimicrobial-dose doxycycline, systemic antimicrobials, chlorhexidine chips, and photodynamic therapy with a diode laser. There was a low level of certainty in the benefits of the other included adjunctive therapies. The panel provides clinical recommendations in the associated clinical practice guideline.

Snyder ME; Pater KS; **Frail CK**; Hudmon KS; Doebbeling BN; Smith RB. Utility of a brief screening tool for medication-related problems. *Res Social Adm Pharm*. 2015 Mar-Apr;11(2):253-64.

BACKGROUND: Medication therapy management (MTM) services position pharmacists to prevent, detect, and resolve medication-related problems (MRPs.) However, selecting patients for MTM who are most at risk for MRPs is a challenge. Using self-administered scales that are practical for use in clinical practice are one approach. **OBJECTIVE:** The objective of this study was to estimate the psychometric properties of a brief self-administered scale as a screening tool for MRPs. **METHODS:** This was a non-randomized study utilizing questionnaires administered cross-sectionally. In Phase 1, patients (n = 394) at community pharmacies and outpatient clinics completed 78 items, provided to the study team by item authors, assessing perceived MRPs. These data were used to select items for further investigation as a brief, self-administered scale, and estimate the reliability and construct validity of the resulting instrument. In Phase 2, a convenience sample of patients (n = 200) at community pharmacies completed a nine-item, self-administered scale. After completion, they were engaged in a comprehensive medication review by their pharmacist who was blinded to questionnaire responses. The main outcome measure for estimating the criterion-related validity of the scale was the number of pharmacist-identified medication-related problems (MRPs.) Item statistics were computed as well as bivariate associations between scale scores and other variables with MRPs. A multivariate model was constructed to examine the influence of scale scores on MRPs after controlling for other significant variables. **RESULTS:** Higher scores on the questionnaire were positively correlated with more pharmacist-identified MRPs ($r = 0.24$; $P = 0.001$) and scores remained as a significant predictor ($P = 0.031$) when controlling for other relevant variables in a multivariate regression model ($R(2) = 0.21$; $P < 0.001$). **CONCLUSIONS:** Patient responses on the scale may have a modest role in predicting MRPs. The use of self-administered questionnaires such as this may supplement other available patient data in developing patient eligibility criteria for MTM, however, additional research is warranted.

Solberg LI. Preventable hospital admissions: are they [editorial]? *Fam Pract*. 2015 Jun;32(3):245-6. Project Number: A12-006 COMPASS.

Solberg LI; Asche SE; Butler JC; Carrell D; Norton CK; Jarvik JG; Smith-Bindman R; **Tillema JO; Whitebird RR; Ziegenfuss JY.** The effect of achieving patient-reported outcome measures on satisfaction. *J Am Board Fam Med*. 2015 Nov-Dec;28(6):785-92.

OBJECTIVE: To determine how frequently patients with advanced imaging for back or abdominal pain achieve outcomes that are identified by patients as important and whether those achieving those outcomes are more satisfied. **METHODS:** Cross-sectional analysis of survey responses from patients of an 800-physician multi-specialty group in Minnesota in 2013. A total of 201 patients with abdominal pain and 167 patients with back pain 1 year earlier that was serious enough for a computed tomography or magnetic resonance imaging scan (67% of those contacted). The main outcomes were the frequency of occurrence of 19 outcomes previously identified by patients as important, plus satisfaction with the results of care. **RESULTS:** The majority of patients surveyed had achieved most of the desired outcomes. For abdominal pain, 17 of 19 of the desired outcomes were achieved by >50% of patients, while 11 of 19 desired outcomes were achieved by >50% of patients with back pain. Seven of the desired outcomes were significantly associated with satisfaction. **CONCLUSION:** Achieving outcomes important to patients is associated with greater patient

satisfaction. Such measures are potentially valuable measures of quality.

Solberg LI; Asche SE; Butler JC; Carrell D; Norton CK; Jarvik JG; Smith-Bindman R; **Tillema JO; Whitebird RR; Ziegenfuss JY.** It is time to ask patients what outcomes are important to them. *Am J Accountable Care*. 2015 Dec;3(4):48-54.

Objectives: To identify the outcomes desired by patients (and their family members) with abdominal or back pain and to compare patient and physician opinions regarding the importance of each outcome. **Study Design:** Mixed methods. **Methods:** After identifying 21 potentially important outcomes from the literature and telephone interviews with patients and family members, we asked 40 patients, 11 family members, and 11 primary care physicians in telephone interviews to rate the importance of each outcome to patients on a scale of 1 to 5 scale (5 = most important), stratified by pain location. **Results:** Mean patient ratings of the 21 outcomes ranged from 3.3 to 5, with the average rating across all items higher for patients with back pain than those with abdominal pain (4.50 vs 4.09; $P = .049$). Physicians rated the importance of these outcomes to patients significantly lower than the patients did for both abdominal pain (4.1 vs 3.5; $P = .04$) and back pain (4.5 vs 3.6; $P = .0003$). Family member ratings were similar to those of the patients (4.3 vs 4.2; $P = .8$), whereas physicians rated the importance to patients to be an average of 0.6 points lower than the ratings of patients for abdominal pain and 0.8 points lower for back pain. **Conclusions:** Many outcomes are important to patients and their family members, but they mostly represent quality-of-life events rather than the symptom and function measures heretofore focused on by researchers. Physicians appear to rate most of these outcomes somewhat lower in importance.

Solberg LI; Crain AL; Maciosek MV; Unutzer J; **Ohnsorg KA;** Beck AL; Rubenstein LV; **Whitebird RR; Rossom RC;** Pietruszewski PB; Crabtree BF; Joslyn KE; Van de Ven AH; Glasgow RE. A stepped-wedge evaluation of an initiative to spread the collaborative care model for depression in primary care. *Ann Fam Med*. 2015 Sep;13(5):412-20. PMID: PMC4569448. Project Number: A06-102 DIAMOND.

PURPOSE: Scale-up and spread of evidence-based practices is one of the most important challenges facing health care. We tested whether a statewide initiative, Depression Improvement Across Minnesota-Offering a New Direction (DIAMOND), to implement the collaborative care model for depression in 75 primary care clinics resulted in patient outcome improvements corresponding to those reported in randomized controlled trials. **METHODS:** Health plans provided a new monthly payment to participating clinics after a 6-month intensive training program with ongoing data submission, networking, and consultation. Implementation was staggered, with 5 sequences of 10 to 40 clinics every 6 months. Payers provided weekly contact information for members from participating clinics who were filling antidepressant prescriptions, and we conducted baseline and 6-month surveys of 1,578 patients about their care and outcomes. **RESULTS:** There were 466 patients in DIAMOND clinics who received usual care before implementation (UCB), 559 who received usual care in DIAMOND clinics after implementation (UCA), 245 who received DIAMOND care after implementation (DCA), and 308 who received usual care in comparison clinics (UC). Patients who received DIAMOND care after implementation reported more collaborative care depression services than the 3 comparison groups (10.9 vs 6.4-6.7, on a scale of 0 of 14, where higher numbers indicate more services; $P < .001$) and more satisfaction with their care (4.0 vs 3.4 on a scale 1 to 5, in which higher scores indicate higher satisfaction; $P < .001$). Depression remission rates, however, were not significantly different among the 4 groups (36.4% DCA vs 35.8% UCB, 35.0% UCA, 33.9% UC; $P = .94$). **CONCLUSIONS:** Despite the incentive

of a supporting payment change and intensive training and support for clinics volunteering to participate, no difference in depression outcomes was documented. Specific unmeasured actions present in trials but not present in these clinics may be critical for successful outcome improvement.

Solberg LI; Stuck LH; Crain AL; Tillema JO; Flottemesch TJ; Whitebird RR; Fontaine PL. Organizational factors and change strategies associated with medical home transformation. *Am J Med Qual.* 2015 Jul;30(4):337-44. Project Number: A09-159 Medical Homes.

Abstract: There is limited information about how to transform primary care practices into medical homes. The research team surveyed leaders of the first 132 primary care practices in Minnesota to achieve medical home certification. These surveys measured priority for transformation, the presence of medical home practice systems, and the presence of various organizational factors and change strategies. Survey response rates were 98% for the Change Process Capability Questionnaire survey and 92% for the Physician Practice Connections survey. They showed that 80% to 100% of these certified clinics had 15 of the 18 organizational factors important for improving care processes and that 60% to 90% had successfully used 16 improvement strategies. Higher priority for this change ($P = .001$) and use of more strategies ($P = .05$) were predictive of greater change in systems. Clinics contemplating medical home transformation should consider the factors and strategies identified here and should be sure that such a change is indeed a high priority for them.

Sperl-Hillen JM; O'Connor PJ. In Reply to Wayne, Bursuk, McGaphie. *Acad Med.* 2015 Sep;90(9):1181-2. Project Number: A00-016 SimCare. [Comment on: *Acad Med.* 2015 Sep;90(9):1181. *Acad Med.* 2014 Dec;89(12):1664-73.]

Sprung CL; Cohen R; Marini JJ. The top attributes of excellence of intensive care physicians. *Intensive Care Med.* 2015 Feb;41(2):312-4.

Steen K; Narang PD; Lippmann SB. Electroconvulsive therapy in multiple sclerosis [review article]. *Innov Clin Neurosci.* 2015 Jul-Aug;12(7-8):28-30. PMCID: PMC4558788.

Abstract: We performed a literature search regarding the safety and efficacy of electroconvulsive therapy in patients with multiple sclerosis and comorbid psychiatric symptoms. Literature review was conducted via PubMed databases. Of the cases we reviewed, most subjects with multiple sclerosis reported significant psychiatric symptom relief, with only a handful reporting neurologic deterioration. There was some evidence that active white matter lesions may be predictive of neurologic deterioration when electroconvulsive therapy is used in patients with multiple sclerosis. A brief description of the pathophysiology and effects of depression in patients with multiple sclerosis is also provided. Although no clinical recommendations or meaningful conclusions can be drawn without further investigation, the literature suggests that electroconvulsive therapy for treatment of psychiatric illnesses in patients with multiple sclerosis is safe and efficacious.

Sukumaran L; McCarthy NL; **Kharbanda EO**; McNeil MM; Naleway AL; Klein NP; Jackson ML; Hambidge SJ; Lugg MM; Li R; Weintraub ES; Bednarczyk RA; King JP; DeStefano F; Orenstein WA; Omer SB. Association of Tdap vaccination with acute events and adverse birth outcomes among pregnant women with prior tetanus-containing immunizations. *JAMA*. 2015 Oct 20;314(15):1581-7.

IMPORTANCE: The Advisory Committee on Immunization Practices (ACIP) recommends the tetanus, diphtheria, and acellular pertussis (Tdap) vaccine for pregnant women during each pregnancy, regardless of prior immunization status. However, safety data on repeated Tdap vaccination in pregnancy is lacking. **OBJECTIVE:** To determine whether receipt of Tdap vaccine during pregnancy administered in close intervals from prior tetanus-containing vaccinations is associated with acute adverse events in mothers and adverse birth outcomes in neonates. **DESIGN, SETTING, AND PARTICIPANTS:** A retrospective cohort study in 29,155 pregnant women aged 14 through 49 years from January 1, 2007, through November 15, 2013, using data from 7 Vaccine Safety Datalink sites in California, Colorado, Minnesota, Oregon, Washington, and Wisconsin. **EXPOSURES:** Women who received Tdap in pregnancy following a prior tetanus-containing vaccine less than 2 years before, 2 to 5 years before, and more than 5 years before. **MAIN OUTCOMES AND MEASURES:** Acute adverse events (fever, allergy, and local reactions) and adverse birth outcomes (small for gestational age, preterm delivery, and low birth weight) were evaluated. Women who were vaccinated with Tdap in pregnancy and had a prior tetanus-containing vaccine more than 5 years before served as controls. **RESULTS:** There were no statistically significant differences in rates of medically attended acute adverse events or adverse birth outcomes related to timing since prior tetanus-containing vaccination. [table: see text]. **CONCLUSIONS AND RELEVANCE:** Among women who received Tdap vaccination during pregnancy, there was no increased risk of acute adverse events or adverse birth outcomes for those who had been previously vaccinated less than 2 years before or 2 to 5 years before compared with those who had been vaccinated more than 5 years before. These findings suggest that relatively recent receipt of a prior tetanus-containing vaccination does not increase risk after Tdap vaccination in pregnancy.

Sukumaran L; McCarthy NL; **Kharbanda EO**; Weintraub ES; **Vazquez-Benitez G**; McNeil MM; Li R; Klein NP; Hambidge SJ; Naleway AL; Lugg MM; Jackson ML; King JP; DeStefano F; Omer SB; Orenstein WA. Safety of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis and influenza vaccinations in pregnancy. *Obstet Gynecol*. 2015 Nov;126(5):1069-74. PMID: PMC4618722.

OBJECTIVE: To evaluate the safety of coadministering tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) and influenza vaccines during pregnancy by comparing adverse events after concomitant and sequential vaccination. **METHODS:** We conducted a retrospective cohort study of pregnant women aged 14-49 years in the Vaccine Safety Datalink from January 1, 2007, to November 15, 2013. We compared medically attended acute events (fever, any acute reaction) and adverse birth outcomes (preterm delivery, low birth weight, small for gestational age) in women receiving concomitant Tdap and influenza vaccination and women receiving sequential vaccination. **RESULTS:** Among 36,844 pregnancies in which Tdap and influenza vaccines were administered, the vaccines were administered concomitantly in 8,464 (23%) pregnancies and sequentially in 28,380 (77%) pregnancies. Acute adverse events after vaccination were rare. We found no statistically significant increased risk of fever or any medically attended acute adverse event in pregnant women vaccinated concomitantly compared with sequentially. When analyzing women at 20 weeks of gestation or greater during periods of influenza vaccine administration, there were no differences in preterm delivery, low-birth-weight, or small-for-gestational-age neonates between women

vaccinated concomitantly compared with sequentially in pregnancy. **CONCLUSION:** Concomitant administration of Tdap and influenza vaccines during pregnancy was not associated with a higher risk of medically attended adverse acute outcomes or birth outcomes compared with sequential vaccination.

Symons FJ; ElGhazi I; Reilly BG; Barney CC; **Hanson LR**; Panoskaltis-Mortari A; Armitage IM; Wilcox GL. Can biomarkers differentiate pain and no pain subgroups of nonverbal children with cerebral palsy? A preliminary investigation based on noninvasive saliva sampling. *Pain Med.* 2015 Feb;16(2):249-56. PMCID: PMC4332832.

OBJECTIVE: Assessing and treating pain in nonverbal children with developmental disabilities are a clinical challenge. Current assessment approaches rely on clinical impression and behavioral rating scales completed by proxy report. Given the growing health relevance of the salivary metabolome, we undertook a translational-oriented feasibility study using proton nuclear magnetic resonance (NMR) spectroscopy and neuropeptide/cytokine/hormone detection to compare a set of salivary biomarkers relevant to nociception. **DESIGN:** Within-group observational design. **SETTING:** Tertiary pediatric rehabilitation hospital. **SUBJECTS:** Ten nonverbal pediatric patients with cerebral palsy with and without pain. **METHODS:** Unstimulated (passively collected) saliva was collected using oral swabs followed by perchloric acid extraction and analyzed on a Bruker Avance 700 MHz NMR spectrometer. We also measured salivary levels of several cytokines, chemokines, hormones, and neuropeptides. **RESULTS:** Partial least squares discriminant analysis showed separation of those children with/without pain for a number of different biomarkers. The majority of the salivary metabolite, neuropeptide, cytokine, and hormone levels were higher in children with pain vs no pain. **CONCLUSIONS:** The ease of collection and noninvasive manner in which the samples were collected and analyzed support the possibility of the regular predictive use of this novel biomarker-monitoring method in clinical practice.

Szulc P; Blackwell T; Kiel DP; **Schousboe JT**; Cauley J; Hillier T; Hochberg M; Rodondi N; Taylor BC; Black D; Cummings S; Ensrud KE; Study of Osteoporotic Fractures (SOF) Research Group. Abdominal aortic calcification and risk of fracture among older women - The SOF study. *Bone.* 2015 Dec;81:16-23. PMCID: PMC4640997.

Abstract: Data concerning the link between severity of abdominal aortic calcification (AAC) and fracture risk in postmenopausal women are discordant. This association may vary by skeletal site and duration of follow-up. Our aim was to assess the association between the AAC severity and fracture risk in older women over the short- and long term. This is a case-cohort study nested in a large multicenter prospective cohort study. The association between AAC and fracture was assessed using Odds Ratios (OR) and 95% confidence intervals (95%CI) for vertebral fractures and using Hazard Risks (HR) and 95%CI for non-vertebral and hip fractures. AAC severity was evaluated from lateral spine radiographs using Kauppila's semiquantitative score. Severe AAC (AAC score 5+) was associated with higher risk of vertebral fracture during 4 years of follow-up, after adjustment for confounders (age, BMI, walking, smoking, hip bone mineral density, prevalent vertebral fracture, systolic blood pressure, hormone replacement therapy) (OR=2.31, 95%CI: 1.24-4.30, p<0.01). In a similar model, severe AAC was associated with an increase in the hip fracture risk (HR=2.88, 95%CI: 1.00-8.36, p=0.05). AAC was not associated with the risk of any non-vertebral fracture. AAC was not associated with the fracture risk after 15 years of follow-up. In elderly women, severe AAC is

associated with higher short-term risk of vertebral and hip fractures, but not with the long-term risk of these fractures. There is no association between AAC and risk of non-vertebral-non-hip fracture in older women. Our findings lend further support to the hypothesis that AAC and skeletal fragility are related.

Thumbigere-Math V; **Michalowicz BS**; de Jong EP; Griffin TJ; Basi DL; Hughes PJ; Tsai ML; Swenson KK; Rockwell L; Gopalakrishnan R. Salivary proteomics in bisphosphonate-related osteonecrosis of the jaw. *Oral Dis.* 2015 Jan;21(1):46-56. PMCID: PMC4007366.

OBJECTIVE: The objective of this study was to identify differentially expressed salivary proteins in bisphosphonate-related osteonecrosis of the jaw (BRONJ) patients that could serve as biomarkers for BRONJ diagnosis. **SUBJECTS AND METHODS:** Whole saliva obtained from 20 BRONJ patients and 20 controls were pooled within groups. The samples were analyzed using iTRAQ-labeled two-dimensional liquid chromatography-tandem mass spectrometry. **RESULTS:** Overall, 1340 proteins were identified. Of these, biomarker candidates were selected based on P-value (<0.001), changes in protein expression (≥ 1.5 -fold increase or decrease), and unique peptides identified (≥ 2). Three comparisons made between BRONJ and control patients identified 200 proteins to be differentially expressed in BRONJ patients. A majority of these proteins were predicted to have a role in drug metabolism and immunological and dermatological diseases. Of all the differentially expressed proteins, we selected metalloproteinase-9 and desmoplakin for further validation. Immunoassays confirmed increased expression of metalloproteinase-9 in individual saliva ($P = 0.048$) and serum samples ($P = 0.05$) of BRONJ patients. Desmoplakin was undetectable in saliva. However, desmoplakin levels tended to be lower in BRONJ serum than controls ($P = 0.157$). **CONCLUSIONS:** Multiple pathological reactions are involved in BRONJ development. One or more proteins identified by this study may prove to be useful biomarkers for BRONJ diagnosis. The role of metalloproteinase-9 and desmoplakin in BRONJ requires further investigation.

Thyvalikakath TP; **Durand EU**; Spallek H; **Enstad CJ**; **Asche SE**; **Rindal DB**; **Rush WA**. Dental hygienists' usage of tobacco-cessation decision support tools in practice: a qualitative study. *Int J Evid Based Pract Dent Hyg.* 2015 Summer;1(1):57-65.

Background: The rapid adoption of electronic record systems to support patient care in dental practice provides an opportunity for the development of technology-driven clinical decision support (CDS) applications. The purpose of this study was to understand how a CDS tool integrated into existing electronic dental record (EDR) software was used by practicing dental hygienists and dentists in the process of assessing and addressing patients' tobacco use and referring them to outside tobacco cessation resources. **Methods:** Employing a user-centered design methodology over the course of 8 days, researchers observed dental providers' use of a tobacco CDS tool during encounters with patients who smoke cigarettes. Using a process called contextual inquiry, they observed 11 dental hygiene patient encounters during 4 visits to 4 different general dental clinics. Semi-structured interviews were conducted with 22 HealthPartners Dental Group dental staff, including dental hygienists, dental assistants, and dentists. Dental hygienists were found to be the primary users of the CDS tool and were surveyed on satisfaction with the usefulness and ease of operating the CDS tool. A thematic analysis of the observation and survey data was undertaken. **Results:** The tobacco cessation CDS tool was used by most dental hygienists but few dentists involved in the care of patients who use tobacco. Interruptions to workflow were categorized as "breakdowns" and were found to be infrequent but in some cases meaningful. In some instances, hygienists reported that the tool

allowed more accurate and detailed information to inform their clinical decision-making as well as better documentation of patients' nicotine dependence level and interest in quitting. A minority reported patient dissatisfaction, though patient reports and observations did not confirm these impressions. Negotiations about rules regarding which provider(s) were responsible for tobacco assessment, messaging, and documentation as well as the frequency with which tobacco use should be assessed and discussed had not been resolved consistently. Conclusions: Findings suggest that user-centered design of a CDS tool can support more consistent assessment and documentation of tobacco use and the delivery of evidence-based, personalized quit messaging targeted to and acceptable by patients.

Tompkins MA; Arendt EA. Patellar instability factors in isolated medial patellofemoral ligament reconstructions-what does the literature tell us? A systematic review [review article]. *Am J Sports Med.* 2015 Sep;43(9):2318-27.

BACKGROUND: Many studies have demonstrated good results after medial patellofemoral ligament (MPFL) reconstruction for patients with patellar instability. The applicability of published studies to the clinical decision-making process for the individual patient with patellar instability, however, is not well elucidated. **HYPOTHESIS:** There is inconsistency in the reporting of preoperative and postoperative variables, which limits the applicability of current studies to patients with patellar instability. **STUDY DESIGN:** Systematic review. **METHODS:** A systematic review of the literature was conducted using the search term medial patellofemoral ligament reconstruction to identify studies with cohorts of patients with isolated MPFL reconstruction. A combination of inclusion and exclusion criteria resulted in 24 studies being reviewed for a variety of preoperative demographics, physical examination findings, and imaging findings, as well as postoperative outcomes, including redislocation and responses to subjective questionnaires. **RESULTS:** A physical examination of lateral patellar translation was reported in 42% of studies, by reporting an apprehension sign (n = 9), reporting quadrant translation (n = 7), or both. For patellar instability factors on imaging, patellar height was reported as a preoperative variable in 75% of studies, and trochlear dysplasia was reported in 83% of studies. The tibial tubercle-trochlear groove distance was reported as a preoperative variable in 42% of studies. The rate of redislocation after index surgery was reported in 92% of studies. Patient-related outcome measures were reported in all of the studies; the Kujala score was the most common. A homogeneous population was selected as part of the authors' surgical indications for "isolated" MPFL in 67% of studies, and a heterogeneous population was selected in 33% of studies. **CONCLUSION:** Current literature on MPFL reconstruction contains diverse methods of recording preoperative and postoperative variables. Most studies report on a homogeneous population, with inconsistent applicability to the broad spectrum of patients with patellar instability. Outcomes reporting in our current literature needs more clarity and consistency regarding reporting methodology to be of value for the treating clinician.

Tucker KL; Sheppard JP; Stevens R; Bosworth HB; Bove A; Bray EP; Godwin M; Green B; Hebert P; Hobbs FD; Kantola I; Kerry S; Magid DJ; Mant J; **Margolis KL**; McKinstry B; Omboni S; Ogedegbe O; Parati G; Qamar N; Varis J; Verberk W; Wakefield BJ; McManus RJ. Individual patient data meta-analysis of self-monitoring of blood pressure (BP-SMART): a protocol. *BMJ Open.* 2015;5(9):e008532. PMCID: PMC4577873.

INTRODUCTION: Self-monitoring of blood pressure is effective in reducing blood pressure in hypertension. However previous meta-analyses have shown a considerable amount of heterogeneity between studies,

only part of which can be accounted for by meta-regression. This may be due to differences in design, recruited populations, intervention components or results among patient subgroups. To further investigate these differences, an individual patient data (IPD) meta-analysis of self-monitoring of blood pressure will be performed. **METHODS AND ANALYSIS:** We will identify randomised trials that have compared patients with hypertension who are self-monitoring blood pressure with those who are not and invite trialists to provide IPD including clinic and/or ambulatory systolic and diastolic blood pressure at baseline and all follow-up points where both intervention and control groups were measured. Other data requested will include measurement methodology, length of follow-up, cointerventions, baseline demographic (age, gender) and psychosocial factors (deprivation, quality of life), setting, intensity of self-monitoring, self-monitored blood pressure, comorbidities, lifestyle factors (weight, smoking) and presence or not of antihypertensive treatment. Data on all available patients will be included in order to take an intention-to-treat approach. A two-stage procedure for IPD meta-analysis, stratified by trial and taking into account age, sex, diabetes and baseline systolic BP will be used. Exploratory subgroup analyses will further investigate non-linear relationships between the prespecified variables. Sensitivity analyses will assess the impact of trials which have and have not provided IPD. **ETHICS AND DISSEMINATION:** This study does not include identifiable data. Results will be disseminated in a peer-reviewed publication and by international conference presentations. **CONCLUSIONS:** IPD analysis should help the understanding of which self-monitoring interventions for which patient groups are most effective in the control of blood pressure.

Umbrello M; Formenti P; Longhi D; Galimberti A; Piva I; Pezzi A; Mistraletti G; **Marini JJ**; Iapichino G. Diaphragm ultrasound as indicator of respiratory effort in critically ill patients undergoing assisted mechanical ventilation: a pilot clinical study. *Crit Care*. 2015;19:161.

INTRODUCTION: Pressure-support ventilation, is widely used in critically ill patients; however, the relative contribution of patient's effort during assisted breathing is difficult to measure in clinical conditions. Aim of the present study was to evaluate the performance of ultrasonographic indices of diaphragm contractile activity (respiratory excursion and thickening) in comparison to traditional indices of inspiratory muscle effort during assisted mechanical ventilation. **METHOD:** Consecutive patients admitted to the ICU after major elective surgery who met criteria for a spontaneous breathing trial with pressure support ventilation were enrolled. Patients with airflow obstruction or after thoracic/gastric/esophageal surgery were excluded. Variable levels of inspiratory muscle effort were achieved by delivery of different levels of ventilatory assistance by random application of pressure support (0, 5 and 15 cmH₂O). The right hemidiaphragm was evaluated by B- and M-mode ultrasonography to record respiratory excursion and thickening. Airway, gastric and oesophageal pressures, and airflow were recorded to calculate indices of respiratory effort (diaphragm and esophageal pressure-time product). **RESULTS:** 25 patients were enrolled. With increasing levels of pressure support, parallel reductions were found between diaphragm thickening and both diaphragm and esophageal pressure-time product (respectively, $R = 0.701$, $p < 0.001$ and $R = 0.801$, $p < 0.001$) during tidal breathing. No correlation was found between either diaphragm or esophageal pressure-time product and diaphragm excursion (respectively, $R = -0.081$, $p = 0.506$ and $R = 0.003$, $p = 0.981$), nor was diaphragm excursion correlated to diaphragm thickening ($R = 0.093$, $p = 0.450$) during tidal breathing. **CONCLUSIONS:** In patients undergoing in assisted mechanical ventilation, diaphragm thickening is a reliable indicator of respiratory effort, whereas diaphragm excursion should not be used to quantitatively assess diaphragm contractile activity.

Uppgaard D; Parsons J; **Rindal DB**. Improve your practice and engage your patients: participate in the NDPBRN [interview]. *Northwest Dent*. 2015 Jul-Aug;94(4):43-5.

Vazquez-Benitez G; Desai JR; Xu S; Goodrich GK; Schroeder EB; Nichols GA; Segal J; Butler MG; Karter AJ; Steiner JF; Newton KM; Morales LS; Pathak RD; Thomas A; Reynolds K; Kirchner HL; Waitzfelder BE; Elston Lafata J; Adibhatla R; Xu Z; O'Connor PJ. Preventable major cardiovascular events associated with uncontrolled glucose, blood pressure, and lipids and active smoking in adults with diabetes with and without cardiovascular disease: a contemporary analysis. *Diabetes Care*. 2015 May;38(5):905-12. Project Number: A13-132 SUPREME DM.

OBJECTIVE: The objective of this study was to assess the incidence of major cardiovascular (CV) hospitalization events and all-cause deaths among adults with diabetes with or without CV disease (CVD) associated with inadequately controlled glycated hemoglobin (A1C), high LDL cholesterol (LDL-C), high blood pressure (BP), and current smoking. **RESEARCH DESIGN AND METHODS:** Study subjects included 859,617 adults with diabetes enrolled for more than 6 months during 2005-2011 in a network of 11 U.S. integrated health care organizations. Inadequate risk factor control was classified as LDL-C ≥ 100 mg/dL, A1C $\geq 7\%$ (53 mmol/mol), BP $\geq 140/90$ mm Hg, or smoking. Major CV events were based on primary hospital discharge diagnoses for myocardial infarction (MI) and acute coronary syndrome (ACS), stroke, or heart failure (HF). Five-year incidence rates, rate ratios, and average attributable fractions were estimated using multivariable Poisson regression models. **RESULTS:** Mean (SD) age at baseline was 59 (14) years; 48% of subjects were female, 45% were white, and 31% had CVD. Mean follow-up was 59 months. Event rates per 100 person-years for adults with diabetes and CVD versus those without CVD were 6.0 vs. 1.7 for MI/ACS, 5.3 vs. 1.5 for stroke, 8.4 vs. 1.2 for HF, 18.1 vs. 4.0 for all CV events, and 23.5 vs. 5.0 for all-cause mortality. The percentages of CV events and deaths associated with inadequate risk factor control were 11% and 3%, respectively, for those with CVD and 34% and 7%, respectively, for those without CVD. **CONCLUSIONS:** Additional attention to traditional CV risk factors could yield further substantive reductions in CV events and mortality in adults with diabetes.

Walker DK; Barton-Burke M; Saria MG; Gosselin T; Ireland A; **Norton V**; Newton S. Everyday advocates: nursing advocacy is a full-time job. *Am J Nurs*. 2015 Aug;115(8):66-70.

Walters MS; Sreenivasan N; Person B; Shew M; Wheeler D; Hall J; Bogdanow L; **Leniek KL**; Rao A. A qualitative inquiry about pruno, an illicit alcoholic beverage linked to botulism outbreaks in United States prisons. *Am J Public Health*. 2015 Nov;105(11):2256-61.

OBJECTIVES: Since 2011, 3 outbreaks of botulism in US prisons have been attributed to pruno, which is an alcoholic beverage made by inmates. Following 1 outbreak, we conducted a qualitative inquiry to understand pruno brewing and its social context to inform outbreak prevention measures. **METHODS:** We interviewed staff, inmates, and parolees from 1 prison about pruno production methods, the social aspects of pruno, and strategies for communicating the association between botulism and pruno. **RESULTS:** Twenty-seven inmates and parolees and 13 staff completed interviews. Pruno is fermented from water, fruit, sugar, and miscellaneous ingredients. Knowledge of pruno making was widespread among inmates; staff were familiar with only the most common ingredients and supplies inmates described. Staff and inmates

described inconsistent consequences for pruno possession and suggested using graphic health messages from organizations external to the prison to communicate the risk of botulism from pruno. **CONCLUSIONS:** Pruno making was frequent in this prison. Improved staff recognition of pruno ingredients and supplies might improve detection of brewing activities in this and other prisons. Consistent consequences and clear messages about the association between pruno and botulism might prevent outbreaks.

Weiss R; Garg SK; **Bergental RM**; Klonoff DC; Bode BW; Bailey TS; Thrasher J; Schwartz F; Welsh JB; Kaufman FR; ASPIRE In-Home Study Group. Predictors of hypoglycemia in the ASPIRE In-Home study and effects of automatic suspension of insulin delivery. *J Diabetes Sci Technol*. 2015 May 18;9(5):1016-20. PMID: PMC4667346.

BACKGROUND: Hypoglycemia varies between patients with type 1 diabetes and is the main obstacle to therapy intensification. We investigated known and potential risk factors for hypoglycemia in subjects with type 1 diabetes. **METHOD:** In the ASPIRE In-Home study (NCT01497938), a randomized trial of the threshold suspend (TS) feature of sensor-augmented insulin pump (SAP) therapy, subjects' propensity to nocturnal hypoglycemia (NH) was established in a 2-week run-in phase and assessed in a 3-month study phase via continuous glucose monitoring. Categorical variables were tested for association with NH rates in both phases. **RESULTS:** Elevated rates of NH were significantly associated with baseline A1C $\leq 7\%$, with bolus insulin deliveries unassisted by the bolus estimation calculator, and with assignment to the control group during the study phase. **CONCLUSIONS:** Routine use of the TS feature and the bolus estimation calculator are strategies that may reduce the risk of NH.

Wellman BR; **Frail CK**; Zillich AJ; Snyder ME. Pharmacists' experiences with a telephonic medication therapy management program for home health care patients. *Consult Pharm*. 2015 Mar;30(3):163-74.

OBJECTIVE: This study was designed to better understand perceived barriers and facilitators to providing medication therapy management (MTM) services by pharmacists who recently provided telephonic MTM services to home health care patients. These services were provided as part of a randomized, controlled trial (RCT) to develop suggested quality improvement strategies for future service design. **DESIGN:** This was a qualitative study. A semi-structured individual interview format was used to elicit responses. **SETTING:** Interviews were conducted by phone with participants. **PARTICIPANTS:** All pharmacists who recently provided telephonic MTM services as a part of an RCT participated in this study. **INTERVENTIONS:** Pharmacists were asked questions regarding their perceptions of the services, training opportunities, patient perceptions of the services, interactions with physicians, and suggestions for improvement. General demographic information was collected for each pharmacist and summarized using descriptive statistics. Interview data were analyzed using inductive qualitative methods to reveal key themes related to facilitators and barriers of MTM services in home health care patients. **MAIN OUTCOME MEASURES:** The main outcome measures were major themes identified from pharmacist interviews pertaining to barriers, facilitators, and quality improvement strategies for telephonic MTM delivery. **RESULTS:** A total of four pharmacists (i.e., 100% of those who participated in the prior RCT) were interviewed. Several themes emerged from the analysis, including: communication and relationships, coordinating care and patient self-management, logistics, professional fulfillment, service delivery and content, and training opportunities. **CONCLUSIONS:** This study provides possible strategies to overcome barriers and facilitate service provision for future telephonic MTM services.

Westerhaus MJ; Finnegan A; Haidar M; Kleinman A; Mukherjee J; Farmer P. The necessity of social medicine in medical education. *Acad Med*. 2015 May;90(5):565-8.

Abstract: Research and clinical experience reliably and repeatedly demonstrate that the determinants of health are most accurately conceptualized as biosocial phenomena, in which health and disease emerge through the interaction between biology and the social environment. Increased appreciation of biosocial approaches have already driven change in premedical education and focused attention on population health in current U.S. health care reform. Medical education, however, places primary emphasis on biomedicine and often fails to emphasize and educate students and trainees about the social forces that shape disease and illness patterns. The authors of this Commentary argue that medical education requires a comprehensive transformation to incorporate rigorous biosocial training to ensure that all future health professionals are equipped with the knowledge and skills necessary to practice social medicine. Three distinct models for accomplishing such transformation are presented: SocMed's monthlong, elective courses in Northern Uganda and Haiti; Harvard Medical School's semester-long, required social medicine course; and the Lebanese American University's curricular integration of social medicine throughout its entire four-year curriculum. Successful implementation of social medicine training requires the institutionalization of biosocial curricula; the utilization of innovative, engaging pedagogies; and the involvement of health professions students from broad demographic backgrounds and with all career interests. The achievement of such transformational and necessary change to medical education will prepare future health practitioners working in all settings to respond more proactively and comprehensively to the health needs of all populations.

Whitsel LP; Benowitz N; Bhatnagar A; Bullen C; Goldstein F; Matthias-Gray L; Grossmeier J; Harris J; Isaac F; Loeppke R; Manley M; Moseley K; Niemiec T; O'Brien V; Palma-Davis L; **Pronk NP**; Pshock J; Stave GM; Terry PE. Guidance to employers on integrating e-cigarettes/electronic nicotine delivery systems into tobacco worksite policy. *J Occup Environ Med*. 2015 Mar;57(3):334-43.

Abstract: In recent years, new products have entered the marketplace that complicate decisions about tobacco control policies and prevention in the workplace. These products, called electronic cigarettes (e-cigarettes) or electronic nicotine delivery systems, most often deliver nicotine as an aerosol for inhalation, without combustion of tobacco. This new mode of nicotine delivery raises several questions about the safety of the product for the user, the effects of secondhand exposure, how the public use of these products should be handled within tobacco-free and smoke-free air policies, and how their use affects tobacco cessation programs, wellness incentives, and other initiatives to prevent and control tobacco use. In this article, we provide a background on e-cigarettes and then outline key policy recommendations for employers on how the use of these new devices should be managed within worksite tobacco prevention programs and control policies.

Williams DN; **Baker CA**; Kind AC; Sannes MR. The history and evolution of outpatient parenteral antibiotic therapy (OPAT). *Int J Antimicrob Agents*. 2015 Sep;46(3):307-12.

Abstract: Outpatient parenteral antibiotic therapy (OPAT) is now a widely accepted and safe therapeutic option for carefully selected patients. Benefits include cost savings and improved patient satisfaction; risks include failure to adhere to care, unexpected changes in the underlying infection, and adverse drug and

intravenous access events. We report on our 40-year experience with OPAT in a single healthcare system in the USA and highlight OPAT developments in several countries. We compared data on patients treated in our programme over two time periods: Period 1 from 1978 to 1990; and Period 2, calendar year 2014. In Period 2 paediatric patients were excluded. Between Periods 1 and 2, changes included an almost three-fold increase in the number of patients treated per year (80 vs. 229), treatment of more patients with severe orthopaedic-related infections (20% vs. 38%), a marked increase in the use of peripherally inserted central catheters to administer antibiotics (20% vs. 98%), a shorter duration of inpatient stay and a longer duration of OPAT (13 days vs. 24 days). Other changes in Period 2 included treatment of 20% of patients without antecedent hospitalisation, and use of carbapenems rather than cephalosporins as the most frequently administered agents. OPAT was safe, with rehospitalisation rates of 6% and 1% in Periods 1 and 2, respectively. We recommend increased access to structured OPAT teams and the development of standard definitions and criteria for important outcome measures (e.g. clinical 'cure' and unplanned hospital re-admissions). These steps are critical for patient safety and financial stewardship of resources.

Williams JAR; Nelson CC; Caban-Martinez AJ; Katz JN; Wagner GR; **Pronk NP**; Sorensen G; McLellan DL. Validation of a new metric for assessing the integration of health protection and health promotion in a sample of small- and medium-sized employer groups. *J Occup Environ Med*. 2015 Sep;57(9):1017-21.

OBJECTIVE: To conduct validation analyses for a new measure of the integration of worksite health protection and health promotion approaches developed in earlier research. **METHODS:** A survey of small- to medium-sized employers located in the United States was conducted between October 2013 and March 2014 (n = 111). Cronbach alpha coefficient was used to assess reliability, and Pearson correlation coefficients were used to assess convergent validity. **RESULTS:** The integration score was positively associated with the measures of occupational safety and health and health promotion activities/policies-supporting its convergent validity (Pearson correlation coefficients of 0.32 to 0.47). Cronbach alpha coefficient was 0.94, indicating excellent reliability. **CONCLUSIONS:** The integration score seems to be a promising tool for assessing integration of health promotion and health protection. Further work is needed to test its dimensionality and validate its use in other samples.

Wirtz NE; Hamlar DD. Genioglossus advancement for obstructive sleep apnea. *Oper Tech Otolaryngol Head Neck Surg*. 2015 Dec;26(4):193-6.

Abstract: Surgical interventions for the upper airway have long been a part of treatment algorithms for sleep-disordered breathing. Genioglossus advancement is one such procedure designed to specifically treat obstructed breathing related to hypopharyngeal collapse. The procedure involves surgical manipulation of the genioglossus muscle's attachment to the mandible. The result is reducing obstruction at the hypopharynx and tongue base by displacing this musculature anteriorly. The last 30 years have introduced variations of the procedures and further explored the relevant anatomy. Although there is a paucity of high-level evidence, studies have shown promising outcomes when the procedure is tailored to those with appropriate anatomy and pathophysiology.

Wolfson J; Bandyopadhyay S; Elidrisi MA; **Vazquez-Benitez G**; Vock DM; Musgrove D; Adomavicius G; Johnson PE; **O'Connor PJ.** A Naive Bayes machine learning approach to risk prediction using censored, time-to-event data. *Stat Med*. 2015 Sep 20;34(21):2941-57. PMID: PMC4523419.

Abstract: Predicting an individual's risk of experiencing a future clinical outcome is a statistical task with important consequences for both practicing clinicians and public health experts. Modern observational databases such as electronic health records provide an alternative to the longitudinal cohort studies traditionally used to construct risk models, bringing with them both opportunities and challenges. Large sample sizes and detailed covariate histories enable the use of sophisticated machine learning techniques to uncover complex associations and interactions, but observational databases are often 'messy', with high levels of missing data and incomplete patient follow-up. In this paper, we propose an adaptation of the well-known Naive Bayes machine learning approach to time-to-event outcomes subject to censoring. We compare the predictive performance of our method with the Cox proportional hazards model which is commonly used for risk prediction in healthcare populations, and illustrate its application to prediction of cardiovascular risk using an electronic health record dataset from a large Midwest integrated healthcare system.

Wong JC; Foster NC; Maahs DM; Raghinaru D; **Bergental RM**; Ahmann AJ; Peters AL; Bode BW; Aleppo G; Hirsch IB; Kleis L; Chase HP; DuBose SN; Miller KM; Beck RW; Adi S. Response to comment on Wong et al. Real-time continuous glucose monitoring among participants in the T1D exchange clinic registry. *Diabetes Care* 2014;37:2702-2709. *Diabetes Care*. 2015 Apr;38(4):e61. [Comment on: *Diabetes Care*. 2015 Apr;38(4):e60. *Diabetes Care*. 2014 Oct;37(10):2702-9.]

Wu AC; Butler MG; Li L; Fung V; **Kharbanda EO**; Larkin EK; Vollmer WM; Miroshnik I; Davis RL; Lieu TA; Soumerai SB. Primary adherence to controller medications for asthma is poor. *Ann Am Thorac Soc*. 2015 Feb;12(2):161-6.

RATIONALE: Few previous studies have evaluated primary adherence (whether a new prescription is filled within 30 d) to controller medications in individuals with persistent asthma. **OBJECTIVE:** To compare adherence to the major controller medication regimens for asthma. **METHODS:** This was a retrospective cohort study of enrollees from five large health plans. We used electronic medical data on patients of all ages with asthma who had experienced an asthma-related exacerbation in the prior 12 months. We studied adherence measures including proportion of days covered and primary adherence (first prescription filled within 30 d). **MEASUREMENTS AND MAIN RESULTS:** Our population included 69,652 subjects who had probable persistent asthma and were prescribed inhaled corticosteroids (ICSs), leukotriene antagonists (LTRAs), or ICS/long-acting beta-agonists (ICS/LABAs). The mean age was 37 years and 58% were female. We found that 14-20% of subjects who were prescribed controller medicines for the first time did not fill their prescriptions. The mean proportion of days covered was 19% for ICS, 30% for LTRA, and 25% for ICS/LABA over 12 months. Using multivariate logistic regression, subjects prescribed LTRA were less likely to be primary adherent than subjects prescribed ICS (odds ratio, 0.82; 95% confidence interval, 0.74-0.92) or ICS/LABA (odds ratio, 0.88; 95% confidence interval, 0.80-0.97). Black and Latino patients were less likely to fill the prescription compared with white patients. **CONCLUSIONS:** Adherence to controller medications for asthma is poor. In this insured population, primary adherence to ICSs was better than to LTRAs and ICS/LABAs. Adherence as measured by proportion of days covered was better for LTRAs and ICS/LABAs than for ICSs.

Yannopoulos D; Aufderheide TP; Abella BS; Duval S; **Frascone RJ**; Goodloe JM; Mahoney BD; Nadkarni VM; Halperin HR; O'Connor R; Idris AH; Becker LB; Pepe PE. Quality of CPR: an important effect modifier in cardiac arrest clinical outcomes and intervention effectiveness trials [review article]. *Resuscitation*. 2015 Sep;94:106-13. [Comment in: *Resuscitation*. 2015 Sep;94:A3-4.]

OBJECTIVES: To determine if the quality of CPR had a significant interaction with the primary study intervention in the NIH PRIMED trial. **DESIGN:** The public access database from the NIH PRIMED trial was accessed to determine if there was an interaction between quality of CPR performance, intervention, and outcome (survival to hospital discharge with modified Rankin Score (mRS) ≤ 3). **SETTING:** Multi-centered prehospital care systems across North America. **PATIENTS:** Of 8719 adult patients enrolled, CPR quality was electronically recorded for compression rate, depth, and fraction in 6199 (71.1%), 3750 (43.0%) and 6204 (71.2%) subjects, respectively. "Acceptable" quality CPR was defined prospectively as simultaneous provision of a compression rate of 100/min (+/- 20%), depth of 5 cm (+/- 20%) and fraction of > 50%. Significant interaction was considered as $p < 0.05$. **INTERVENTION:** Standard CPR with an activated versus sham (inactivated) ITD. **MEASUREMENTS AND MAIN RESULTS:** Overall, 848 and 827 patients, respectively, in the active and sham-ITD groups had "acceptable" CPR quality performed ($n = 1675$). There was a significant interaction between the active and sham-ITD and compression rate, depth and fraction as well as their combinations. The strongest interaction was seen with all three parameters combined (unadjusted and adjusted interaction p -value, < 0.001). For all presenting rhythms, when "acceptable" quality of CPR was performed, use of an active-ITD increased survival to hospital discharge with mRS ≤ 3 compared to sham (61/848 [7.2%] versus 34/827 [4.1%], respectively; $p = 0.006$). The opposite was true for patients that did not receive "acceptable" quality of CPR. In those patients, use of an active - ITD led to significantly worse survival to hospital discharge with mRS ≤ 3 compared to sham (34/1012 [3.4%] versus 62/1061 [5.8%], $p = 0.007$). **CONCLUSIONS:** There was a statistically significant interaction between the quality of CPR provided, intervention, and survival to hospital discharge with mRS ≤ 3 in the NIH PRIMED trial. Quality of CPR delivered can be an underestimated effect modifier in CPR clinical trials.

Yki-Jarvinen H; **Bergenstal RM**; Bolli GB; Ziemien M; Wardecki M; Muehlen-Bartmer I; Maroccia M; Riddle MC. Glycaemic control and hypoglycaemia with new insulin glargine 300 U/ml versus insulin glargine 100 U/ml in people with type 2 diabetes using basal insulin and oral antihyperglycaemic drugs: the EDITION 2 randomized 12-month trial including 6-month extension. *Diabetes Obes Metab*. 2015 Dec;17(12):1142-9.

AIMS: To compare the efficacy and safety of new insulin glargine 300 U/ml (Gla-300) with insulin glargine 100 U/ml (Gla-100) over 12 months of treatment in people with type 2 diabetes using basal insulin and oral antihyperglycaemic drugs (OADs). **METHODS:** EDITION 2 (NCT01499095) was a randomized, 6-month, multicentre, open-label, two-arm, phase IIIa study investigating once-daily Gla-300 versus Gla-100, plus OADs (excluding sulphonylureas), with a 6-month safety extension. **RESULTS:** Similar numbers of participants in each group completed 12 months of treatment [Gla-300, 315 participants (78%); Gla-100, 314 participants (77%)]. The reduction in glycated haemoglobin was maintained for 12 months with both treatments: least squares (LS) mean (standard error) change from baseline -0.55 (0.06)% for Gla-300 and -0.50 (0.06)% for Gla-100; LS mean difference -0.06 [95% confidence interval (CI) -0.22 to 0.10]%. A significant relative reduction of 37% in the annualized rate of nocturnal confirmed [≤ 3.9 mmol/l (≤ 70 mg/dl)] or severe hypoglycaemia was observed with Gla-300 compared with Gla-100: rate ratio 0.63 [(95% CI 0.42-0.96); $p = 0.031$], and fewer participants experienced ≥ 1 event [relative risk 0.84 (95% CI 0.71-0.99)]. Severe

hypoglycaemia was infrequent. Weight gain was significantly lower with Gla-300 than Gla-100 [LS mean difference -0.7 (95% CI -1.3 to -0.2) kg; $p = 0.009$]. Both treatments were well tolerated with a similar pattern of adverse events (incidence of 69 and 60% in the Gla-300 and Gla-100 groups). **CONCLUSIONS:** In people with type 2 diabetes treated with Gla-300 or Gla-100, and non-sulphonylurea OADs, glycaemic control was sustained over 12 months, with less nocturnal hypoglycaemia in the Gla-300 group.

Zielinski SM; Heetveld MJ; Bhandari M; Patka P; Van Lieshout EM; FAITH Trial Investigators (Regions Hospital Investigators - **Switzer JA, Cole PA, Anderson SA, Lafferty PM, Li M, Ly TV, Marston SB, Foley AL, Vang S, Wright DM**. Implant removal after internal fixation of a femoral neck fracture: effects on physical functioning. *J Orthop Trauma*. 2015 Sep;29(9):e285-92.

OBJECTIVES: The effect of implant removal after internal fixation of a femoral neck fracture on physical functioning was analyzed. Characteristics of patients who had their implant removed were studied, as it is currently unknown from which type of patients implants are removed and what effect removal has on function. **DESIGN:** Secondary cohort study alongside a randomized controlled trial. **SETTING:** Multicenter study in 14 hospitals. **PATIENTS AND INTERVENTION:** Patients who had their implant removed after internal fixation of a femoral neck fracture are compared with patients who did not. **MAIN OUTCOME MEASUREMENTS:** Patient characteristics and quality of life (Short Form 12, Western Ontario McMaster Osteoarthritis Index) were compared. Matched pairs were selected based on patient/fracture characteristics and prefracture physical functioning. **RESULTS:** Of 162 patients, 37 (23%) had their implant removed. These patients were younger (median age: 67 vs. 72 years, $P = 0.024$) and more often independently ambulatory prefracture (100% vs. 84%, $P = 0.008$) than patients who did not. They more often had evident implant back-out on x-rays (54% vs. 34%, $P = 0.035$), possibly related to a higher rate of Pauwels 3 fractures (41% vs. 22%, $P = 0.032$). In time, quality of life improved more in implant removal patients [+2 vs. -4 points, Short Form 12 (physical component), $P = 0.024$; +9 vs. 0 points, Western Ontario McMaster Osteoarthritis Index, $P = 0.019$]. **CONCLUSIONS:** Implant removal after internal fixation of a femoral neck fracture positively influenced quality of life. Implant removal patients were younger and more often independently ambulatory prefracture, more often had a Pauwels 3 fracture, and an evident implant back-out. Implant removal should be considered liberally for these patients if pain persists or functional recovery is unsatisfactory.

Zlowodzki MP; Wijdicks CA; Armitage BM; Cole PA. Value of washers in internal fixation of femoral neck fractures with cancellous screws: a biomechanical evaluation. *J Orthop Trauma*. 2015 Feb;29(2):e69-72.

OBJECTIVE: The purpose of this study was to evaluate the maximum insertion torque of cancellous bone screws in osteoporotic proximal femurs with and without the use of washers. **METHODS:** Eight matched pairs of osteoporotic fresh-frozen human cadaveric femurs (age >70 years, all female) were used. Two screws were inserted in each femur either with or without a washer, and maximum insertion torque was measured using a 50 N.m torque transducer. The testing was performed using a customized device, which allowed the torque transducer to apply a constant axial force and rate of rotation to the screws. **RESULTS:** In 14 of 16 paired trials, the maximum screw insertion torque was higher when a washer was used. The average maximum torque with a washer was 5.1 N.m compared with 3.1 N.m without a washer ($P < 0.01$). **CONCLUSIONS:** The addition of washers increased the maximum insertion torque of cancellous screws in the proximal femur by 65% in this study. Washers prevent the screw heads from penetrating the lateral cortex

at low insertion torque loads, and thereby provide for an improved purchase of the screws in the femoral head with a higher maximum insertion torque. We advocate for routine washer use and encourage future clinical studies to further understand the correlation between their use and improved outcomes in this patient population.

Zysset P; Qin L; Lang T; Khosla S; Leslie WD; Shepherd JA; **Schousboe JT**; Engelke K. Clinical use of quantitative computed tomography-based finite element analysis of the hip and spine in the management of osteoporosis in adults: the 2015 ISCD Official Positions-Part II. *J Clin Densitom.* 2015 Jul-Sep;18(3):359-92.

Abstract: The International Society for Clinical Densitometry (ISCD) has developed new official positions for the clinical use of quantitative computed tomography (QCT)-based finite element analysis of the spine and hip. The ISCD task force for QCT reviewed the evidence for clinical applications and presented a report with recommendations at the 2015 ISCD Position Development Conference. Here we discuss the agreed upon ISCD official positions with supporting medical evidence, rationale, controversy, and suggestions for further study. Parts I and III address the clinical use of QCT of the hip, and the clinical feasibility of existing techniques for opportunistic screening of osteoporosis using CT scans obtained for other diagnosis such as colonography was addressed.

Published Abstracts

Ankel FK. How to effectively supervise and teach residents: entrustment and autonomy [abstract]. *Acad Emerg Med.* 2015 May;22(Suppl 1). [Presented at the *Society for Academic Emergency Medicine (SAEM) Annual Meeting*, San Diego, CA, May 2015.]

Bergenstal RM; Lunt H; Franek E; Travert F; Mou J; Hartman ML; Rosilio M; Bastyr EJ 3rd. Superior reduction of HbA1c in a double-blind, randomized study of basal insulin peglispro (BIL) vs. insulin glargine (GL) in patients (pts) with T1D: IMAGINE 3 [abstract]. *Diabetes.* 2015 Jun;64(Suppl 1):A250. [Poster at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

Bettencourt A; **Mohr WJ**; **Stuck LH**; Muhar AA; **Ahrenholz DH.** Non-invasive stroke volume measurement during acute burn fluid resuscitation [abstract #132]. *J Burn Care Res.* 2015 Jul-Aug;36(Suppl 1):S131. [Poster at the *American Burn Association (ABA) 47th Annual Meeting*, Chicago, IL, Apr 2015.]

Introduction: Effective fluid resuscitation is one of the cornerstones of modern burn care, but determining optimal resuscitation can be challenging. Traditional endpoints used have been urine output (UO) and mean blood pressure (MAP). Studies using cardiac output and index, oxygen delivery and consumption, and base deficit and lactate have resulted in increased IV fluid (IVF) administration without improvements in burn outcomes. Changes in Stroke Volume Index (SVI) and Stroke Volume Variation (SVV) in the hypovolemic individual (SVI < 33 and a SVV > 12%) have been shown to predict fluid responsiveness in some patient populations but has not yet been studied in burn patients. The purpose of this study was to determine if SVI and SVV, measured by a non-invasive cardiac output monitor (NICOM), correlates with traditional endpoints to predict the need for increased IVF during resuscitation. Methods: This was an IRB approved, prospective, blinded, observational study of patients ≥ 18 years old with >20% TBSA burns. The NICOM device was applied during the acute resuscitation and hemodynamic data were recorded every minute, stored on a

memory device, and analyzed using standard Receiver Operating Curve (ROC) methods. Our standardized Nurse Driven Resuscitation Protocol, which titrates IVF based on hourly UO, MAP, and central venous pressure was used. Median SVI and SVV measurements in the hour prior to a patient recording of low UO were analyzed to determine their ability to predict such episodes. A ROC curve was plotted with confidence bounds, as well as the area under the curve (AUC) and its confidence interval. Potential thresholds for SVI and SVV were assessed for sensitivity and specificity. Results: This study included 20 patient resuscitations. In spite of chest wall burns, we were able to successfully obtain measurements from the skin sensors on all patients. SVI ROC analysis estimated an AUC of 67.6% (95% CI: 61.3%-73.8%), representing a moderate-low ability to predict an upcoming low UO. SVI values between 22.5 and 28.5 had both sensitivity and specificity >50%, with specificity reaching 75% for an SVI of 22. The SVV ROC analysis showed a low ability to predict low urine output (AUC=60.3% [53.7%-66.9%]). Conclusions: SVI below 33 does not predict need for increased IVF in the burn patient. A SVI < 22 would intervene early in half, while overtreating a quarter of the patients. Despite evidence in the literature to support the use of SVV in fluid resuscitation, SVV was not able to predict patients with low upcoming urine outputs as well as SVI in this patient population.

Bond ME; Zantek ND; **Henry KD; Engebretsen KM; Thomas AJ; Stellpflug SJ**. Intravenous fat emulsion does not significantly alter clotting markers in dabigatran-treated blood [abstract #20]. *J Med Toxicol*. 2015 Mar;11(1):11. [Poster at the *American College of Medical Toxicology (ACMT) Annual Scientific Meeting*, Clearwater Beach, FL, Mar 2015.]

Background: Dabigatran etexilate is an oral direct thrombin (factor IIa) inhibitor that is Food and Drug Administration-approved to reduce the risk of stroke and systemic embolism in patients with non-valvular atrial fibrillation and for the treatment and reduction of risk of deep vein thrombosis (DVT) and pulmonary embolism. Dabigatran offers several advantages over traditional treatment with warfarin, including but not limited to no routine laboratory monitoring. It has been shown to be equivalent in prevention of stroke and DVT with similar bleeding rates. Hemodialysis has been proposed as a method of reversal, but unfortunately there is no known reversal method appropriate for use in patients with emergent life threatening hemorrhage. Intravenous fat emulsion (IFE) has been used in the treatment of overdose of lipophilic drugs. Most toxicologists only recommend IFE for patients in extremis after ingestion of a lipid soluble substance. Dabigatran is lipidsoluble, particularly in pro-drug form. Research Question: Will IFE treatment correct in vitro dabigatran-induced coagulopathy of human blood samples? Methods: Blood draws from healthy volunteers were spiked with dabigatran or dabigatran plus IFE. Values for Ecarin clot time (ECT), international normalized ratio (INR), and activated partial thromboplastin time (aPTT) were compared across both study arms. Data were analyzed using paired ttests. Results: The study included 18 healthy volunteers. Addition of dabigatran caused a marked increase in ECT, INR, and PTT compared with untreated and samples treated only with IFE. There was no significant difference in the ECT between the dabigatran and dabigatran+IFE arms (see table). INR and aPTT were statistically significantly different between the two arms. Discussion: In vitro addition of IFE to dabigatran-treated samples did not significantly alter the ECT. The small decreases in INR and aPPT were statistically significant but unlikely to be clinically relevant. These data suggest IFE may not successfully reverse the effects of dabigatran. The major limitation of these studies is their in-vitro nature. Conclusion: IFE does not reverse in vitro dabigatran-induced do-agulopathy.

Butryn ML; Forman EM; Keefe FJ; McAuley E; **Sherwood NE**; Stevens VJ. Building and managing a clinical research team [abstract]. *Ann Behav Med*. 2015 Apr;49(Suppl 1):S53. [Poster at the *Society of Behavioral Medicine 36th Annual Meeting & Scientific Sessions*, San Antonio, TX, Apr 2015.]

Abstract: Strong management and leadership skills create a positive workplace culture in which team members receive high quality mentoring and do work with a high level of productivity, quality, and efficiency. Although training in management and leadership is commonplace in many industries, it is rarely part of formal education or professional development in academia and other settings in which clinical research is conducted. This panel will focus on topics of interest to scientists who currently direct clinical research in behavioral medicine, or who are planning to do so in the future. The panel members will draw upon their years of experience serving as principal investigators and leaders of clinical research teams and will discuss challenges and best practices in three domains: 1) Putting together an A team: recruiting, selecting, and retaining outstanding research staff and trainees, 2) Mentoring and managing team members: setting the stage for high-quality work and training through inspiration, goal-setting, feedback, and effective meetings, and 3) Managing yourself: keys to staying energized, productive, and innovative as a leader. The moderator will provide the panel members with prompts and questions in these three areas and panel members will also take questions from the audience.

Cole JB; Nystrom PC; **Orozco BS**; Moore JC; Kornas RL; Fryza BJ; Steinberg LW; O'Brien-Lambert A; **Stellflug SJ**; **Engbreetsen KM**; Ho JD. A prospective study of ketamine versus haloperidol for severe prehospital agitation [abstract #7]. *Clin Toxicol (Phila)*. 2015 Jul;53(7):642. [Poster at the *North American Congress of Clinical Toxicology (NACCT) 2015 Annual Meeting*, San Francisco, Oct 2015.]

Background: Undifferentiated severe agitation (SA) in the prehospital environment is a commonly encountered problem that represents a safety issue for both the patient and their caregivers. When rapid sedation is indicated, controversy exists regarding the ideal agent. We hypothesized ketamine (K) 5 mg/kg intramuscular (IM) would be superior to haloperidol (H) 10 mg IM for SA in the prehospital environment, with time to adequate sedation as our primary outcome measure. Methods: This is a prospective open label Waiver of Consent study (45 CFR 46.116) of all patients in our EMS system needing chemical restraint for SA that were subsequently transported to our ED. From October 2014 to February 2015, all patients in our EMS system with SA were treated with H. Our standard treatment for prehospital SA in February of 2015 was subsequently changed to K. All paramedics in our EMS system were trained in the Altered Mental Status Scale, a validated ordinal scale of agitation. Paramedics carried stopwatches and measured time to adequate sedation after injection. Secondary outcomes included additional sedatives given, ethanol concentration, intubation, vomiting, dystonia, akathisia, emergence reaction, laryngospasm, or hypersalivation. Results: 89 subjects have thus far been enrolled; 64 received H, 25 received K. Median age of the H arm was 32 (range 18.69); median age for K was 36 (range 20.55). For gender, 32/63 (51%) were male in the H arm; 15/25 (60%) were male in the K arm. Twelve subjects in the H arm required another medication prehospital for sedation; all were given midazolam 5 mg IM. No subjects in the K arm required additional sedation prehospital. In the H arm 38/64 (59%) achieved adequate sedation prehospital; in the K arm 24/25 (96%) achieved adequate sedation prehospital ($p \leq 0.001$). Median time to adequate sedation in the H arm was 19.6 min (range 3.8.84); median time to adequate sedation in the K arm was 5.5 min (range 1.6.15) ($p \leq 0.0001$). Regarding intubation, 2/64 (3%) of subjects in the H arm were intubated versus 12/25 (48%) of subjects in the K arm ($p \leq 0.001$). Complication rate including vomiting, dystonia, akathisia, emergence

reaction, laryngospasm, or hypersalivation were higher in the ketamine group (3/55, 5% in the H arm versus 10/22, 45% in the K arm). Complications in the H arm included only dystonia and vomiting. All other complications were seen in the K arm. Median breath ethanol in the H arm was 0.16 g/dL (n = 53, range 0.0-0.42), in the K arm it was 0.18 g/dL (n = 10, range 0.0-0.34). Conclusion: For severe prehospital agitation, ketamine 5 mg/kg IM is superior to haloperidol 10 mg IM regarding time to adequate sedation. Ketamine is, however, associated with a significantly higher complication rate.

Crain AL; Sherwood NE; Forman EM; Butryn ML; Almirall D; Jeffery RW; Levy RL. Achieving clinically significant weight loss: how soon can we respond to non-responders [abstract]? *Ann Behav Med.* 2015 Apr;49(Suppl 1):S20. [Presented at the *Society of Behavioral Medicine 36th Annual Meeting & Scientific Sessions*, San Antonio, TX, Apr 2015.]

Background: State-of-the art behavioral interventions can help people lose 8-10% of body weight over a 6 month period, typically the nadir for weight loss efforts. Unfortunately, 40-60% of participating adults do not achieve this clinically significant weight loss goal. If early response to treatment accurately predicts successful weight loss, identifying early nonresponders and either augmenting or switching treatment approaches could be a potentially cost-effective approach to enhancing overall success rates. However, clinically useful definitions for early response/non-response have not been established. Purpose: To systematically compare alternative definitions for identifying early responders/non-responders to standard behavioral weight loss intervention based on weight loss during treatment, rate of weight loss, and program attendance, as well as the timing at which early responders/non-responders are identified. Methods: Weekly weight data collected during intervention sessions and at baseline and 6-month research assessments from four behavioral weight loss trials (n=492) were pooled. Receiver operating characteristic (ROC) curves were used to compare alternate definitions for early response/non-response. The accuracy in predicting successful weight loss at month 6 (10% weight loss) for each was quantified using the area under the ROC curve (AUC). Results: Early response/non-response definitions based on cumulative weight loss to date, either in pounds or as percent of starting weight lost, more accurately predict successful weight loss than rules based on rate of loss (1, 1.5, 2 lbs/week) or program attendance. By Week 3, pounds (AUC=.72) and percent lost (AUC=.73) accurately predicted success, and better than rate- (AUCs=.60-.66) or attendance-based rules (AUCs=.52-.53). We will demonstrate how to use model-predicted likelihoods (e.g., participants losing less than 3% of body weight only have a 43% success likelihood) to refine a non-response definition (e.g., 3% weight loss by 3 weeks) to meet specific objectives such as a high non-responder rate. Conclusions: Simpler definitions for early response/non-response based on amount or percent of weight loss during treatment predict successful weight loss at month 6 at least as accurately as more complicated definitions.

Davies M; Mosenzon O; **Bergenstal RM;** Kushner RF; Skjoth TV; Claudius B; DeFronzo RA. Early response to liraglutide 3.0 mg in adults with overweight or obesity and type 2 diabetes: subanalysis of the SCALE Diabetes Trial [abstract]. *Diabetes.* 2015 Jun;64(Suppl 1):A564. [Poster at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

Desai JR; O'Connor PJ; Vazquez-Benitez G; Schroeder EB; Karter AJ; Steiner JF; Nichols GA; Reynolds K; Newton KM; Pathak RD; Waitzfelder BE; Butler MG; Harris R; Thomas A; SUPREME-DM Study Group. Surveillance of cardiovascular events and total mortality among insured adults with and without diabetes: the SUPREME Cohort Study [abstract 55-OR]. *Diabetes*. 2015 Jun;64(Suppl 1):A14. Project Number: A13-132 SUPREME DM. [Presented at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

Desai JR; Vazquez-Benitez G; O'Connor PJ. How to minimize future CV events and total mortality in adults with diabetes: lessons from the 10,000,000 person-year SUPREME Cohort Study [abstract]. *Diabetes*. 2015 Jun;64(Suppl 1). Project Number: A13-132 SUPREME DM. [Presented at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

Frail CK; Chapman SA; Moon JY; Pittenger AL; Undeberg MR. Application of an entrustable professional activity model in advanced pharmacy practice experience assessment [abstract]. *Am J Pharm Educ*. 2015 Jul;79(5):26. [Presented at the *American Association of Colleges of Pharmacy (AACP) 116th Annual Meeting*, National Harbor, MD, Jul 2015.]

Objectives: To apply the entrustable professional activity (EPA) model to assess student performance on educational outcomes for advanced pharmacy practice experience (APPE) assessment. **Method:** The assessment of professional tasks and practice activities through the use of EPAs has been successfully implemented in medical education for assessing trainee preparation for practice. This EPA model is being applied to our pharmacy education to develop an assessment framework across the APPE curriculum. APPE course directors, practice faculty, and the Office of Experiential Education collaboratively defined a set of universal EPAs that are critical for pharmacists in any practice setting that will be assessed in all rotation types. Additionally, course directors have defined rotation type-specific EPAs unique to pharmacists working in ambulatory, acute, community, and institutional care. **Results:** Performance on EPAs will be used in two assessment approaches: individual preceptor assessment for APPE performance, and objective competency examinations of all students during the APPE year. Progress to acceptable level of entrustment for each EPA will be assessed by preceptors using a four-level scale with minimum levels of performance required. Universal EPAs will also be used to assess performance on an objective case-based performance examination to be administered mid-APPE year. Passing this examination is required for advancing to the remaining APPE blocks, and ultimately for graduation. **Implications:** It is anticipated that applying EPAs to two assessment strategies will clarify expectations for both students and preceptors. EPAs will also allow preceptors to translate assessment decisions based on activities students have demonstrated as a part of usual practice throughout the rotation.

Frail CK; Garza OW; Huet AL. Development of an innovative technology-driven transitions of care service to improve medication use in rural populations [abstract]. *Pharmacotherapy*. 2015 Nov;35(11):e216. [Presented at the *American College of Clinical Pharmacy (ACCP) 2015 Global Conference on Clinical Pharmacy - Scientific*, San Francisco, CA, Oct 2015.]

PURPOSE: Pharmacist-driven transitions of care have demonstrated the ability to reduce hospital re-admissions and improve patient outcomes. However, access to pharmacy services in rural areas limit opportunities for patients to benefit from face-to-face pharmacist care within the critical time period

immediately following discharge. An innovative approach to in-home medication reconciliation and patient education supported by technology is one solution to increasing access to care for this population.

METHODS: This service is based on a partnership between a community pharmacy organization and nearby hospitals in rural Ohio. Upon discharge, the pharmacist reconciles and coordinates the hospital discharge orders with their community pharmacy records, the primary care provider, and the patient. Post-discharge medications are dispensed in a calendarized adherence packaging system. Medications are delivered to the patient's home by the community pharmacy's delivery service. At delivery, the patient receives education from the pharmacist via videoconferencing on a computer tablet. Unneeded medications are removed from the patient's home to prevent confusion. Pharmacists follow up with patients as needed based on their specific needs. **RESULTS:** Data is currently being collected in order to empirically evaluate this process. Outcomes include re-admissions at 30 and 180 days following discharge and patient satisfaction with the service. Pharmacists also document drug therapy problems identified during medication reconciliation. **CONCLUSION:** This innovative pharmacist care model may offer a solution to increasing access to pharmacy services for underserved patients during a critical transition in care.

Hirsch IB; Dubose SN; Peters AL; Aleppo G; **Bergenstal RM**; Largay JF; Massaro EM; Beck RW; Weinstock RS. Hypoglycemia and glucose variability in older adults with type 1 diabetes (T1D) [abstract 408-P]. *Diabetes*. 2015 Jun;64(Suppl 1):A106. [Poster at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

Hirsch IB; Probstfield JL; David BR; Ahmann AJ; **Bergenstal RM**; Gilbert M; Kingry C; Khakpour D; Lai D; Pressel SL; Riddle MC; O'Brien KD. Glucose variability in type 2 diabetes: the initial results of the FLAT-SUGAR trial [abstract 385-OR]. *Diabetes*. 2015 Jun;64(Suppl 1):A100. [Oral presentation at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

Isetts BJ; Pittenger AL; Janke AL; **Frail CK**; Moon JY; Conway JM; Hager KD; St. Peter WL; Speedie MK. Strategies for exceeding standards 11 and 24: Interprofessional Education (IPE) and assessment [abstract]. *Am J Pharm Educ*. 2015 Jul;79(5):120. [Presented at the *American Association of Colleges of Pharmacy (AACP) 116th Annual Meeting*, National Harbor, MD, Jul 2015.]

Objective/Intent: To prepare collaboration-ready graduates for team-based care in redesigned healthcare delivery systems. **Methods/Process:** Pharmacists must collaborate in order to provide the highest levels of care for patients. The preparation of pharmacy graduates to function effectively in high-performing teams focuses on Core Competencies for Interprofessional Collaborative Practice and Lencioni and Tuckman teamwork principles of effective team functioning. A multifaceted strategy is being used for engaging students in developing fundamental team-based skills in combination with IPE awareness and immersion experiences across all four years of the curriculum, recognizing that collaboration-ready is essential to intra-, as well as inter-professional settings. Pharmacy is utilizing the entrustable professional activity (EPA) and milestone strategy to ensure all students are meeting graduation standards for generalist pharmacy practice, using units of professional activity that require collaboration skills. Additionally, EPAs are being applied to Advanced Pharmacy Practice Experience assessment and include effective collaboration as a graduation standard for generalist pharmacy practice. **Results/Outcomes:** An IPE focused EPA has been developed as a part of a broader effort to revise experiential education assessment. Students will have to demonstrate

achievement of this EPA in: 1) practice with preceptors on each core required rotation (acute, ambulatory, community, institutional) and, 2) in a high stakes objective performance assessment required for graduation. In this respect, students must demonstrate collaboration skills within and across teams throughout both the didactic and experiential curriculum. Implications: Graduates from the University of Minnesota College of Pharmacy will be collaboration-ready for intra-, and inter-professional team-based care required in redesigned healthcare delivery systems.

Katzung KM; **LeRoy JM; Cole JB**. Prolonged sodium nitroprusside infusion resulting in fatal cyanide poisoning during national sodium thiosulfate shortage [abstract]. *Clin Toxicol (Phila)*. 2015;53(7):671. [Poster at the *North American Congress of Clinical Toxicology (NACCT) 2015 Annual Meeting*, San Francisco, CA, Oct 2015.]

Background: Sodium nitroprusside (SNP) is a vasodilator used primarily to treat hypertensive emergencies and improve cardiac output in heart failure. Toxicity results from conversion of SNP to cyanide (CN) and can occur when SNP is infused at doses ≥ 2 mcg/kg/min for prolonged periods. The diagnosis of superimposed cyanide toxicity in critically ill patients is challenging: the patient may deteriorate without the usual laboratory markers of acute cyanide overdose. Concomitant administration of sodium thiosulfate (STS) prevents accumulation of CN and is considered standard of care for patients receiving prolonged SNP infusion. Currently there is only one FDA-approved distributor of STS and the drug has been on national shortage since 2011. Case Report: A 23-year-old woman with recent diagnosis of severe dilated cardiomyopathy was admitted to the intensive care unit and started on an infusion of SNP, with documented maximum rate of 3.0 mcg/kg/min. Despite initial improvement she deteriorated on hospital day 4. Respiratory failure prompted intubation, which was complicated by a PEA arrest. Return of spontaneous circulation was achieved after 15 minutes of ACLS. After confirming that she had not received STS during her hospital course, healthcare providers (HCPs) suspected CN toxicity secondary to prolonged SNP infusion. She was empirically treated with 300 mg sodium nitrite (SN) and 12.5 g of STS (Nithiodoter), then re-dosed (per package guidelines) with 150 mg SN and 6.25 g STS. CN levels were sent pre and post-treatment, returning at 6.289 mg/L and 0.128 mg/L respectively. Never recovering from her PEA arrest, she required increasing vasopressor support for cardiogenic shock and hemodialysis for acute kidney failure. Unfortunately, ARDS progressed. Her family ultimately withdrew care, and she expired on hospital day 5. Prior to the national shortage, STS was routinely administered with all NPS infusions at this institution per standardized order set. Case Discussion: CN toxicity from SNP infusion is well-documented in the literature, but it appears that significant morbidity related to SNP infusion is rare due to the routine administration of STS. The ongoing shortage of STS may result in further cases of SNP toxicity. HCPs are unlikely to be familiar with SNP's mechanism of toxicity and likely rely on standardized order sets that may be altered without sufficient warning by hospital pharmacies during drug shortages. Conclusions: HCPs should be cognizant of drug shortages and their negative effects on previously standardized treatment modalities. Additionally, in the setting of prolonged SNP infusion, HCPs must maintain vigilance for CN toxicity.

LeRoy JM; Olives TD; Cole JB. Near death experience with baclofen and the role of the poison center [abstract]. *Clin Toxicol (Phila)*. 2015;53(7):703. [Poster at the *North American Congress of Clinical Toxicology (NACCT) 2015 Annual Meeting*, San Francisco, CA, Oct 2015.]

Background: Baclofen is a GABAB agonist that, in overdose, can cause hypothermia, seizures, and profound coma. Multiple case reports have shown that it can mimic brain death. However, physicians caring for

critically ill patients may not be aware of this. We present a case where a baclofen overdose mimicked brain death, and the family was told the patient was in fact brain dead. However, the intervention of Poison Control (PC) prevented withdrawal of care. Case Report: A 42-year-old man was found comatose at home near pill bottles. Medications included baclofen, hydrocodoneacetaminophen, tizanidine, and gabapentin. He was given 0.4 mg naloxone en route to hospital with no effect. On Emergency Department arrival, he abruptly had a tonic-clonic seizure. PC was contacted and supportive care was recommended. The patient was subsequently intubated. Vital signs after intubation were as follows: Temperature 32.8oC, pulse 55 bpm, blood pressure 116/74 mmHg. Physical exam revealed mid-point pupils. Labs included a normal serum creatinine of 0.88 mg/dL. He was admitted to intensive care. The next day, he continued to be comatose without sedation. The history suggested that the patient did not ingest a large quantity of baclofen. Therefore, brain death was suspected, and an electroencephalogram was performed which revealed no brain activity. A follow-up call from PC revealed that the treating physician gave the grim news of brain death to the family and planned for withdrawal of care in the next 1.2 days. However, the recommendation from PC was to continue supportive care, as the patient was known to have baclofen on his medication list. Furthermore, his presentation was consistent with baclofen overdose mimicking brain death. The physician was receptive and relayed the information to the family members. The patient began moving extremities later that evening and was discharged to Psychiatry in his usual state of health 4 days later. Discussion: In this case, it was not recognized by the treating physician that a baclofen ingestion could mimic brain death. This caused the patient's family unnecessary grief and nearly cost the patient his life. However, as a result of a PC consultation, the treating physician was made aware of the many reports of baclofen mimicking brain death, and no permanent harm came to the patient. Conclusion: We report a case of baclofen overdose mimicking brain death that nearly resulted in iatrogenic death. Verification with a PC before declaring brain death in an overdose patient can prevent unnecessary deaths.

Levine MD; Pizon AF; **Stellpflug SJ**; Vhora R; Wiegand TJ; Traub S. Estimating the impact of adopting the revised United Kingdom acetaminophen treatment nomogram in the US population [abstract #62]. *J Med Toxicol*. 2015 Mar;11(1):26. [Poster at the *American College of Medical Toxicology (ACMT) Annual Scientific Meeting*, Clearwater Beach, FL, Mar 2015.]

Background: The decision to treat an acute acetaminophen overdose patient is based on plotting the acetaminophen concentration on the Rumack-Matthew nomogram. In 2012, the UK's Medicines and Healthcare Products Regulatory Agency lowered the treatment threshold by 50 %, mandating treatment if a 4-h acetaminophen concentration exceeded 100 mcg/mL. Hypothesis: We hypothesize the number of additional patients who would require treatment for acetaminophen ingestions can be estimated using data from a diverse group of hospital Emergency Departments (EDs). Methods: In this institutional review board-approved study, patients >13 years who presented to one of seven US hospitals with an acute acetaminophen ingestion between 7/1/2008 and 6/30/2013 were screened. Patients who would require treatment based on the current (revised) UK nomogram, but not the current US nomogram, were included. The estimated number of cases nationally was extrapolated by taking the proportions of cases at each hospital as a percentage of total ED visits for that center and applying this to the total number of annual ED visits in that participating county and then to the US. County and national visit information was obtained from the Area Health Resources Files from the Department of Health and Human Services. Results: One

hundred seven eligible patients were identified. The median age was 23 (18–35) years; 63 % were female. Applying the revised UK nomogram to the US population would result in treating an additional 5.4 cases/100,000 patients. Extrapolating this number nationally, an estimated 6,951 (95 % CI 0–24,585) additional patients would be treated annually. Discussion: Patients whose acetaminophen concentration falls below the currently used US nomogram historically have a very low rate of developing space hepatic failure. Adapting the current UK treatment strategy in the US would increase the number of patients treated (and exposed to potential iatrogenic complications) and increase costs without providing any likely clinical benefit. Conclusion: Adopting the revised UK treatment threshold to acute APAP ingestions in the US would result in treating an additional 6,951 patients annually.

Levine MD; Pizon AF; **Stellpflug SJ**; Wiegand TJ; Villano J; Peak D; Thomas SH. Hypoglycemia in acetaminophen-induced hepatic failure: what's the significance [abstract]? *Ann Emerg Med*. 2015 Oct;66(4 Suppl):S140. [Poster at the *American College of Emergency Medicine (ACEM) Scientific Assembly*, Boston, MA, Oct 2015.]

Background: Acetaminophen (APAP) toxicity is a common cause of acute hepatic failure in the United States. Hypoglycemia is a well-known complication of hepatic failure. However, the prognostic implications of a single episode of hypoglycemia in APAP-induced hepatic failure is not known. Study Objectives: The primary objective of this study is to assess the significance of a single hypoglycemic episode in patients admitted with acute APAP-induced. Methods: This study is a multi-center, retrospective study of patients admitted with acute liver injury due to APAP toxicity between January 1, 2008 through June 30, 2013. Adult subjects (age > 15 years) with known acetaminophen ingestion, with transaminase elevation, defined as an AST > 1000 IU/L were included. Those subjects with transaminase elevation due to other etiologies were excluded. Hypoglycemia was defined as a single glucose < 50 mg/dL at any point during the hospitalization. Data was abstracted using standardized chart review methodology. Hypoglycemia was compared against death. Logistic regression was performed to assess confounding variables. Results: During the study period, a total of 233 cases were identified. Hypoglycemia was identified in 18 subjects. 28 subjects died, and 10 received a liver transplant. The median (IQR) maximal AST was 6374 (3222-10261) IU/L, and the median (IQR) maximal prothrombin time was 33.6 (23.3-52.5) seconds. After comparing for initial blood glucose and nadir pH, hypoglycemia was significantly associated with the composite endpoint (OR 4.59; 95% CI 1.42-14.8). Conclusions: In this series of patients admitted with APAP-induced hepatic failure, a single episode of hypoglycemia was highly predictive of death.

Levine MD; Thomas SH; Pizon AF; **Stellpflug SJ**; Vohra R; Wiegand TJ; Traub S; Traub N; Tashman D; Seabury S. Estimating the financial impact of adopting the revised United Kingdom acetaminophen treatment nomogram in the US population [abstract #251]. *Clin Toxicol (Phila)*. 2015 Jul;53(7):754. [Poster at the *North American Congress of Clinical Toxicology (NACCT) 2015 Annual Meeting*, San Francisco, Oct 2015.]

Background: The decision to treat a patient with an acute acetaminophen overdose is determined by plotting the acetaminophen concentration on the Rumack-Matthew nomogram. In 2012, the United Kingdom's Medicines and Healthcare Products Regulatory Agency lowered the treatment threshold by 50%, mandating treatment if a four-hour acetaminophen concentration exceed 100 mcg/mL. Using a multi-center study in emergency departments throughout the US, we had previously estimated that changing the treatment threshold from the current threshold to the new UK threshold of 100 mcg/mL would result in

treating an additional 6,951 adults annually. The purpose of this study was to estimate the financial burden of such a decision. **Methods:** The averages charges and payments for emergency department visits were obtained by reviewing the Emergency Room Visits (ERV) file of the Medical Expenditure Panel Survey (MEPS) from 2000-2012. The search utilized only patients discharged from the emergency department who were treated for poisoning by drugs, medicinal and biological substances. The monetary values were subsequently adjusted to 2012 dollars using the medical component of the Consumer Price Index. **Results:** For patients discharged from the emergency department, the average total charge per patient was \$2221, with an average corresponding patient of \$772. Extrapolating these values to the estimated number of additional patients who would require treatment if the treatment threshold were changed yielded an estimated \$5.4 million in payments and \$15.4 million in charges. **Discussion:** Changing the acetaminophen treatment nomogram guidelines in the US to that of the UK would result in estimated charges of more than \$15 million and estimated payments of more than \$5 million annually. Our estimates do not include costs associated with increased ED referrals from poison centers or costs associated with admissions for the additional patients requiring antidotal therapy. The last step necessary for a full fiscal evaluation will be to estimate if the treatment threshold change will eliminate any patients from developing end-stage liver failure requiring transplantation, thus potentially balancing some of the additional cost incurred from the change. **Conclusions:** Changing the treatment threshold would result in significant healthcare costs for a set of extremely low-risk patients for unclear benefit.

Mazze RS; **Bergental RM; Strock ES; Min X**; Thompson K; Borgman SK; Hermansson K; Mattheus M; Woerle HJ; Johansen OE. Glycemic variability correlated with 1.5-anhydroglucitol (1.5 AHG) but not with markers of oxidation, inflammation, and endothelial function: baseline characteristics of the CAROLINA CGM sub-study [abstract]. *Diabetes*. 2015 Jun;64(Suppl 1):A246. [Poster at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

Miyamoto CF; Davis AA; Nkengla CK; Kuehn C; Rood JM; Mohr WJ; Ahrenholz DH. Bridging the gap: from burn preceptor to clinical expert [abstract #323]. *J Burn Care Res*. 2015 Jul-Aug;36(Suppl 1):S227. [Poster at the *American Burn Association (ABA) 47th Annual Meeting*, Chicago, IL, Apr 2015.]

Introduction: Recent growth in the nursing workforce has resulted in a higher percentage of nurses with less than two years of experience, leaving relatively few seasoned nurses available to function as preceptors. This imbalance has created challenges for nursing units that rely on competent, but somewhat inexperienced nurses, to assume the responsibilities of precepting. Little research exists on how to cultivate preceptorship among new nurses using an evidence-based practice model capable of sustaining unit-wide competency. The purpose of this study was to identify the needs of an established Burn Center's preceptors working to become clinical experts and to better assist their less experienced coworkers. **Methods:** A needs assessment was performed via an anonymous 12-question survey for nursing preceptors (RNP) and non-preceptors (NP) in the Burn Center. These responses were used to determine the opportunities for improvement for the preceptor program. Survey respondents also had the opportunity to submit write-in specific suggestions. **Results:** A total of 12 RNP and 23 NP surveys were completed with an overall response rate of 74.1%. Of the NP respondents, 69.6% stated the teaching and instruction of burn-specific cares are "sometimes consistent" between preceptors. Additionally, the NP group rated only 36.4% of the current preceptors' clinical knowledge as "expert" and merely "average" in 63.3% of responses. The RNP group

described themselves as “competent” in 59.1% of responses versus 40.9% being “comfortable” in providing burn specific information to new nurses on orientation. More than half, 58.3%, of the RNP group also felt they were “competent” preceptors and clinical experts in providing education and resources to the inexperienced burn nurse. However, only 50% of the RNP group felt they were able to consistently explain the rationales behind treatments and interventions. Eight respondents submitted write-in suggestions. Four of these stated the need for more burn-specific experience and education. Conclusions: Burn centers present unique challenges for preceptors, especially those who are relatively inexperienced. Our results show the need for preceptors to use a consistent and comprehensive approach to instill competence and confidence in their preceptees. Applicability of Research to Practice: Creating a preceptor program that develops preceptors into clinical experts can improve burn programs. By increasing the clinical expertise of preceptors and the consistency of precepting practices, better burn nursing care will be available to all burn patients.

Mohr WJ; Null E; Morris AR; Moseley MB; Wewerka SS; Salzman JG; Endorf FW; Ahrenholz DH. Boomtown: analysis of burn injuries from the Bakken Oil Industry [abstract #133]. *J Burn Care Res.* 2015 Jul-Aug;36(Suppl 1):S132. [Poster at the *American Burn Association (ABA) 47th Annual Meeting*, Chicago, IL, Apr 2015].

Introduction: Increased oil production in the Bakken shale formation has resulted in a large number of serious work-related burn injuries. The purpose of this study is to compare patient demographics, burn characteristics, and outcomes of patients employed by the oil industry (OIL) to those not oil related (NO) admitted to a regional burn center. Methods: This is a retrospective observational study of patients admitted to our ABA verified Burn Center between July 2007 and October 2013. To accommodate the statistical analysis plan, we selected control patients (NO) in a 5:1 ratio for comparison. Patient demographics, treatment characteristics, and patient outcomes were abstracted. All variables were summarized and compared between groups using unadjusted Student t-tests for continuous variables, Chi-squared test, Fisher’s Exact test, and Wilcoxon ranked-sum tests as appropriate for categorical variables. Results: A total of 184 patients (32 OIL, 148 NO) were included. OIL patients were significantly younger (38.0 ± 11.8 vs. 45.3 ± 18.4 years; $p = 0.006$), male (100% vs. 75.4%; $p < 0.001$), burned due to an explosion (66% vs. 9%; $p < 0.001$), and had a higher median [IQR] %TBSA (22% [5%-24%] vs. 5% [3%-10%]; $p = 0.006$). A higher proportion of OIL patients underwent prehospital intubation (59% vs. 17%; $p < 0.001$) and required continued burn center ventilation (41% vs. 18%; $p = 0.004$), but there was no difference in the median number of ventilator days (6 [2–11] vs. 2.5 [2–12]; $p = 0.67$). The OIL injured patients had a higher median [IQR] number of operations (1 [0–2] vs. 0 [0–1]; $p = 0.02$), and were more likely to experience at least one surgical complication (50% vs. 22%; $p = 0.001$) than the NO group. Both groups demonstrated a similar survival rate (OIL = 94%, NO = 97%; $p = 0.61$), but oil field patients had a much higher median hospital length of stay (13.5 [3–40] vs. 4 [1–13] days; $p < 0.001$). Conclusions: Injuries as the result of oil related activities have different demographic, treatment, and outcome characteristics compared to the general burn population. These patients are more severely burned, undergo more surgical procedures, require ventilatory support more often, use more intense in-hospital resources, and experience complications in greater numbers. Education and support for hospitals located near oil fields but hundreds of miles from definitive burn care is critical for initial resuscitation, and advanced planning to accommodate the small volume but resource intensive care required at regional burn centers should be considered. Applicability of Research to Practice: Detailing characteristics of this specific burn mechanism will allow for better prehospital

stabilization and ultimate functional outcome for these patients.

Mohr WJ; Salzman JG; Zagar AE; Endorf FW; Ahrenholz DH. Use of tranexamic acid in burn excision and grafting procedures: a case series [abstract #137]. *J Burn Care Res.* 2015 Jul-Aug;36(Suppl 1):S134. [Poster at the *American Burn Association (ABA) 47th Annual Meeting*, Chicago, IL, Apr 2015.]

Introduction: Blood loss associated with tangential excision (TE) is substantial, with estimates ranging between 0.5–1 mL for every 1 cm² or 5–11% of the blood volume per 1% BSA of burn skin removed. This amount can be reduced by using tourniquets, but 26% to 50% (BMI > 40) of the body's surface is contained on the trunk and is out of reach of these devices. Tranexamic acid (TXA) is a lysine derivative that blocks the lysine site on plasminogen and inhibits fibrinolysis. This agent has been shown to decrease death from hemorrhage in trauma patients. We sought to determine if the use of TXA could decrease operative blood loss in the excision of truncal burns. **Methods:** This was a retrospective, observational case series of burn patients \geq 18 years old treated at our ABA verified burn center who required excision of truncal burns as part of their staged reconstruction. A 1 gm dose of TXA was given over 10 minutes at the time of incision, and no continuous infusion was used. Patient demographic information and operative variables were abstracted and summarized. The estimated EBL was calculated using the Gross equation and compared to two EBL prediction formulas: Warden and Steadman. **Results:** From June 2013 - April 2014, there were 8 patients included in this pilot study, ages 18–59. Patients underwent TE with placement of a dermal replacement product between postburn day 1–5 (mean 3 days). The average TBSA burned was 32% (15–61%), with a mean excision of 2713 cm² (1700–5250 cm²) or 13% BSA (8.5–26.1%). Patients received an average of 3,525 mL fluid intraoperatively (2200–5900 mL). Only 2 of 8 patients received transfusions within 24 hours of their operation, averaging 0.63 U per patient). The median post-operative hemoglobin drop was 5.7 g/dL to a value of 7 g/dL the following day. The calculated EBL was 1.1 mL/cm² and 141 mL/%TE. This compares favorably with the Warden (110%) and Steadman (63%) estimates. There were no episodes of venous thromboembolism. **Conclusions:** Blood loss associated with burn excision of the trunk after TXA was similar to that described in the literature using tourniquets and subcutaneous infiltration with vasoactive agents. Perioperative transfusion was performed in only a quarter of these patients despite an average excision of 2713 cm² (13% BSA). There were no episodes of VTE diagnosed during their hospitalization. A multi-center randomized trial would be necessary to determine a true benefit. **Applicability of Research to Practice:** This agent may be effective in reducing the blood loss during excision of areas not amenable to other adjuncts, such as tourniquets and clays.

O'Connor PJ; Ekstrom HL; Margolis KL; Rush WA; Amundson GH; Appana D; Crain AL; Sperl-Hillen JM. Evaluation of provider experience with an EHR-based clinical decision support tool [abstract 2643-PO]. *Diabetes.* 2015 Jun;64(Suppl 1):A668. [Presented at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

O'Connor PJ; Ekstrom HL; Sperl-Hillen JM; Margolis KL; Crain AL; Amundson GH; Appana D. Sustained use of a diabetes clinical decision support tool in primary care practices [abstract 1340-P]. *Diabetes.* 2015 Jun;64(Suppl 1):A348. [Poster at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

O'Connor PJ; Sperl-Hillen JM; Ekstrom HL; Appana D; Amundson GH; Frost SD; Duncan JE; Sharma R. Disseminating web-based EHR-linked diabetes clinical decision support system from one medical group to another: case study [abstract 1377-P]. *Diabetes*. 2015 Jun;64(Suppl 1):A358. [Poster at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

Olives TD; Lintner C; Cole JB. Physostigmine reversal of baclofen? Inadvertent administration of intrathecal physostigmine [abstract]. *Clin Toxicol (Phila)*. 2015;53(7):682-3. [Poster at the *North American Congress of Clinical Toxicology (NACCT) 2015 Annual Meeting*, San Francisco, CA, Oct 2015.]

Background: Physostigmine salicylate is a carbamate with a tertiary amine structure used to reverse anticholinergic delirium. Case reports also describe its use in the reversal of respiratory depression caused by baclofen overdose. We describe the case of a patient inadvertently administered intrathecal physostigmine while initiating baclofen therapy. Case Report: A 62-year-old woman presented to a health care facility early in the day to continue an early trial of intrathecal baclofen therapy. She was naive to baclofen, and physostigmine was readied by providers in the event of baclofen-induced respiratory depression. A trial of baclofen on the day before had been successful, however no intrathecal pump had yet been installed. Once the thecal sac had been accessed, 2 mg of physostigmine was inadvertently instilled instead of baclofen. Shortly after administration, the patient reported profound nausea without emesis. Vitals were notable for a heart rate of 77 beats per minute and a blood pressure of 150/84 mmHg. Expectant management of seizures with benzodiazepine therapy was recommended, and the patient was admitted to a monitored bed awake, alert, and talking. The patient experienced no vomiting despite her initially forceful nausea. Her vital signs remained normal, and she developed no seizures, bradycardia or other evidence of cholinergic excess. She required no therapies over her stay, and was discharged the following day. Case Discussion: The structure of physostigmine salicylate allows it to penetrate the blood:brain barrier, unlike quaternary amines (i.e. neostigmine), however direct intrathecal instillation has been reported only rarely. Notably feared complications of physostigmine administration include seizures, bradycardia, increased oropharyngeal and upper respiratory secretions, and bronchospasm. Historically, cases of anejaculation were treated with intrathecal administration of neostigmine (Chapelle et al 1976), but only vague references to direct intrathecal administration of physostigmine. Both the paucity of cholinergic excess - apart from transient nausea - and the absence of ensuing seizure activity precipitated by intrathecal injection of physostigmine administration are particularly noteworthy. Conclusion: Current recommendations for the administration of physostigmine emphasize the slow administration to avoid side effects of seizure and bradycardia. This case demonstrates a lack of significant side effects following the direct instillation of 2 mg of physostigmine into the cerebrospinal fluid (CSF), suggesting low risk of seizure with transiently elevated CSF physostigmine concentration.

Paetow GM; Austad EJ; Olives TD; Laudenbach AP; Cole JB. Use of tissue perfusion monitoring to titrate high dose insulin in beta blocker and calcium channel blocker overdose [abstract]. *Clin Toxicol (Phila)*. 2015 Jul;53(7):705-6. [Presented at the *North American Congress of Clinical Toxicology (NACCT) 2015 Annual Meeting*, San Francisco, Oct 2015.]

Background: Tissue perfusion (StO₂) monitoring uses near-infrared spectroscopy to calculate the concentration of oxygenated hemoglobin in muscle tissue. It has been shown to correlate with surrogate measures of tissue perfusion such as mean arterial pressure (MAP) and has been validated in hemorrhagic

and septic shock. Literature supporting its use in poisoned patients is lacking. We present a case of a patient in shock from a beta blocker (BB) and calcium channel blocker (CCB) overdose where therapies were titrated using StO₂ monitoring as the goal for resuscitation. Case Report: A 51-year-old man presented to a rural emergency department after ingesting forty 25mg tablets of metoprolol and an unknown quantity of 5mg tablets of amlodipine. He became obtunded with a systolic blood pressure in the 50s and a heart rate in the 20s so he was intubated, given push-dose epinephrine and 3g of calcium gluconate. Poison control recommended using high-dose insulin (HDI), which was started at 1 U/kg/hr. He was then transferred to a tertiary care center. On arrival, vital signs showed a blood pressure of 79/49 and a heart rate of 39. The patient was placed on a StO₂ monitor with an initial reading of 69% (normal range 75-85%). An epinephrine drip was started at 0.1 mcg/kg/hr and HDI was increased to 10 U/kg/hr over the next 3 hours to increase StO₂ (see table). The patient was also given 50g of activated charcoal and a total of 9g of calcium gluconate during the resuscitation. StO₂ measurements rose to 73.75% with increasing HDI dosing. MAPs stabilized in the 60s but his heart rate remained in the 30s. The patient was transferred to the intensive care unit (ICU) where StO₂ monitoring was used to guide ongoing resuscitative efforts. Readings slowly increased to the high 70s over the course of two days. He was weaned off of the epinephrine and HDI and was ultimately transferred to the floor on ICU day 9 in stable condition and without neurologic sequelae. Discussion: Historically, achievement of goal MAPs has guided resuscitation in massive BB or CCB overdoses. StO₂ measurements were used in this case of mixed cardiogenic and vasoplegic shock and correlated well with MAPs. StO₂ monitoring demonstrated adequate peripheral tissue perfusion despite persistent bradycardia. In the absence of StO₂ monitoring, such bradycardia may have provoked even more aggressive resuscitative efforts. Conclusion: This case suggests StO₂ monitoring may be beneficial in guiding the resuscitation of patients with beta blocker and calcium channel blocker overdoses.

Pangarakis SJ; Amis CA. Focus the flame: fueling the fire for catheter-associated urinary tract infection reduction in intensive and progressive care units [abstract]. *Crit Care Nurs.* 2015 Apr;35(2):e25.

Pathak RD; Schroeder EB; Seaquist ER; Zeng C; Elston LaFata J; Thomas A; **Desai JR**; Waitzfelder BE; Nichols GA; Lawrence JM; Karter AJ; Steiner JF; Segal J; **O'Connor PJ.** Severe hypoglycemia in a large cohort of adults with diabetes mellitus treated in U.S. integrated health care delivery systems, 2005-2011 [abstract 390-P]. *Diabetes.* 2015 Jun;64(Suppl 1):A102. Project Number: A13-132 SUPREME DM. [Poster at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

Abstract: Glycemic control is fundamental to diabetes care, but aggressive glucose targets and intensive therapy can result in increased episodes of hypoglycemia. We sought to quantify the burden of severe hypoglycemia in an observational cohort study (2005 - 2011) including insured subjects with diabetes from the multi-institutional SURveillance, PREvention, and ManagEment of Diabetes Mellitus (SUPREME-DM) study. Severe hypoglycemia was defined as any occurrence of a hypoglycemia-related ICD-9 code extracted from an emergency department or inpatient encounter. We examined the rate of severe hypoglycemic events overall and by age, gender, comorbidity status, antecedent A1c, and medication use. A total of 917,440 subjects with diabetes and at least one year of follow-up (mean 4.7 years follow-up) were examined, of which 42,378 (4.6%) experienced at least one severe hypoglycemic event during the 7-year study period. The population had slightly more males than females, and a mean age of 57.9 years. Annual age- and sex-adjusted rates of severe hypoglycemia tended to decrease over time, ranging from 13 - 16

events per 1000 person-years with an overall weighted rate during the study period of 14.7 events per 1000 person-years. Higher rates of severe hypoglycemia were associated with older age, various comorbidities, higher A1c levels, and use of insulin, insulin secretagogues, or beta blockers. The higher rates of hypoglycemia observed here compared to randomized controlled trials suggest that those who are enrolled in trials may be at lower risk of severe hypoglycemia than the broader population of individuals with diabetes either due to trial eligibility or focused clinical attention. Given the higher rate of severe hypoglycemia observed in certain groups, greater attention to management guidelines in populations at high risk for hypoglycemia, including those on insulin therapy and the elderly, may be necessary.

Pestka DL; **Frail CK**; Conway J; Von Hoff B; Palombi LC; Sorensen TD. Implementation steps and strategies fostering success of medication management services in community pharmacies [abstract]. *Pharmacotherapy*. 2015 Nov;35(11):e263. [Presented at the *American College of Clinical Pharmacy (ACCP) 2015 Global Conference on Clinical Pharmacy - Scientific*, San Francisco, CA, Oct 2015.]

PURPOSE: The purpose of this project was to determine what factors have led to the successful delivery of medication management services among community pharmacies with established medication management programs. **METHODS:** Four organizations with community pharmacies in Minnesota were identified that have established patient-centered clinical services. Focus groups with pharmacists as well as interviews with management from each organization were carried out focusing on what has led to the success of their services. Transcripts from the focus groups and interviews were aggregated, coded, and emerging themes were defined. **RESULTS:** Preliminary findings suggest that implementing and sustaining medication management services in a community pharmacy is a cyclical process that is continuously evolving and expanding. It begins with a decision to act and the steps that are necessary to lay the initial groundwork. Once the service is in place and pharmacies have identified strategies to successfully engage patients, they then look for ways to improve and expand the services being offered. Data analysis will be complete by July 2015. **CONCLUSION:** With quality measures continuing to have a greater impact on pharmacies, there is increased incentive for community pharmacies to offer patient-centered medication management services. The results of this study may serve as a road map for other community pharmacies looking to develop patient care services.

Rindal DB; Kottke TE; Rush WA; Asche SE; Enstad CJ. Implementation of an electronic dental record tool to increase referrals to a tobacco counseling quit line [abstract]. *Implement Sci*. 2015;10(Suppl 1):A6. [Presented at the *Science of Dissemination and Implementation in Health 7th Annual Conference: Transforming Individual and Population Health*, Bethesda, MD, Dec 2014.]

Rodriguez H; Dubose SN; **Garg SK**; Bhan A; Rickels MR; **Olson BA**; Maahs DM; Miller KM; Beck RW. Factors associated with reduced hypoglycemia awareness (RHA) in older adults with type 1 diabetes (T1D) [abstract 412-P]. *Diabetes*. 2015 Jun;64(Suppl 1):A107. [Poster at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

Rothbauer MJ; Rood J; Ahrenholz DH; Dries DJ; Mohr WJ; Endorf FW. Psychological support strategies in hospitalized burn patients: a quality performance improvement assessment [abstract #211]. *J Burn Care Res.* 2015 Jul-Aug;36(Suppl 1):S171. [Poster at the *American Burn Association (ABA) 47th Annual Meeting*, Chicago, IL, Apr 2015.]

Introduction: Psychological intervention and support is an integral part of a burn recovery. Working in a Level I trauma center which serves a five state area creates an additional set of challenges for the psychosocial team. Early and consistent interventions by social work/case management, child life and chaplaincy can create a safe and healing environment for patients and families which contribute to positive outcomes. Methods: Creating this community of support starts in the acute setting and is offered throughout the hospitalization and into the months and years post injury. Assessments upon admission reveal individual patient and family needs but the importance of frequent and consistent involvement for the duration of the hospitalization and during follow up care can significantly affect outcomes. Every burn patient is expected to have a consult to every discipline within the psychosocial team including social work/case management, chaplaincy, and child life (if applicable). These consults remain in the electronic medical record until the consult has been completed. During this consult the social worker assesses the appropriateness for any/all of our psychological programs offered at our burn center. These programs are offered during and after the inpatient admission. The implementation of these programs is discussed in our weekly provider care rounds and all team members are encouraged to provide input into what programs would be suitable for each patient/family. Results: A random retrospective quality performance assessment of 30 patients admitted to the burn center during 2014 was completed. The length of stay for these patients ranged from 1 to 126 days. One hundred percent of the 30 patients were seen by social work/case management. All five children had child life consults completed. In addition there was one adult patient who was also seen by child life. Chaplaincy saw 17 of the 30 patients. Conclusions: A consistent approach to psychosocial interventions facilitates optimal psychosocial support. Ongoing outreach, education, and communication with our referral sources are crucial to long term positive psychological outcomes for burn survivors and their families. Applicability of Research to Practice: Eliciting feedback and satisfaction surveys from patients and that specifically address their experiences of being hospitalized regionally could further support ongoing psychological programming.

Salzman JG; Frascone RJ; Zagar AE; Burnett AM; Loken NM; Wewerka SS. Intraosseous pressure monitoring in critical care patients [abstract]. *Ann Emerg Med.* 2015 Oct;66(4 Suppl):16A. [Poster at the *American College of Emergency Physicians (ACEP) Research Forum*, Boston, MA, Oct 2015.]

Salzman JG; Junney; Harney; Vazquez-Benitez G; Biros MH; Silbergleit; Wright. Timing of consent into a multicenter randomized controlled traumatic brain injury clinical trial conducted under exception from informed consent [abstract]. *Ann Emerg Med.* 2015 Oct;66(4 Suppl):12A. [Poster at the *American College of Emergency Physicians (ACEP) Scientific Assembly*, Boston, MA, Oct 2015.]

Selvin E; Parrinello CM; **Bergenstal RM.** Trends in diabetes control and insulin use in the U.S., 1998-2010 [abstract]. *Diabetes.* 2015 Jun;64(Suppl 1):A428. [Poster at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

Shapiro AC; Adlis S; Liang S; Robien K; Kirstein MN; Anderson E; Lerner RE. A randomized trial of vitamin D3 in aromatase inhibitor-associated musculoskeletal symptoms [abstract]. *J Clin Oncol.* 2015 May 20;33(15 Suppl):9608. [Presented at the *American Society of Clinical Oncology Annual Meeting*, Chicago, IL, May 2015.]

Background: Vitamin D3 supplementation (D3) has been suggested as a treatment for aromatase inhibitor (AI)-associated musculoskeletal symptoms (AIMSS), but efficacy and safety are unclear. Methods: We randomly assigned 113 post-menopausal women (18 years; stage I-IIIa breast cancer; taking an AI and experiencing AIMSS), to either 600 IU D3 (control: n = 56) or 4,000 IU D3 (experimental: n = 57), daily for 6 months (6 mos). The primary study endpoint was change in musculoskeletal symptoms (MS) from baseline to 6 mos, measured by: The Breast Cancer Prevention Trial Symptom Scales-MS subscale (BCPT-MS), the Australian/Canadian Osteoarthritis Hand Index (AUSCAN), the Western Ontario and McMaster Osteoarthritis Index (WOMAC) and hand grip strength (Dynamometer). Plasma AI pharmacokinetics (AI-PK) were estimated using non-linear mixed-effects modeling. Effects of D3 on AI-PK were tested by likelihood ratio test. Serum 25(OH)D was quantified by chemiluminescent immunoassay (DiaSorin, Stillwater, MN). Sample size was calculated on a change of 0.62 in BCPT-MS score. Assuming a two-tailed test with $\alpha = 0.05$ and power = 80%, adequate sample size was 116 (58 per group). Primary endpoint analyses were based on intent-to-treat and determined using a General Linear Model controlling for possible effect modifiers. Results: The groups did not differ on demographic or clinical characteristics nor on AIMSS measures. After 6 mos, serum 25(OH)D was 33 ± 8 ng/mL vs. 46 ± 11 (mean \pm sd; control vs experimental; $p < 0.001$). There were no statistically significant differences between groups (control vs exp) in mean change in AIMSS scales from baseline to 6 mos: BCPT-MS: -0.45 vs. -0.24; WOMAC function: -1.23 vs -3.96; WOMAC pain: -0.56 vs. -1.18; WOMAC stiffness: -0.47 vs -0.54; AUSCAN function: -0.75 vs -1.12; AUSCAN pain: -0.24 vs. -0.90; AUSCAN stiffness: -0.11 vs. -0.08; hand grip: 1.06 vs 1.78 (all $p > 0.1$). AI clearance did not differ significantly between groups (baseline vs 6 mos; $p > 0.5$). Conclusions: Women randomly assigned to higher dose D3 (4,000 IU) showed no improvement in AIMSS over usual dose D3 (600 IU). While D3 does not appear to adversely affect AI drug metabolism, it may have other health effects in this population.

Stellpflug SJ; LeRoy JM; Boley SP; Olives TD. Brom(ism)ance: an escalating relationship with dextromethorphan [abstract #97]. *J Med Toxicol.* 2015 Mar;11(1):41. [Poster at the *American College of Medical Toxicology (ACMT) Annual Scientific Meeting*, Clearwater Beach, FL, Mar 2015.]

Background: Dextromethorphan (DXM) is an over-the-counter antitussive agent commonly abused for its NMDA receptor antagonism and dissociative effects similar to phencyclidine and ketamine. DXM is found in multiple formulations, and is widely available as a hydrobromide salt (DXM HBr). The serum bromide elevation common to DXM HBr overdoses has previously been described as falsely elevating serum chloride. Tolerance and dependence have not previously been established in DXM users. Hypothesis: Chronic DXM HBr abuse and tolerance may lead to escalating doses. This tolerance may be demonstrated by a gradual increase in the spuriously elevated serum chloride. Methods: We describe an adult male who frequently presented to an urban academic emergency department (ED) following recurrent use of a single DXM HBr formulation. Initial serum chloride concentrations at each visit for DXM HBr ingestion were compared over time via linear correlation. Results: Twenty-eight visits were included over 62 months from the first ED presentation. Chloride concentrations were available for 23 of those visits. Chloride concentrations ranged from 104 to 126 mmol/L. Correlation using chloride (y-axis) and months from first ED visit (x-axis) revealed

$R^2=0.6321$ ($p<0.001$); slope=0.238; standard error of the slope=0.041 (for every increase in month number, there was an increase in chloride of 0.238 ± 0.041 mmol/L). Discussion: Linear correlation indicates an increase in measured serum chloride that is unlikely due to chance alone, in the setting of recurrent DXM HBr abuse. These results suggest the development of tolerance and a need for escalated doses of DXM HBr. The patient confirmed a subjective need to escalate his dosing over the 5-year study period. This laboratory phenomenon has face validity but has not previously been evaluated from a laboratory standpoint. This patient experience is compelling both in theory and by statistical evaluation, but further study with similar assessment of many chronic DXM-abusing patients could establish a clearer link between abuse and tolerance. Conclusion: Over a 5-year period, this patient's serum chloride (i.e., bromide) concentration demonstrated a gradual increase, suggesting the development of physical tolerance.

Stoesz AE; Zwank MD; Stuck LH; Ward CM. Anterior shoulder dislocation reduction in the emergency department: is there a best technique [abstract]? *Ann Emerg Med.* 2015 Oct;66(4 Suppl):13A. [Poster at the *American College of Emergency Physicians (ACEP) Scientific Assembly*, Boston, MA, Oct 2015.]

Vazquez-Benitez G; Desai JR; Schmittiel JA; Lawrence JM; Newton KM; **O'Connor PJ.** Are composite measures of diabetes quality of care associated with major CV events [abstract 440-P]? *Diabetes.* 2015 Jun;64(Suppl 1):A115. Project Number: A13-132 SUPREME DM. [Poster at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

White WB; Wilson CA; Bakris GL; **Bergental RM;** Cannon CP; Cushman WC; Fleck PR; Heller SR; Kupfer S; Mehta CR; Menon V; Nissen SE; Perez AT; Zannad F. Major cardiovascular outcomes in the EXAMINE trial according to ACE inhibitor use [abstract 12-OR]. *Diabetes.* 2015 Jun;64(Suppl 1):A3. [Oral presentation at the *American Diabetes Association (ADA) 75th Scientific Sessions*, Boston, MA, Jun 2015.]

Zwank MD; Gordon BD. Innovative utilization of the EPIC electronic medical record for integrating evidence-based medicine and improving patient care [abstract]. *Acad Emerg Med.* 2015 May;22(Suppl S1). [Presented at the *Society for Academic Emergency Medicine (SAEM) Annual Meeting*, San Diego, CA, May 2015.]

Zwank MD; House CM; Isenberger KM; Quaday KA; Ziegenfuss JY; Moriarty KA; Nelson WB. Early discharge with next day stress testing in low risk chest pain patients presenting to the emergency department is feasible [abstract]. *Ann Emerg Med.* 2015 Oct;66(4 Suppl):4A. [Poster at the *American College of Emergency Physicians (ACEP) Scientific Assembly*, Boston, MA, Oct 2015.]

Study Objectives: Chest pain (CP) is a common presenting complaint in the emergency department (ED). Several clinical decision rules have been developed to help risk stratify a group of patients at very low risk for acute coronary syndrome and bad outcomes. Central to the care of most ED patients with CP is close clinical followup and appropriate risk stratification testing. We sought to determine if a protocol could be effectively implemented to help assure timely stress testing (stress echocardiogram or stress nuclear) of patients with undifferentiated CP. Methods: We instituted a low-risk CP protocol that provided reliable stress testing with 72 hours of ED presentation at an inner-city tertiary care hospital with annual census of 80,000. Patients were eligible if they had a thrombolysis in myocardial infarction (TIMI) score of 0 or 1, a normal or unchanged EKG and a negative troponin I biomarker at 6 hours after onset of CP. Alternatively,

patients could be enrolled if the treating ED clinician deemed the patient to be otherwise low-risk. The study was approved by the IRB. Data was abstracted from patient electronic medical records. Patients who did not show up for their scheduled stress test were surveyed by phone. Results: A total of 340 patients were initially enrolled. The average age was 50 and 51% were female (age range 22-82). Two hundred nine patients had a TIMI score of 0 while 29 patients had a TIMI score of 3 or 4. Common risk factors included smoking (30%), hypertension (39%), hyperlipidemia (30%) and diabetes (12%). Median ED length of stay was 223 minutes. 265 (78%) patients followed up as scheduled and had stress testing performed. Median time to follow-up was 2.4 days (range 0-48 days) with 187 (55%) of the cohort completing their stress test within 72 hours. 75 (22%) failed to have stress testing performed. Of the 75 who did not attend their stress test appointment, 32 provided clinical follow-up data through a phone survey, 32 had electronic medical record clinical follow-up data beyond their emergency department visit, and the remaining 11 (3%) had no follow-up. Of the 329 patients with some form of follow-up available including scheduled stress testing, there were 17 (5%) with equivocal or abnormal stress test, 12 (4%) patients who had a subsequent coronary angiogram, 4 (1%) patients that underwent percutaneous revascularization, and 2 patients who suffered a myocardial infarction (0.05%). There were no deaths. Conclusion: A majority of ED patients presenting with CP identified to be at low risk for ACS followed up for scheduled stress testing utilizing an ED low-risk CP protocol. However, a substantial minority did not show up for stress testing. The reasons for this are unknown. Observed rates of angiography, coronary intervention, and myocardial infarction were very low: 4%, 1%, and 0.05%.

Zwank MD; Mohr WJ; Endorf FW; Muhar AA; Atwood DT. Treatment of accidental hypothermia at a level I trauma center: a retrospective cohort [abstract]. *Acad Emerg Med*. 2015 May;22(Suppl S1):Abstract #494. [Poster at the *Society for Academic Emergency Medicine (SAEM) Annual Meeting*, San Diego, CA, May 2015.]

Zylla DM; Richter SA; Shapiro AC; Gupta P. Impact of opioid use on survival in patients with newly diagnosed stage IV non-hematologic malignancies [abstract #188]. *J Clin Oncol*. 2015;33(suppl 29S). [Poster at the *American Society of Clinical Oncology Palliative Care in Oncology 2015 Symposium*, Boston, MA, Oct 2015.]

Background: Pain is a challenging problem in patients with advanced cancers. Opioids are commonly required to treat cancer-related pain, but may be associated with tumor progression and shorter survival. We recently reported that high opioid use during the first 90 days after diagnosis is associated with shorter survival in patients with advanced lung cancer. Methods: We identified 1386 newly diagnosed stage IV non-hematologic malignancies from 2005-2013 and gathered pain and opioid utilization within 90 days of treatment using data from electronic medical records and the tumor registry. Opioid utilization was stratified into low opioid exposure (LOE; no opioid prescriptions or one prescription for a short-acting opioid) and high opioid exposure (HOE; any long-acting opioid prescription or 2 or more short-acting opioid prescriptions). Pain was analyzed by the proportion of time patients reported levels of moderate-severe pain (i.e., pain level = 4). The effects of opioid exposure, prognosis of tumor type (< 1 year vs = 1 year), and gender on overall survival were analyzed in univariable and multivariable models. Results: Patients in the HOE (n = 887) and LOE (n = 499) groups were well matched for age, gender, and tumor type. Moderate-severe pain was higher in the HOE group compared to the LOE group (29.3% vs 14.0%). HOE was associated with shorter median survival compared to LOE (7.2 vs 13.2 months, p-value < 0.0001). On multivariable

analysis, HOE was associated with shorter overall survival after adjusting for age, gender and tumor prognosis (HR 1.4, 95% CI 1.2- 1.6) (Table). Conclusions: Results support prior studies of advanced prostate and lung cancers, and show early utilization of opioids is a strong prognostic factor for survival. Further prospective investigation on the role of opioid receptors and opioid utilization is urgently needed.

Posters and Presentations

Abrar FA. Creating mobile clinics for rural areas; reducing maternal mortality. Presented to *Health Care Providers in Somalia*. Somalia. Aug 2015.

Al Salamah M; Chung B; **Walsh M**; **Ankel FK.** Program director survival stories. Presented at the *International Conference on Residency Education (ICRE)*. Vancouver, BC. Oct 2015.

Anderson HA; **Kipper KI.** Simulation in the patient's home: hospice nurses and aides. Presented at the *International Meeting for Simulation in Healthcare*. New Orleans, LA. Jan 2015.

Anderson JP; Joshi K; Icten Z; Alas V. Treatment of patterns among schizophrenia patients on paliperidone palmitate or atypical oral antipsychotics in community behavioral health organizations. Poster at the *U.S. Psychiatric & Mental Health 28th Congress*. San Diego, CA. Sep 2015.

Anderson KB; **Pureza VS**; **Walker PF.** Things to come? Fever, rash, and arthralgias in a traveler returning from Haiti. Poster at the *Global Health Graduation*. Minneapolis, MN. Jul 2015.

Ankel FK. Co-chair of the *International Clinician Educators (ICE) Summit*. Glasgow, Scotland. Sep 2015.

Ankel FK. Disruptive medical education. Presented at the *Council of Emergency Medicine Residency Directors (CORD) Academic Assembly*. Phoenix, AZ. Apr 2015.

Ankel FK. Program director survival stories. Presented to the *International Conference of Residency Education (ICRE)*. Vancouver, British Columbia. 2015.

Bailey SR; Stevens VJ; **Solberg LI**; Kurtz SE; McBurnie MA; Priest EL; Puro JE; Williams R; Fortmann SP; Hazlehurst BL. Assessing trends in smoking cessation in diverse patient populations using electronic medical records. Poster at the *Oregon Health & Science University (OHSU) Research Week 2015*. Portland, OR. May 2015.

Bailey SR; Stevens VJ; **Solberg LI**; Kurtz SE; McBurnie MA; Priest EL; Puro JE; Williams R; Fortmann SP; Hazlehurst BL. Assessing trends in smoking cessation in diverse patient populations using electronic medical records. Poster at the *Society for Research on Nicotine and Tobacco*. Philadelphia, PA. Feb 2015.

Banegas MP; Buist DS; Epstein MM; Field TS; Clarke Hillyer G; Lott JP; **Pawloski PA**. The CRN Scholars Program: training for research in integrated systems. Presented at the *HMO Research Network (HMORN) 21st Annual Conference: Care Improvement Research: Partnering with Patients, Providers and Operational Leaders*. Long Beach, CA. Mar 2015.

Barclay TR; Forsberg AC; Stuck LH; Schlichting JT; **Hanson LR**. The Minnesota Memory Project: baseline data from a longitudinal observational study of aging. Poster at the *American Academy of Neurology (AAN) Annual Meeting*. Washington DC. Apr 2015.

Benson J; Hines P; **McKinney ZJ**; McKinney AM. The use of order-based CDS alerting to increase the homogeneity of premedication regimens in patients with known contrast allergies. Poster at the *Twin Cities Resident Quality Forum, University of Minnesota*. Minneapolis, MN. May 2015.

Bergenstal RM. Are they really worth it? Debating the value of new insulins in the management of type 2 diabetes. Presented at the *American Diabetes Association (ADA) 75th Scientific Sessions*. Boston, MA. Jun 2015.

Bovard RS. Fitness assessment and the exercise prescription: skill building session. Presented at the *ACPM (American College of Preventive Medicine) Annual Meeting*. Atlanta, GA. Feb 2015.

Brosnahan D; **House CM; Nelson WB**. The assessment of cardiac workload during simulated firefighting tasks. Presented at the *Robert Hebbel Sixteenth Annual Research Day, University of Minnesota*. Minneapolis, MN. Apr 2015.

Bruen CA. Engineering better CPR. Presented at the *SMACC Social Media and Critical Care Conference*. Chicago, IL. Jun 2015.

Carhart ED; **Stuck LH; Salzman JG**. Achieving a safe endotracheal tube cuff pressure in the prehospital setting: is it time to revise the standard cuff inflation practice? Poster at the *National Association of EMS Physicians (NAEMSP) 2015 Annual Meeting*. New Orleans, LA. Jan 2015.

Cole PA; Hill BW; Rizkala AR. Data-driven implant design avoids unnecessary hardware: a comparative study for complex tibial pilon fractures. Presented at the *Mid-America Orthopaedic Association (MAOA) Annual Meeting*. Hilton Head, SC. Apr 2015.

Cole PA; Hill BW; Rizkala AR. Fracture specific implant design avoids unnecessary incisions and hardware for OTA 43C3 tibia pilon fractures. Presented at the *American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting*. Las Vegas, NV. Mar 2015.

Crain AL; Sperl-Hillen JM; Ekstrom HL; O'Connor PJ; Margolis KL; Rush WA; Amundson GH; Appana D. Sustaining use of a clinical decision support tool for primary care providers. Presented at the *HMO Research Network (HMORN) 21st Annual Conference: Care Improvement Research: Partnering with Patients, Providers and Operational Leaders*. Long Beach, CA. Mar 2015.

Dehmer SP. Predicted health and economic impact from nationwide adoption of team-based care for managing uncontrolled hypertension in the United States. Presented at the *AcademyHealth Annual Research Meeting (ARM)*. Minneapolis, MN. Jun 2015.

Dries DJ. Acute respiratory failure and mechanical ventilation; Postoperative management; Ventilation (Skill Station); Integration (Skill Station). Presented at the *Society of Critical Care Medicine (SCCM) Pediatric Fundamental Critical Care Support (PFCCS) Course*. Saint Paul, MN. Feb 2015.

Dries DJ. Blood product resuscitation for trauma. Webcast at the *Trauma 2015 Annual Symposium*. Sanford, SD. Oct 2015.

Dries DJ. Burn stuff. Presented at the *Trauma Education: The Next Generation, HealthPartners and Regions Hospital Conference*. Saint Paul, MN. Sep 2015.

Dries DJ. Circulatory shock and fluid management; Electrolyte emergencies; Gastrointestinal bleeding in the ICU; Weaning and withdrawing mechanical ventilatory support; Nosocomial infections in the ICU; Ethical and legal considerations in critical care; Airway management and neuromuscular blockade. Presented at the *Adult Multiprofessional Critical Care Review Course (MCCRC-Peru), Society of Critical Care Medicine*. Lima, Peru. Nov 2015.

Dries DJ. Non-invasive ventilation/case studies. Presented at the *Medical College of Wisconsin*. Milwaukee, WI. Feb 2015.

Dries DJ. Trauma overview; Chest trauma; Chest trauma: procedures. Presented at the *MELA (Medical Education for Latin America) Trauma Life Support Course*. Cochabamba, Bolivia. Mar 2015.

Dries DJ. What new modes of invasive and non-invasive ventilation should we be using? Presented at the *American Burn Association 47th Annual Meeting*. Chicago, IL. Apr 2015.

Duncan JE. Building infrastructure to engage patients, families and members in research within a learning health organization. Presented at the *HMO Research Network (HMORN) 21st Annual Conference: Care Improvement Research: Partnering with Patients, Providers and Operational Leaders*. Long Beach, CA. Mar 2015.

Ekstrom HL; O'Connor PJ; Margolis KL; Rush WA; Amundson GH; Appana D; Crain AL; Sperl-Hillen JM. Evaluation of provider experience with an electronic health record-based clinical decision support tool. Presented at the *HMO Research Network (HMORN) 21st Annual Conference: Care Improvement Research: Partnering with Patients, Providers and Operational Leaders*. Long Beach, CA. Mar 2015.

Epps CA; Maxworthy JC; Johnson GL; Spain A. Simulation accreditation. Expert panel at the *International Meeting for Simulation in Healthcare*. New Orleans, LA. Jan 2015.

Fina M. The abnormal ear exam. Presented at the *HealthPartners Primary Care Update*. Minneapolis, MN. Sep 2015.

Fina M. Differential diagnosis of dizziness. Presented at the *HealthPartners Primary Care Update*. Minneapolis, MN. Sep 2015.

Fina M. Endoscopic approach for epitympanic cholesteatoma. Presented at the *ENT Endoscopy 2015 International Congress*. Nice, France. Nov 2015.

Fina M. How to get started in endoscopic ear surgery. Presented at the *ENT Endoscopy 2015 International Congress*. Nice, France. Nov 2015.

Fina M. Transcanal endoscopic approach for attic cholesteatoma. Presented at the *American Academy of Otolaryngology "Masters of Surgery" Scientific Session*. Dallas, TX. Sep 2015.

Fine JM; Forsberg AC; Stroebel BM; Verden DR; Hamel K; Raney EB; Frey WH 2nd; Hanson LR. Intranasal deferoxamine prevents memory loss in the intracerebroventricular streptozotocin rat. Presented at the *International Conference on Alzheimer's Disease Annual Meeting*. Washington DC. Jul 2015.

Fontaine PL; Kharbanda EO; O'Connor PJ; Nordin JD; Asche SE. Specialty differences in recognizing and managing elevated blood pressures among children and adolescents. Presented at the *Minnesota Academy of Family Physicians Spring Refresher*. Saint Paul, MN. Apr 2015.

Fontaine PL; Kharbanda EO; O'Connor PJ; Nordin JD; Asche SE. Specialty differences in recognizing and managing elevated blood pressures among children and adolescents. Presented at the *Minnesota Academy of Family Physicians 35th Annual Research Forum*. Minneapolis, MN. Mar 2015.

Frail CK. Medication adherence: two states' perspectives. Invited webinar and virtual roundtable follow-up for the *National Association of Chronic Disease Directors (NACDD) and Association of State and Territorial Health Officials (ASTHO)*. May 2015.

Frascone RJ. EAGLES bullet rounds #2: intra-osseous monitoring. Presented at the *Medical Directors Gathering of EAGLES Conference*. Dallas, TX. Feb 2015.

Frascone RJ. It's a "no brainer"! Using bispectral index monitoring in determining futility. Presented at the *Medical Directors Gathering of EAGLES Conference*. Dallas, TX. Feb 2015.

Frascone RJ. It's a "no brainer"! Using bispectral index monitoring in determining futility. Presented at the *Citizens CPR Foundation Emergency Cardiac Care Update Pre-Conference Workshop*. San Diego, CA. Dec 2015.

Frascone RJ. It's a "no brainer!" Using bispectral index monitoring in determining futility. Presented at the *American College of Emergency Physicians (ACEP) Scientific Assembly*. Boston, MA. Oct 2015.

Frascone RJ. Maintaining perfusion till re-perfusion: mechanical devices and bridging the time to the cath lab. Presented at the *American College of Emergency Physicians (ACEP) Scientific Assembly*. Boston, MA. Oct 2015.

Frascone RJ. Maintaining perfusion till re-perfusion: mechanical devices and bridging the time to the cath lab. Presented at the *Citizens CPR Foundation Emergency Cardiac Care Update Pre-Conference Workshop*. San Diego, CA. Dec 2015.

Frascone RJ. Minding your P's and Q's: what are the actual cardiac effects of sedation practices? Presented at the *Citizens CPR Foundation Emergency Cardiac Care Update Pre-Conference Workshop*. San Diego, CA. Dec 2015.

Goertz MN; Stanfield SC; Barringer KW. Sepsis: from good to great. Poster at the *NPSF (National Patient Safety Foundation) 17th Annual Patient Safety Congress*. Austin, TX. May 2015.

Gordon BD. Care plans for frequent hospital patients reduce costs. Presented at the *EPIC User Group Meeting Executive Session*. Verona, WI. Aug 2015.

Greupner JT. Case presentation. Clinical Pathologic Case Conference at the *Council of Emergency Medicine Residency Directors (CORD) Academic Assembly*. Phoenix, AZ. Apr 2015.

Gurwitz JH; Bayliss E; Magaziner J; Gill TM; Go AS; Greenspan S; **Hanson LR**; High K; Hornbrook MC; Larson EB; Silliman RA; Tai-Seale M. The new HMORN-OAICs AGING initiative. Presented at the *HMO Research Network (HMORN) 21st Annual Conference: Care Improvement Research: Partnering with Patients, Providers and Operational Leaders*. Long Beach, CA. Mar 2015.

Hanson LR; Barclay TR; Hanson AM; Stuck LH; Crow JM; Borson S; **Rosenbloom MH.** Performance on cognitive screening is associated with increased retrospective healthcare utilization. Poster at the *American Academy of Neurology (AAN) Annual Meeting*. Washington DC. Apr 2015.

Hanson LR; Barclay TR; Hanson AM; Stuck LH; Crow JM; Rosenbloom MH. Identification of multiple chronic conditions that yield the highest impact of cognitive screening. Presented at the *HMO Research Network (HMORN) 21st Annual Conference: Care Improvement Research: Partnering with Patients, Providers and Operational Leaders*. Long Beach, CA. Mar 2015.

Hasty RE; Ludwig E; Snyder ME; **Frail CK.** Perspectives of Indiana healthcare providers on Medicare coverage and expansion. Presented at the *ASHP (American Society of Health Systems Pharmacists) Midyear 2016 Clinical Meeting & Exhibition*. New Orleans, LA. Dec 2015.

Hegarty CB; Ronan-Bentle SE. Are you a SLOE (Standard Letter of Evaluation) reader? Presented at the *Council of Emergency Medicine Residency Directors (CORD) Academic Assembly*. Phoenix, AZ. Apr 2015.

Hegarty CB; Ronan-Bentle SE; Weizberg M. Introduction to the SLOE (Standard Letter of Evaluation) and how to write a great one! Presented at the *Council of Emergency Medicine Residency Directors (CORD) Academic Assembly*. Phoenix, AZ. Apr 2015.

Hernandez BS. Flashing lights. Clinical pathologic case conference. Presented at the *Council of Emergency Medicine Residency Directors (CORD) Academic Assembly*. Phoenix, AZ. Apr 2015.

Hildebrand GR; Ly AV; Eggenberger EE; Vang S; Ward CM. Retrospective review of radiologic evaluation of patients with suspected hip or pelvis fractures. Presented at the *Mid-America Orthopaedic Association (MAOA) Annual Meeting*. Hilton Head, SC. Apr 2015.

Hildebrand GR; Ly AV; Eggenberger EE; Vang S; Ward CM. Retrospective review of radiologic evaluation of patients with suspected hip or pelvis fractures. Presented at the *Minnesota Orthopaedic Society Annual Meeting*. Minneapolis, MN. May 2015.

Horrigan PB; Olson JT; Lafferty PM. Sagittal alignment measurements in operatively treated distal femur fractures. Poster at the *Minnesota Orthopaedic Society Annual Meeting*. Minneapolis, MN. May 2015.

House CM; Anstadt MA; Stuck LH; Nelson WB. The dose response of cardiac rehabilitation. Presented at the *Robert Hebbel Sixteenth Annual Research Day, University of Minnesota*. Minneapolis, MN. Apr 2015.

Icten Z; Joshi K; **Anderson JP**; Alas V. Predictors of remission in schizophrenia patients treated with paliperidone palmitate or oral antipsychotics in the outpatient setting. Poster at the *U.S. Psychiatric & Mental Health 28th Congress*. San Diego, CA. Sep 2015.

JaKa MM. Creating a culture of health in Minnesota. Presented at the *Weight of the Fox Valley Community Health Connections*. Neenah, WI. Jul 2015.

JaKa MM; Levy RL; Langer SL; Sherwood NE. Do parents choose the topics that matter: correlations of weight-related topics discussed during a tailored pediatric obesity prevention intervention. Poster at the *Association for Behavioral and Cognitive Therapies 49th Annual Convention*. Chicago, IL. Nov 2015.

Johnson GL. Simulation accreditation and certification. Presented at the *Simulation 2015: Connecting & Celebrating Conference*. Saint Paul, MN. May 2015.

Johnson GL; Kipper KI. Simulation 101. Workshop at the *Association for Nursing Professional Development Annual Conference*. Las Vegas, NV. Jul 2015.

Johnson JD; Nessler JM; Horazdovsky RD; Vang S; Thomas AJ; Marston SB. Serum and wound vancomycin levels following intrawound administration in primary total joint arthroplasty. Presented at the *Minnesota Orthopaedic Society Annual Meeting*. Minneapolis, MN. May 2015.

Johnson JD; Nessler JM; Vang S; Horazdovsky RD; Marston SB. Serum and wound vancomycin levels following intrawound administration in primary total joint arthroplasty. E-poster at the *Pan Pacific 2nd Annual Orthopaedic Congress*. Kona, HI. Jul 2015.

Johnson JD; Vang S; Marston SB. The impact of femoral head size on the dislocation rate of femoral neck fractures treated with a total hip arthroplasty. Presented at the *Mid-America Orthopaedic Association (MAOA) Annual Meeting*. Hilton Head, SC. Apr 2015.

Johnson JD; Vang S; Marston SB. The impact of femoral head size on the dislocation rate of femoral neck fractures treated with a total hip arthroplasty. Poster at the *Pan Pacific 2nd Annual Orthopaedic Congress*. Kona, HI. Jul 2015.

Kelly BJ; Olson JT; Torchia MT; Cole PA. Integrating a student-run smoking cessation clinic with an orthopaedic department at a Level 1 trauma center. Poster at the *Mid-America Orthopaedic Association (MAOA) Annual Meeting*. Hilton Head, SC. Apr 2015.

Kharbanda EO. Incident ADHD diagnosis and use of stimulant medication among youth 10-17 years. Poster at the *AcademyHealth Annual Research Meeting (ARM)*. Minneapolis, MN. Jun 2015.

Kipper KI; Anderson HA. Creatively using simulation-based learning to connect the education for mental health professionals. Presented at the *International Meeting for Simulation in Healthcare*. New Orleans, LA. Jan 2015.

Kipper KI; Anderson HA. Scenario design. Presented at the *Simulation 2015: Connecting & Celebrating Conference*. Saint Paul, MN. May 2015.

Koehler DM; Thomas GW; Karam MD; **Lafferty PM**; Ohrt GT; Marsh JL; **Van Heest AE**; Anderson DD. Surgical coaching from head-camera video for fluoroscopically guided articular fracture surgery. Presented at the *Mid-America Orthopaedic Association (MAOA) Annual Meeting*. Hilton Head, SC. Apr 2015.

Koehler DM; Thomas GW; Karam MD; **Lafferty PM**; Ohrt GT; Westerlind BA; Marsh JL; **Van Heest AE**; Anderson DD. Surgical coaching from head-mounted video in the training of fluoroscopically guided articular fracture surgery. Poster at the *American Orthopaedic Association Annual Meeting*. Providence, RI. Jun 2015.

Lafferty PM; Heisterman TG; Rizkala AR; Horazdovsky RD; Cole PA. Intraoperative O-arm evaluation on the effect of ankle position on accuracy of syndesmotic reduction. Presented at the *Mid-America Orthopaedic Association (MAOA) Annual Meeting*. Hilton Head, SC. Apr 2015.

Lafferty PM; Rizkala AR; Olson JT; Li M; Cole PA. Short- and long-term results of complex hip fractures treated with a proximal locking plate. Presented at the *American Academy of Orthopaedic Surgeons Annual Meeting*. Las Vegas, NV. Mar 2015.

Lamkin HP. Basic mannequin maintenance. Presented at the *Simulation 2015: Connecting & Celebrating Conference*. Saint Paul, MN. May 2015.

Lamkin HP; Johnson GL; Kipper KI; Anderson HA. Mannequin maintenance. Workshop at the *International Meeting for Simulation in Healthcare*. New Orleans, LA. Jan 2015.

LeRoy JM. Effect of methylene blue on mortality in a porcine model of amlodipine toxicity. Presented at the *American College of Medical Toxicology (ACMT) Fellows in Training Research Symposium*. Clearwater, FL. Mar 2015.

LeRoy JM. Effect of methylene blue on mortality in a porcine model of amlodipine toxicity. Presented at the *Emergency Medicine Basic Research Skills Conference*. Dallas, TX. Apr 2015.

LeRoy JM. Snake bites and other envenomations/Approach to the tox patient/Ultrasound in the ER/Transfer of the critically ill patient in austere environment. Presented at the *International Conference on Acute Care*. Cochabamba, Bolivia. Mar 2015.

Maglalang P; Coles L; Mishra U; Rath C; **Fine JM**; Lee H; Kapoor M; Cheryala N; Georg G; Siegel R; **Hanson LR**; Cloyd J. Pharmacokinetics of a diazepam prodrug/enzyme combination following nasal administration in rats for treatment of seizure emergencies. Poster at the *University of Minnesota Clinical and Translation Science Institute's Poster Session*. Minneapolis, MN. Sep 2015.

Martens TW. Type 2 diabetes: using shared decision making to select medications or advance therapies. Presented at the *IDC (International Diabetes Center) Continuing Education, Advanced Strategies for Diabetes Educators*. Minneapolis, MN. Nov 2015.

Martin CT; McKinney ZJ; Hoody DG. DKA (diabetic ketoacidosis) critical care pathway. Poster at the *Twin Cities Resident Quality Forum, University of Minnesota*. Minneapolis, MN. May 2015.

Martin J; Hester A; Gernant SA; **Frail CK**; Snyder ME. Pharmacists' experiences using a self-administered brief screening tool for medication-related problems with patients in a community pharmacy setting. Presented at the *ASHP (American Society of Health Systems Pharmacists) Midyear 2016 Clinical Meeting & Exhibition*. New Orleans, LA. Dec 2015.

Martinson BC. Initial results from the Survey of Organizational Research Climates (SOuRCe) in the VA. Poster at the *AcademyHealth Annual Research Meeting (ARM)*. Minneapolis, MN. Jun 2015.

Masters T; **Westgard BC; Walter JW**; Hendrickson S; Logue C. Awake, anesthetized myringotomy: a retrospective case series from a new standard of practice. Poster at the *Undersea and Hyperbaric Medicine Society Annual Meeting*. Dallas, TX. Jun 2015.

Masters T; **Westgard BC; Walter JW**; Hendrickson S; Logue C. Hyperbaric oxygen therapy for central retinal artery occlusion (CRAO): improved outcomes in a retrospective case series. Poster at the *Undersea and Hyperbaric Medicine Society Annual Meeting*. Dallas, TX. Jun 2015.

Mathews BK. Choose your own adventure--medical decision making. Presented at the *University of Minnesota Internal Medicine Residency Program, Educational Conference and Workshop*. Saint Paul, MN. Jul 2015.

Mathews BK. Diagnostic error in medicine: a case autopsy. Presented at *Hospital Medicine Update -- A Full Systems Review*. Minneapolis, MN. Jun 2015.

Mathews BK. From possible to probable to sure to wrong--premature closure and anchoring in a complicated case. Presented at the *HealthPartners Primary Care Update: Pathways to Knowledge*. Minneapolis, MN. Sep 2015.

Mathews BK; Olson APJ. A crash course in not crashing: diagnostic error and the next frontier in patient safety. Presented to the *Hennepin County Medical Center Internal Medicine Residency Program*. Minneapolis, MN. Jan 2015.

Mathews BK; Olson APJ; Borman-Shoap E; Olson M. Looking under the hood when the car breaks down--teaching about medical decision making by studying diagnostic error. Presented at the *Best Practices in Medical Education Day Workshop: Critical Thinking in Medical Education, University of Minnesota*. Minneapolis, MN. May 2015.

Mathews BK; Olson APJ; Ruedinger E; Rank K. Teaching effectively about medical decision making and diagnostic error: how to get it right and how to talk about it when we don't. Presented at the *Association of Program Directors in Internal Medicine (APDIM)*. Houston, TX. Apr 2015.

McKinney ZJ. Effects of taconite mining silica and respirable dust exposure on an inflammatory DNA adduct biomarker, M1dG. Presented at the *Occupational and Environmental Medicine Grand Rounds*. Saint Paul, MN. Apr 2015.

McKinney ZJ. Occupational and environmental medicine and psychiatric concerns. Presented at the *HealthPartners Psychiatry Didactics Lecture*. Saint Paul, MN. May 2015.

McKinney ZJ. Race relations in the exam room: it's not all black and white. Presented at the *Hamm Memorial Psychiatric Clinic*. Saint Paul, MN. Oct 2015.

McKinney ZJ. Usage and engagement of a collaborative Wiki for occupational and environmental medicine residents. Poster at the *American Occupational Health Conference (AOHC)*. Baltimore, MD. May 2015.

McKinney ZJ; Gitnacht D. Usage and engagement of a collaborative Wiki for occupational and environmental medicine residents. Poster at the *Twin Cities Resident Quality Forum*. Minneapolis, MN. May 2015.

McKinney ZJ; Gorlin JB; Peters JM; Perry EH. Improving packed red blood cell orders, utilization, and management with point-of-care clinical decision support. Poster at the *Twin Cities Resident Quality Forum, University of Minnesota*. Minneapolis, MN. May 2015.

McKinney ZJ; Kalliainen LK. The use of electronic health record alerts to improve postoperative hand therapy protocol compliance following peripheral nerve repair. Poster at the *Twin Cities Resident Quality Forum, University of Minnesota*. Minneapolis, MN. May 2015.

McKinney ZJ; Ma B; Stepanov I; Ryan AD; Mandel JH. Effects of taconite mining silica and respirable dust exposure on an inflammatory DNA adduct biomarker, M1dG. Poster at the *National Occupational Research Agenda (NORA) Symposium, University of Minnesota*. Minneapolis, MN. May 2015.

McKinney ZJ; Ma B; Stepanov I; Ryan AD; Mandel JH. Effects of taconite mining silica and respirable dust exposure on an inflammatory DNA adduct biomarker, M1dG. Poster at the *American Occupational Health Conference (AOHC)*. Baltimore, MD. May 2015.

Miller J; Walker PF; Hendel-Paterson BR; Ruiz MA; Van Dyke SE. Honoring choices across cultures: teaching interprofessional and multicultural approaches to advance care planning and end-of-life care. Abstract presented at the *Collaborating Across Borders V (CAB V) Conference*. Roanoke, VA. Sep 2015.

Miotke SA; Mohr WJ; Endorf FW; Ahrenholz DH. Use of tranexamic acid in burn excision and grafting procedures: a case series. Presented at the *Minnesota Surgical Society*. Minneapolis, MN. Oct 2015.

Mullen DM. Barriers to preventative screening mammography. Poster at the *AcademyHealth Annual Research Meeting (ARM)*. Minneapolis, MN. Jun 2015.

Mullen DM. Leveraging the PCORI Ambassador Program to engage diverse populations of stakeholders. Presented at the *Summer Institute, University of Texas Health Sciences Center*. San Antonio, TX. Aug 2015.

Mullen DM. PCORI ambassador spotlight: examples of ambassador community engagement. Presented at the *PCORI Ambassador Monthly Meeting*. Washington DC. Sep 2015.

Mullen DM; Bergenstal RM. Reducing staff time with optimized work flows and standardized ambulatory glucose profile (AGP). Poster at the *American Diabetes Association (ADA) 75th Scientific Sessions*. Boston, MN. Jun 2015.

Mullen DM; Richter SA. Barriers to preventative screening mammography. Presented at the *AcademyHealth Annual Research Meeting (ARM)*. Minneapolis, MN. Jun 2015.

Mullen DM; Richter SA; Bergenstal RM; AGP Work Flow Study Group. Reducing staff time with optimized work flows and standardized Ambulatory Glucose Profile (AGP) reporting. Presented at the *American Diabetes Association (ADA) 75th Annual Scientific Sessions*. Boston, MA. Jun 2015.

Mullen DM; Richter SA; Bergenstal RM; AGP Work Flow Study Group. Understanding patient and clinician glucose reporting preferences in type 1 diabetes: Ambulatory Glucose Profile (AGP). Presented at the *European Association for the Study of Diabetes (EASD)*. Stockholm, Sweden. Sep 2015.

Myeroff CM; Sveom DS; Wright DM; Stuck LH; Switzer JA. Does surgical treatment, hospital admission or discharge facility predict mortality in elder patients with fractures of the proximal humerus? Presented at the *Minnesota Orthopaedic Society Annual Meeting*. Minneapolis, MN. May 2015.

Nelson AF. Perspectives on health services research career paths in an era of health reform. Panel session at the *NRSA Research Trainees 21st Annual Conference, AcademyHealth Annual Research Meeting (ARM)*. Minneapolis, MN. Jun 2015.

Nelson JG. Beyond lectures and email. Presented at the *EMS Educators Teaching & Learning Annual Conference*. Alexandria, MN. Apr 2015.

Nelson JG. Department of Emergency Medicine: focus on education research. Presented to the *Education Research in Progress Series of the Medical Educator Development and Scholarship Division, Academic Health Center, University of Minnesota*. Minneapolis, MN. Dec 2015.

Nelson JG. Tube thoracostomy, difficult airway. Presented at the *American College of Emergency Physicians (ACEP) Simulation Course*. Phoenix, AZ. 2015.

O'Connor PJ. Trends in hypoglycemia in a large cohort of adults with diabetes mellitus treated in U.S. community practices: 2005-2011. Oral presentation at the *Diabetes and Cardiovascular (D&CVD) Study Group 8th Annual Meeting, European Association for the Study of Diabetes (EASD)*. Munich, Germany. Oct 2015.

O'Connor PJ. Use and customization of risk scores for predicting cardiovascular events using electronic health record data. Oral presentation at the *Diabetes and Cardiovascular (D&CVD) Study Group 8th Annual Meeting, European Association for the Study of Diabetes (EASD)*. Munich, Germany. Oct 2015.

O'Connor PJ; Parker ED; Sinaiko AR; Kharbanda EO; Margolis KL; Daley MF; Trower NK; Sherwood NE; Greenspan LD; Lo JC; Magid DJ. Relation of change in weight status to the development of hypertension in children and adolescents. Poster at the *Diabetes and Cardiovascular (D&CVD) Study Group 8th Annual Meeting, European Association for the Study of Diabetes (EASD)*. Munich, Germany. Oct 2015.

O'Connor PJ; Sandhu A; Ho MP; Asche SE; Magid DJ; Margolis KL; Rush WA; Price DW; Ekstrom HL; Tavel HM; Godlevsky GV; Sperl-Hillen JM. Improving population health: predictors of recidivism to uncontrolled hypertension in patients with previously well-controlled hypertension. Poster at the *International Forum on Quality and Safety in Healthcare*. London, UK. Apr 2015. Project Number: A07-090 PPL.

O'Connor PJ; Sperl-Hillen JM; Asche SE; Crain AL; Margolis KL. Design of diabetes clinical decision support systems that reduce CV risk. Poster at the *Diabetes and Cardiovascular (D&CVD) Study Group 8th Annual Meeting, European Association for the Study of Diabetes (EASD)*. Munich, Germany. Oct 2015.

O'Connor PJ; Sperl-Hillen JM; Crain AL; Ekstrom HL. Passive safety monitoring using electronic medical records data for pragmatic cardiovascular clinical trials. Poster at the *Diabetes and Cardiovascular (D&CVD) Study Group 8th Annual Meeting, European Association for the Study of Diabetes (EASD)*. Munich, Germany. Oct 2015.

Olives TD. A case of atypical pesticide use in the U.S. (or how Craig's List and Ebay plot to expose you to a World War I chemical warfare agent). Presented at the *Forensic Science 32nd Annual Seminar, Minnesota Coroners' and Medical Examiners' Association*. Minneapolis, MN. Sep 2015.

Olives TD. (Not your mother's) Bath salts: A toxicologist's perspective on the management of synthetic stimulant & hallucinogen toxicity. Presented at the *Greater NW EMS Conference*. Mahanomen, MN. Oct 2015.

Olives TD. Socioeconomic stratification of callers to a regional poison center: what size are the holes in our net? Presented at the *American College of Medical Toxicology (ACMT) Annual Scientific Meeting*. Clearwater Beach, FL. Mar 2015.

Olives TD. Surrogates for cerebral perfusion in a swine model of calcium channel antagonist cardiogenic shock. Presented at the *American College of Medical Toxicology (ACMT) Annual Scientific Meeting, Fellows-in-Training Research Symposium*. Clearwater Beach, FL. Mar 2015.

Olives TD; Chavez R. Cold water drowning in the setting of a pediatric MCI. Presented at the *Bureau for EMS Week, Meeker Memorial Hospital*. Litchfield, MN. May 2015.

Olives TD; Chavez R. Pediatric cold water drowning MCI: putting training, experience, and resilience to the test. Presented at the *Greater NW EMS Conference*. Mahanomen, MN. Oct 2015.

Paddock MT. Determining the reliability of the ALiEM AIR score for rating educational online learning materials, Paper Session: Innovative technologies for medical education. Presented at the *Innovative Technologies for Medical Education, International Conference on Residency Education (ICRE) 2015*. Vancouver, British Columbia. Oct 2015.

Pawloski PA; Lamerato LE; Buist DS; Thomas AJ; Kane SM; Rasmussen R; Fuller S. Applying a neutropenia risk model to cancer patients using VDW data: a CRN pilot study. Presented at the *HMO Research Network (HMORN) 21st Annual Conference: Care Improvement Research: Partnering with Patients, Providers and Operational Leaders*. Long Beach, CA. Mar 2015.

Pawloski PA; Thomas AJ; Kane SM; Eggen DB; Van Arman LL. Applying a model to predict neutropenia risk in patients with cancer using electronic data. Presented at the *HMO Research Network (HMORN) 21st Annual Conference: Care Improvement Research: Partnering with Patients, Providers and Operational Leaders*. Long Beach, CA. Mar 2015.

Powers MA. What to do with all of that data? The Ambulatory Glucose Profile. Symposium at the *American Diabetes Association (ADA) 75th Scientific Sessions*. Boston, MA. Jun 2015.

Pronk NP. Addressing obesity at the workplace. Lecture at the *George Washington University Milken School of Public Health*. Washington DC. Jan 2015.

Pronk NP. Building a business case for worksite health promotion. Lecture at the *Global Healthy Workplace Awards and Summit*. Florianopolis, Santa Catarina, Brazil. May 2015.

Pronk NP. Culture matters: improving workforce health, safety, function, and performance. Presented at the *Hanford Health & Productivity Symposium*. Pasco, WA. Mar 2015.

Pronk NP. Design matters: well-designed programs can improve health as well as save money. Presented at the *IAWHP (International Association for Worksite Health Promotion) Pre-Conference at the ACSM's Health & Fitness Summit*. Phoenix, AZ. Mar 2015.

Pronk NP. Diabetes prevention. Presented at the *IHI (Institute for Healthcare Improvement) Forum*. Orlando, FL. Dec 2015.

Pronk NP. Employer-community committee update to HERO (Health Enhancement Research Organization) Think Tank. Presented at the *HERO Forum: Healthy Workplaces, Healthy Communities*. Chicago, IL. Sep 2015.

Pronk NP. Employer outcomes of Total Worker Health initiatives. Presented at the *National Institutes of Health Pathways to Prevention Conference*. Bethesda, MD. Dec 2015.

Pronk NP. Engaging members and driving improvement in population health. Panel discussion at the *World Health Care Congress*. Washington DC. Mar 2015.

Pronk NP. Exercise is medicine at the workplace. Tutorial lecture at the *American College of Sports Medicine (ACSM) Annual Meeting 2015 World Congress on Exercise is Medicine*. San Diego, CA. May 2015.

Pronk NP. From research to roadmap: frameworks to connect knowing and doing. Presented at the *Data Gathering Workshop for the Committee on Evaluating Approaches to Assessing Prevalence and Trends in Obesity*. Washington DC. Institute of Medicine (IOM); Jul 2015.

Pronk NP. Functional movement and workplace health promotion. Presented at the *ESPN Wide World of Sports at Disney World; A Joint Presentation With the International Association for Worksite Health Promotion (IAWHP) and the American College of Sports Medicine (ACSM)*. Orlando, FL. Dec 2015.

Pronk NP. Health and well-being of the workforce. Lecture at the *Carlson School of Business, University of Minnesota*. Minneapolis, MN. May 2015.

Pronk NP. Healthy workplaces, healthy communities: leveraging health beyond the workplace. Presented at the *Las Vegas Ergonomics Expo, Ergotron*. Las Vegas, NV. Nov 2015.

Pronk NP. Introduction of the National Physical Activity Plan (NPAP), Business and Industry Sector. Presented at the *NPAP Congress*. Washington DC. Feb 2015.

Pronk NP. Nudging workplaces toward physical activity. Presented at the *Symposium on Behavioral Economics and Physical Activity (CDC Session): Moving Passion to Practice, American College of Sports Medicine (ACSM) Annual Meeting*. San Diego, CA. May 2015.

Pronk NP. Optimal lifestyle: a simple metric for employee health, costs, and productivity. Presented at the *General Motors International Medical Team (Southeast Asia, Russia, Middle East, Africa) Webex*. Oct 2015.

Pronk NP. Physical activity promotion at the workplace: design matters. Presented at the *Physical Activity: Moving Toward Obesity Solutions Workshop, Institute of Medicine (IOM)*. Washington DC. Apr 2015.

Pronk NP. Sedentary behavior and worksite interventions. Lecture at the *Sedentary Behavior and Health Conference*. Champaign, IL. Oct 2015.

Pronk NP. A systems approach to workplace integration of safety and health. Presented at the *Harvard School of Public Health Executive Continuing Professional Education (HSPH Ergonomics Course)*. Boston, MA. Oct 2015.

Pronk NP. Value of workplace health. Lecture at the *University of Minnesota Public Health Institute, Integrating Worker Health Protection and Promotion Course*. Minneapolis, MN. Jun 2015.

Pronk NP. Workplace wellness in flux: making wellness work. Presented at the *Modern Healthcare Workplace of the Future Conference*. Nashville, TN. Oct 2015.

Pronk NP; Fabius R; Fraguas SP. Value of investing in a healthy workplace and workforce. Session chair at the *Global Healthy Workplace Awards and Summit*. Florianopolis, Santa Catarina, Brazil. May 2015.

Pronk NP; Noyce J. Healthy workplaces - healthy communities. Presented at the *HERO Think Tank*. Phoenix, AZ. Feb 2015.

Rasimas JJ. Taming your tiger: approaches to emergency psychiatry that work. Skills Course at the *Academy of Psychosomatic Medicine Annual Meeting*. New Orleans, LA. 2015.

Rasimas JJ. Update in internal medicine for the consultation-liaison psychiatrist: clozapine. Skills Course at the *Academy of Psychosomatic Medicine Annual Meeting*. New Orleans, LA. 2015.

Rasimas JJ; Held JT; Holt R; Narang PD. One institutional policy for treating depression with ketamine and a proposal for clinical consortium. Poster at the *Academy of Psychosomatic Medicine (APM) Annual Meeting*. New Orleans, LA. Nov 2015.

Ronan-Bentle SE; **Hegarty CB**; Messner A; Taitsman L. The use of standardized letters of recommendation in residency applications: implications for applicants, authors, and residency leaders. Presented at the *NRMP Conference Transitions to Residency: Conversations Across the Medical Education Continuum*. New Orleans, LA. Oct 2015.

Rosenbloom MH; **Barclay TR**; Pyle M; **Hanson AM**; **Stuck LH**; **Hanson LR**. Routine cognitive screening in a neurology practice: impact on physician behavior. Poster at the *American Academy of Neurology (AAN) Annual Meeting*. Washington DC. Apr 2015.

Rossom RC. Integrating behavioral health care with primary care: where we are and where we are going. Presented at the *AcademyHealth Annual Research Meeting (ARM)*. Minneapolis, MN. Jun 2015.

Rossom RC; Simon GE; Beck AL; Coleman KJ. Depression severity and suicidal ideation across age groups and degrees of medical comorbidity. Presented at the *HMO Research Network (HMORN) 21st Annual Conference: Care Improvement Research: Partnering with Patients, Providers and Operational Leaders*. Long Beach, CA. Mar 2015.

Sandberg BC; **Bohm KC**; **Switzer JA**; **Hill BW**; **Olson JT**; **Lafferty PM**. Immediate sarmiento bracing for the treatment of humeral shaft fractures. Presented at the *Minnesota Orthopaedic Society Annual Meeting*. Minneapolis, MN. May 2015.

Sandberg BC; **Bohm KC**; **Switzer JA**; **Hill BW**; **Olson JT**; **Lafferty PM**. Immediate sarmiento bracing for the treatment of humeral shaft fractures. Poster at the *Orthopaedic Trauma Association (OTA) Annual Meeting*. San Diego, CA. Oct 2015.

Schousboe JT. Individual and health care system characteristics associated with choice of post-acute care after hip fracture. Poster at the *AcademyHealth Annual Research Meeting (ARM)*. Minneapolis, MN. Jun 2015.

Schubert WV. AO craniomaxillofacial education update. Presented at the *AO Education Platform Meeting*. Zurich, Switzerland. Apr 2015.

Schubert WV. AOCMF membership; Panfacial fractures; Teaching at small group discussions of midface and mandible modules. Presented at the *AOCMF Principles Course*. Kansas City, KS. Nov 2015.

Schubert WV. Complications in orbital reconstruction. Presented at the *Austrian Society of Oral & Maxillofacial Surgery 19th Congress*. Mayrhofen, Austria. Jan 2015.

Schubert WV. Exam of the head and neck. Presented at the *Plastic Surgery Core Curriculum, Regions Hospital*. Saint Paul, MN. Jul 2015.

Schubert WV. Facial fractures. Presented at the *Department of Plastic Surgery, Core Competency Lectures*. Saint Paul, MN. Feb 2015.

Schubert WV. Gunshot wounds to the face. Presented at the *Austrian Society of Oral & Maxillofacial Surgery 19th Congress*. Mayrhofen, Austria. Jan 2015.

Schubert WV. Imaging in the evaluation of orbital trauma; Materials for orbital reconstruction (titanium mesh); Treatment strategies for zygoma fractures; AO membership. Presented at the *South African Society of Maxillo-Facial & Oral Surgeons (SASMFOs) Congress: Orbital Trauma & Reconstruction*. Cape Town, South Africa. Aug 2015.

Schubert WV. Management of gunshot wounds to the face/neck; Physics of ballistic trauma; Reconstruction of midface trauma; Surgical approaches for repair of trimalar fractures; Surgical management of LeFort 1,2,3 midface fractures. Presented as *AO Visiting Guest Professor, Henry Ford Hospital*. Detroit, MI. Apr 2015.

Schubert WV. Mandible trauma and reconstruction. Presented at the *American Society of Maxillofacial Surgeons (ASMS), Basic Maxillofacial Principles and Techniques Course*. University of Miami, Florida. Jan 2015.

Schubert WV. Mandible trauma and reconstruction; Discussion on facial plating. Presented at the *American Society of Maxillofacial Surgeons (ASMS) Basic Maxillofacial Principles & Techniques Course, University of Pennsylvania*. Philadelphia, PA. Aug 2015.

Schubert WV. Midface and ZMC trauma. Presented at the *Department of Oral and Maxillofacial Surgery CORE Curriculum, University of Minnesota*. Minneapolis, MN. Mar 2015.

Schubert WV. My life with AO. Presented at the *AO Asia-Pacific Retreat*. Bangkok, Thailand. Jun 2015.

Schubert WV. Orbital-zygomatic trauma and reconstruction: discovering the truths and debunking myths. Presented at the *American Society of Plastic Surgery (ASPS) Annual Meeting*. Boston, MA. Oct 2015.

Schubert WV. Postoperative flap management. Presented at the *Microvascular Surgery & Reconstruction Course*. Shiraz, Iran. May 2015.

Schubert WV. Update from AO International. Presented at the *AOCMF Latin American Board Meeting*. Mexico City, Mexico. Sep 2015.

Schubert WV. What is AO; Alternatives to symphyseal fracture management; Dental impressions and models; Panfacial staging and impressions; NOE; AO membership. Presented at the *Multidisciplinary Maxillofacial Trauma Course, Course Director*. Shiraz, Iran. May 2015.

Schubert WV. What is AOCMF; Management of panfacial fractures; Gunshot injury management: an American perspective; Complex NOE; AOCMF membership. Presented at the *AOCMF Symposium*. Nairobi, Kenya. Oct 2015.

Solberg LI. Accelerating PCOR (Patient-Centered Outcomes Research) through the PCORI (Patient-Centered Outcomes Research Institute) Pilot Projects Learning Network: experiences with shared learning and collaboration. Panel member at the *PCORI Annual Meeting*. Arlington, VA. Oct 2015.

Solberg LI. Lessons from a career in quality improvement research. Plenary presentation at the *North American Primary Care Research Group Annual Conference*. Cancun, Mexico. Oct 2015.

Solberg LI; Landon B; Fisher E; Rittenhouse D. Changes in how physician organizations improve (and how we study it). Invited panel member on *Academy Health Policy Roundtable, AcademyHealth Annual Research Meeting (ARM)*. Minneapolis, MN. Jun 2015.

Solberg LI; Reid RJ; Darer J; Shah N; Gould MK. Research operations partnerships to improve care. Plenary panel at the *HMO Research Network (HMORN) 21st Annual Conference: Care Improvement Research: Partnering with Patients, Providers and Operational Leaders*. Long Beach, CA. Mar 2015.

Sperl-Hillen SM; Ekstrom HL; O'Connor PJ; Bergenstal RM; Asche SE; DeFor TA; Amundson GH; Appana D. The need for new care strategies to prevent A1c relapse. Presented at the *HMO Research Network (HMORN) 21st Annual Conference: Care Improvement Research: Partnering with Patients, Providers and Operational Leaders*. Long Beach, CA. Mar 2015.

Townsend D; Clements ZR; Morton CT; Mathews BK. Picking on PICCs (peripherally inserted central catheters) to decrease upper extremity DVTs and reduce costs. Poster at the *Society of Hospital Medicine (HM2015) Annual Meeting*. National Harbor, MD. Mar 2015.

Truesdale KP; Matheson P; Pratt C; **JaKa MM;** McAleer S; Sommer E; Stevens J. Examination of two dietary quality indices in low-income preschool and adolescent children from four US cities. Presented at *Obesity Week (Obesity Society's Annual Scientific Meeting)*. Los Angeles, CA. Nov 2015.

Walker PF. Best practices in refugee health: leading with head and heart. Keynote speaker at the *North American Refugee Health Conference: Health Means the World to Us*. Toronto, Canada. Jun 2015.

Walker PF. Neurotoxic shell fish poisoning: clinical case. Presented at the *Global Health Course, University of Minnesota*. Minneapolis, MN. May 2015.

Walker PF. Non-schistosomiasis fluke infection. Presented at the *Global Health Course, University of Minnesota*. Minneapolis, MN. May 2015.

Walker PF. Providing high-quality primary care to refugees and immigrants--cancer screening in immigrants: case studies. Presented at the *Global Health Course, University of Minnesota*. Minneapolis, MN. May 2015.

Walter JW. Morbidity and mortality in necrotizing soft tissue infections (INSTIs): hyperbaric oxygen versus standard therapy in two urban hospitals. Presented at the *Undersea and Hyperbaric Medicine Society Annual Scientific Meeting*. Montreal, Quebec. Jun 2015.

Walter JW; Westgard BC. Hyperbaric oxygen therapy is associated with improved mortality in necrotizing soft tissue infections (NSTIs): a retrospective case-control study in two urban hospitals. Poster at the *Undersea and Hyperbaric Medicine Society Annual Meeting*. Dallas, TX. Jun 2015.

Westgard BC. Intensive community engagement to address cardiovascular disease risk factors in a disadvantaged refugee population. Poster at the *AcademyHealth Annual Research Meeting (ARM)*. Minneapolis, MN. Jun 2015.

Westgard BC. Triple-aim hotspots: neighborhood factors in potentially avoidable emergency department visits and costs. Poster at the *AcademyHealth Annual Research Meeting (ARM)*. Minneapolis, MN. Jun 2015.

Westgard BC; Martinson BC; Maciosek MV; Pryce D; Dalmar A; Farah F; Wewerka SS; Fernandes OD. Intensive community engagement to address cardiovascular disease risk factors in the Somali community. Presented at the *AcademyHealth Annual Research Meeting*. Minneapolis, MN. Jun 2015.

Wolfson J; Vock DM; Johnson PE; Bandyopadhyay S; **O'Connor PJ; Vazquez-Benitez G.** Use and customization of risk scores for predicting cardiovascular events with electronic health data. Poster at the *AHA Scientific Sessions*. Orlando, FL. Nov 2015.

Ziegenfuss JY. Cost and quality trade-offs in a well-being survey of HealthPartners patient members. Presented at the *American Association for Public Opinion Research 70th Annual Conference*. Hollywood, FL. May 2015.

Ziegenfuss JY. Cost and quality trade-offs in a well-being survey of HealthPartners patient members. Presented at the *AcademyHealth Annual Research Meeting (ARM)*. Minneapolis, MN. Jun 2015.

Zielinski MD; Kuntz M; Zhang X; **Zagar AE**; Khasawneh MA; Zendejas B; Polites SF; Ferrara M; Harmsen WS; Ballman KS; Park MS; Schiller HJ; **Dries DJ**; Jenkins DH. Botulinum toxin A-induced paralysis of the lateral abdominal wall after damage-control laparotomy: a multi-institutional, prospective, randomized, placebo-controlled, double-blinded clinical trial. Presented at the *EAST (Eastern Association for the Surgery of Trauma) 28th Annual Scientific Assembly*. Lake Buena Vista, FL. Jan 2015.

Zwank MD. Cost effectiveness and socioeconomic impact of ultrasound at the bedside. Presented at the *Ultrasound in the Critical Patient 1st International Congress*. Bogota, Colombia. Jul 2015.

Zwank MD. Electronic medical record workflow affects bedside ultrasound ordering and documentation compliance. Presented at the *Society for Academic Emergency Medicine (SAEM) Great Plains Regional Research Forum*. Minneapolis, MN. Sep 2015.

Zwank MD. Ultrasound in acute respiratory illness in children. Presented at the *Ultrasound in the Critical Patient 1st International Congress*. Bogota, Columbia. Jul 2015.

Zwank MD; Ciccollelo K; Farrar K. Impact of EMR discharge notifications on patient follow-up and treatment for hypertension: a retrospective cohort. Presented at the *Society for Academic Emergency Medicine (SAEM) Great Plains Regional Research Forum*. Minneapolis, MN. Sep 2015.

Books and Book Chapters

Abben KW; Boffeli TJ. Osteomyelitis of the central toes. In: **Boffeli TJ**, editor. *Osteomyelitis of the foot and ankle: medical and surgical management*. New York, NY: Springer; 2015; pp. 197-216.

Boffeli TJ; Abben KW; Tabatt JA. Fifth ray osteomyelitis. In: **Boffeli TJ**, editor. *Osteomyelitis of the foot and ankle: medical and surgical management*. New York, NY: Springer; 2015; pp. 229-51.

Boffeli TJ; Collier RC. Osteomyelitis of the calcaneus. In: **Boffeli TJ**, editor. *Osteomyelitis of the foot and ankle: medical and surgical management*. New York, NY: Springer; 2015; pp. 297-323.

Boffeli TJ; Hyllengren SB; Peterson M. First ray osteomyelitis. In: **Boffeli TJ**, editor. *Osteomyelitis of the foot and ankle: medical and surgical management*. New York, NY: Springer; 2015; pp. 167-96.

Boffeli TJ; Mahoney KJ. Chopart's amputation for osteomyelitis of the midfoot. In: **Boffeli TJ**, editor. *Osteomyelitis of the foot and ankle: medical and surgical management*. New York, NY: Springer; 2015; pp. 283-96.

Boffeli TJ; Thompson JC. Diagnosis and management of the septic joint. In: **Boffeli TJ**, editor. *Osteomyelitis of the foot and ankle: medical and surgical management*. New York, NY: Springer; 2015; pp. 91-8.

Boffeli TJ; Thompson JC. Diagnosis and prevention of postamputation heterotopic ossification. In: **Boffeli TJ**, editor. *Osteomyelitis of the foot and ankle: medical and surgical management*. New York, NY: Springer; 2015; pp. 127-37.

Boffeli TJ; Waverly BJ. Transmetatarsal and lisfranc amputation. In: **Boffeli TJ**, editor. *Osteomyelitis of the foot and ankle: medical and surgical management*. New York, NY: Springer; 2015; pp. 253-82.

Boffeli TJ, editor. *Osteomyelitis of the foot and ankle: medical and surgical management*. New York, NY: Springer; 2015.

Collier RC; Tabatt J. Prevention of osteomyelitis in traumatic injuries. In: **Boffeli TJ**, editor. *Osteomyelitis of the foot and ankle: medical and surgical management*. New York, NY: Springer; 2015; pp. 139-56.

Dehmer SP; Maciosek MV; Flottemesch TJ. *Aspirin use to prevent cardiovascular disease and colorectal cancer: a decision analysis.* AHRQ Technical Report No: 15-05229-EF-1. Rockville, MD: Agency for Healthcare Research and Quality (AHRQ); Sep 2015. [U.S. Preventive Services Task Force Evidence Syntheses]

Abstract: Evidence indicates that aspirin is effective for the primary prevention of cardiovascular disease (CVD) and colorectal cancer (CRC), but regular use also increases risk for gastrointestinal (GI) and cerebral hemorrhages. To assess the net balance of benefits and harms from routine use of aspirin for primary prevention across clinically relevant age, sex, and CVD risk groups. Decision analysis using a microsimulation model. Relative risks of aspirin benefits and harms are sourced from three updated systematic evidence reviews. Men and women aged 40 to 79 years with 10-year CVD risk of 20 percent or less, no history of CVD, and non-elevated risk for GI or cerebral hemorrhage. Lifetime, 20 years, and 10 years. Clinical. Daily use of low-dose aspirin (100mg or less). Primary outcomes are net benefits in terms of life years and quality-adjusted life years (QALYs). Benefits include reduction of non-fatal myocardial infarction, non-fatal ischemic stroke, fatal CVD, CRC incidence, and CRC mortality. Harms include increase in fatal and non-fatal GI bleeding and hemorrhagic stroke. Lifetime net benefits from routine aspirin use for primary prevention are found to be positive for men and women aged 40-69 in all 10-year CVD risk levels. For men and women aged 70-79, lifetime net outcomes are mixed: net life years are negative, but net QALYs are positive. The largest lifetime net benefits from aspirin are found among men and women aged 40-59 with moderate-to-high baseline CVD risk. Net benefits from aspirin over 10 and 20 years of use are generally much lower and may be negative. Net benefit calculations also favor early over delayed initiation of aspirin use for all men and women aged 40-69. Net benefit results are most sensitive to uncertainty regarding the effect of low-dose aspirin on the increased risk of hemorrhagic stroke and in the primary prevention of CVD mortality. Imposing small disutilities on routine aspirin use can substantially diminish the net benefit of using aspirin to improve overall quality of life. Sensitivity analyses demonstrate that our current imprecision in understanding aspirin's effects on benefits and harms, when used for primary prevention, carry through to model estimates. Persons aged 40-49 are not as well represented in the studies informing aspirin's effects, and therefore, the modeling results may not reliably apply to persons in this age group. Improved ability to estimate individual GI bleeding risk would enhance precision. Modeled results do not account for potential correlations between CVD risk factors and GI bleeding risk, except for age and sex. Benefits are predicted to exceed harms among persons aged 40-69 with non-elevated bleeding risk who take aspirin for primary prevention of CVD and CRC over their lifetimes. Net benefits from routine aspirin use over a 10- or 20-year horizon are expected to be substantially smaller, and in many cases, harms may exceed benefits. Findings do not differ markedly between men and women; however, deterministic and probabilistic sensitivity analyses reveal meaningful uncertainty about the magnitude of net benefit.

Forte ML; Butler M; Andrade KE; Vincent A; **Schousboe JT**; Kane RL. *Treatments for fibromyalgia in adult subgroups [review].* Rockville, MD: Agency for Healthcare Research and Quality (AHRQ); Jan 2015. [Comparative Effectiveness Reviews, No. 148]

Abstract: We conducted a systematic literature review of clinical trials to assess the comparative effectiveness of treatments for fibromyalgia in subgroups of highly affected or clinically complex adults. We focused on patient subgroups rather than overall treatment effects to complement a large systematic review being conducted on fibromyalgia treatments at McMaster University. We searched Medline(R), Embase(R), PsycINFO(R), AMED, and the Cochrane Central Register of Controlled Trials (CENTRAL) plus reference lists of

included studies and recent systematic reviews. Two investigators screened abstracts of identified references for eligibility (enrolled adults with fibromyalgia, examined treatment effects, had a control group, and assessed outcomes at least 3 months after treatment initiation). Full-text articles were reviewed to identify outcomes reporting for at least one adult subgroup: women, older or obese adults, individuals with coexisting mental health conditions, high severity or longer fibromyalgia duration, multiple medical comorbidities, or other chronic pain conditions. Primary outcomes included pain, symptom improvement, function, fatigue, sleep quality, participation, and health-related quality of life. We extracted data, assessed risk of bias of individual studies, and evaluated strength of evidence for each comparison and outcome. We identified 22 randomized controlled trials (RCTs), 8 pooled analyses of patient-level RCT data, and 4 observational studies that met inclusion criteria; 59 percent were drug trials. Adults with fibromyalgia and major depressive disorder (MDD) were studied most often; drug studies also reported outcomes by age, sex, race, and anxiety. Most drug trials examined duloxetine effects on pain and global improvement; trial duration was typically 3 months. Low-strength evidence for duloxetine suggests that subgroups of adults with fibromyalgia and MDD do not experience differential short-term treatment effects. Other subgroup evidence is largely insufficient. For nearly all comparisons, treatment-by-subgroup interactions were not significant. Most interaction results were reported in text; only two RCTs and five pooled RCT analyses displayed data on subgroup outcomes. Losses to followup were considerable; dropout reporting was not subgroup specific. Adverse effects were reported for the MDD subgroup in one duloxetine pooled analysis; these were similar to overall adverse effects. Studies were not powered to detect subgroup effects. Despite the prevalent belief that fibromyalgia treatments may behave differently in subgroups, evidence to date is largely insufficient for fibromyalgia subgroup effects of interventions other than duloxetine in adults with concomitant MDD. Future studies should be designed to support subgroup analysis to improve clinical applicability.

Framer EM; Kaplan G; **Pronk NP**. Addressing obesity at the workplace. In: O'Connell MP, editor. *Health promotion in the workplace*. Troy, MI: American Journal of Health Promotion, Inc; 2015; pp. 509-34.

Haller PR. Leg injuries. In: Tintinalli JE; Stapczynski JS; Ma OJ; Yealy D; Meckler G; Cline D, editors. *Tintinalli's emergency medicine: a comprehensive study guide*. 8th ed. New York: McGraw-Hill; 2015; p. Chapter 275.

Institute of Medicine (IOM); **Pronk NP**, chair of the Planning Committee on Cross-Sector Work on Obesity Prevention Treatment and Weight Maintenance Models for Change IOM. *Cross-sector responses to obesity: models for change: workshop summary*. Washington DC: The National Academies Press; 2015.

Institute of Medicine (IOM); **Pronk NP**, member of Planning Committee. *Business engagement in building healthy communities: workshop summary*. Washington DC: The National Academies Press; 2015.

Institute of Medicine (IOM); **Pronk NP**, member of the Roundtable on Obesity Solutions IOM. *Physical activity: moving toward obesity solutions: workshop summary*. Washington DC: The National Academies Press; 2015.

Johnson GL. Developing a systematic program evaluation plan. In: Palaganas JC; Maxworthy JC; Epps CA; Mancini ME, editors. *Defining excellence in simulation programs*. Philadelphia, PA: Lippincott Williams & Wilkins/Society for Simulation in Healthcare; 2015; pp. 377-90.

Johnson GL; Augustson JL. Writing and implementing a strategic plan. In: Palaganas JC; Maxworthy JC; Epps CA; Mancini ME, editors. *Defining excellence in simulation programs*. Philadelphia, PA: Lippincott Williams & Wilkins/Society for Simulation in Healthcare; 2015; pp. 364-76.

Kadan-Lottick N; **Kunin-Batson AS.** Central nervous system effects of childhood cancer. In: Schwartz CL; Hobbie WL; Constine LS; Ruccione KS, editors. *Survivors of childhood and adolescent cancer: a multidisciplinary approach*. New York: Springer; 2015.

May J; Baase C; Flynn J; Goetzel RZ; **Pronk NP**; Terry PE; White JM. *Culture of health measures. Phase II report: identifying measures*. Edina, MN: Health Enhancement Research Organization (HERO); 2015.

Nance MA; Lovecky D; Leserman A; Meyer S, editors. Caregiver guide for mid to late stage *Huntington's disease: for long-term care facilities and in-home care agencies*. New York, NY: Huntington's Disease Society of America; 2015.

Nelson JG; Hemphill RR. Clotting disorders. In: Tintinalli JE; Stapczynski JS; Ma OJ; Yealy D; Meckler G; Cline D; American College of Emergency Physicians, editors. *Tintinalli's emergency medicine: a comprehensive study guide*. 8th ed. New York: McGraw-Hill; 2015; p. Chapter 234.

Oziransky V; Yach D; Tsao TY; Luterek A; Stevens D; **Pronk NP.** *Beyond the four walls: why community is critical to workforce health. Business case study: HealthPartners*. New York, NY: Vitality Institute; Jul 2015.

Paddock MT. Frostbite and other cold injuries. In: Tintinalli JE; Stapczynski JS; Ma OJ; Yealy D; Meckler G; Cline D; American College of Emergency Physicians, editors. *Tintinalli's emergency medicine: a comprehensive study guide*. 8th ed. New York: McGraw-Hill; 2015; p. Chapter 234.

Pfannenstien RR; Hyllengren SB; Boffeli TJ. Bone biopsy techniques. In: **Boffeli TJ**, editor. *Osteomyelitis of the foot and ankle: medical and surgical management*. New York, NY: Springer; 2015; pp. 39-47.

Pfannenstien RR; Mahoney KJ; Boffeli TJ. Osteomyelitis of the distal fibula associated with lateral ankle decubitus ulceration. In: **Boffeli TJ**, editor. *Osteomyelitis of the foot and ankle: medical and surgical management*. New York, NY: Springer; 2015; pp. 325-37.

Pray L; **Pronk NP**, member of the Roundtable on Obesity Solutions Institute of Medicine IOM. *Physical activity: moving toward obesity solutions: workshop summary*. Washington DC: National Academies Press; 2015.

Pronk NP. *Three ways for employers to build healthy communities--and healthy employees.* Alpharetta, GA: Institute for Healthcare Consumerism (IHC); 2015.

Abstract: Historically, the private sector has shouldered the burden of direct and indirect health costs, including health plan premiums, workers' compensation, disability, absenteeism, presenteeism, employee retention and turnover and low morale. According to the Public Health Institute, as much as 50 percent of company profits may go towards those costs. To date, worksite wellness programs have been widely adopted as a way to control health care spending, and to get employees involved. But as a recent report from the Vitality Institute confirms, the health of the workforce is linked to the overall health of the community. Employers who are committed to reducing health care costs and improving workforce productivity will need to broaden their approach to good health to reach the community. A national initiative to improve the health of all people through employer-community collaboration, "Healthy Workplaces, Healthy Communities" is designed to help achieve this important goal.

Pronk NP; Canterbury MM; Kottke TE; Zimmerman DJ. Case study: the power of community in population health: PowerUp for kids. In: Nash DB; Fabius RJ; Skoufalos A; Clarke JL; Horowitz MR, editors. *Population health: creating a culture of wellness.* 2nd ed. Burlington, MA: Jones & Bartlett Learning; 2015; pp. 427-36.

Pronk NP; Institute of Medicine (IOM). *Business engagement in building healthy communities: workshop summary.* Washington DC: The National Academies Press; 2015.

Risser JM; Epstein HR. Withdrawing life-sustaining interventions. In: Pantilat SZ; Anderson W; Gonzalas A; Widera E, editors. *Hospital-based palliative medicine: a practical, evidence-based approach.* Hoboken, NJ: John Wiley & Sons; 2015; pp. 195-205.

Stellpflug SJ; Kerns W 2nd. Antidotes in depth: high dose insulin euglycemia. In: Hoffman RS; Howland MA; Lewin NA; Nelson LS; Goldfrank LR, editors. *Goldfrank's Toxicologic emergencies.* 10th ed. New York: McGraw-Hill Professional; 2015.

Thompson JC; Boffeli TJ. Central metatarsal osteomyelitis. In: **Boffeli TJ**, editor. *Osteomyelitis of the foot and ankle: medical and surgical management.* New York, NY: Springer; 2015; pp. 217-28.

Walker PF; Barnett ED; **Stauffer WM.** Healthcare for adult immigrants and refugees. In: Baron EL, editor. *UpToDate.* Waltham, MA: UpToDate; 2015.

Zwank MD. Chapter. In: Sherman SC; Cico SJ; Nordquist E; Ross C; Wang E, editors. *Atlas of clinical emergency medicine.* Philadelphia, PA: Wolters Kluwer; 2015.

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Maciosek MV; Flottemesch TJ; Dehmer SP; LaFrance AB; McGree DA; O'Blenes SM; HealthPartners Institute for Education and Research. *Community HEALTHADVISOR* [Web Page]. 2015; Accessed 2015 May 21. Available at: <http://www.communityhealthadvisor.org/drupal/cha/home>.

Community Health Advisor helps decision makers identify the public health policies and programs that will have the greatest effect on health, mortality and medical costs at a county, state or national level.