## Oral Presentations

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Weight Change with Implementation of Preventive Vital Signs

Isaac Chambers, MS-4, Justin Moore, MD, Frank Dong, PhD

KU School of Medicine – Wichita

Background: More than two thirds (69.6%) of U.S. adults are overweight or obese. Low levels of fruit and vegetable (F/V) consumption and physical activity (PA) are two risk behaviors. However, most outpatient health care settings do not have mechanisms in place to routinely encourage these patients on their F/V and PA. This study seeks to determine if routine questioning of patients concerning fruit and vegetable intake and physical activity is associated with weight reduction.

Methods: A retrospective chart review identified overweight and obese patients who visited an outpatient clinic between January 1, 2010 and December 31, 2012. Starting January 2010, patients who visited the University of Kansas School of Medicine-Wichita (KUSM-W) Cypress clinic were reminded about their fruit and vegetable consumption, physical activity, and smoking status at each outpatient visit (“preventive vital signs” [PVS]) by the nurses. A cohort of 125 patients was compared to an age and sex-matched cohort of 125 patients from the KUSM-W Midtown clinic that was not exposed to PVS.

Results: The cohorts were predominantly female participants (62.4%) and Caucasian (50.4%). More participants with diabetes mellitus were included in the PVS cohort than in controls (40% vs. 19.2%, respectively; P=0.0003). Though baseline weights were similar between the two cohorts (99.12 ± 25.63 and 98.95± 25.60 kg, respectively; P=0.9570), after a mean of 33 months follow up over a mean of nine visits, weight change and BMI change did not differ between groups.

Conclusion: Use of preventive vital signs was not associated with weight reduction in an outpatient clinic.

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The Relationship of Obesity and Outcomes in Pediatric Trauma Patients

Brandon Stringer, MS-4, Clint Gates, MS-4, Gina Berg, PhD, Felecia Lee, PhD, Ashley Hervey, MEd, Paul Harrison, MD

KU School of Medicine – Wichita

Background: It has been demonstrated that obese adults have higher mortality rates and more complications during hospitalization after traumatic events. The pediatric population is less well studied. The purpose of this study was to determine if BMI is an independent risk factor for in-hospital mortality and to explore if an increase in BMI impacts resource usage in a pediatric trauma population.

Methods: A retrospective trauma registry review of pediatric trauma patients (aged 2-17 years) admitted between 2002 and 2012 to a Midwestern Level I trauma center. Patients were stratified into non-obese (<95th percentile) and obese (>95th percentile) according to published charts for age and gender. Canonical correlation analysis determined the relationship between patient characteristics (age, BMI, ISS, physiological complication count) and hospital resource usage (ICU and hospital LOS, total medical consults, total procedure count).

Results: Analysis included 1,620 patients, 82% were non-obese and 18% obese. The sample did not support the assumptions of the multivariable analysis intended to examine in-hospital mortality. BMI was not related to hospital resource usage. However, injury severity (increased ISS, physiological complication count) was related to hospital resource usage. The severely injured spent fewer days in the hospital and ICU, received fewer procedures, and more medical consults.

Conclusion: In this pediatric trauma population, it was not possible to conclude if BMI was associated with mortality. Mortality may not be the best outcome measure in a pediatric population. According to the canonical correlation, severity of injury was inversely related to some aspects of hospital resource usage.

Contact Information:
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A Meta-analysis of Home-based Exercise Therapy vs. Supervised Exercise Therapy for the Treatment of Peripheral Artery Disease

Maneesh Kumar, MS-4, Philip Twumasi-Ankrah, PhD
KU School of Medicine - Wichita

Background: Peripheral artery disease (PAD) is a chronic arterial occlusive disease. First line treatment for PAD is supervised exercise therapy. Walking therapy has been shown to improve maximum walking distance (MWD) and pain free walking distance (PFWD). However, supervised exercise therapy (SET) can be time consuming and difficult for patients to maintain. Home-based exercise therapy (HBET) may be easier for patients to maintain and provide similar clinical benefit.

Methods: Peer-reviewed controlled trials were selected for this meta-analysis. Medline, Pubmed, and Google Scholar were used. Studies published prior to 2005 AHA guidelines were excluded.

Results: Nine studies were selected. HBET increased MWD from 292.1 m (95% CI: 64.9, 519.3) at baseline to 366.3 m (95% CI: 50.2, 482.7) at followup. Also PFWD increased from 123.6 m (95% CI: 31.6, 215.6) to 198.3 m (95% CI: 79.1, 475.8) at follow-up. Increases in MWD and PFWD for SET were higher than in the HBET group at follow-up but these differences were not statistically significant assessed at 5% type I error rate.

Conclusion: The differences for both MWD and PFWD in the HBET groups from baseline to follow-up were not statistically significant while they improved significantly in the SET groups. HBET studies with well specified exercise instructions did have a significant improvement in both MWD and PFWD (p < 0.05). Low intensity HBET does improve MWD and PFWD and may have higher treatment adherence. Physicians should consider HBET with specific walking advice as a viable alternative to SET to results in better functional benefits.

Contact Information:
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Referral to Death Time: A Hospice Enrollment Retrospective Study at Via Christi Residency Program

Bonnie Cassidy, DO¹, Joe Cwick, DO¹, Amy Chesser, PhD¹, Doug Woolley, MD¹, Mark Stovack, MD², Kyle Smothers¹

KU School of Medicine – Wichita¹, Via Christi Regional Medical Center²

Background: Many factors affect residents referring patients to hospice: knowing when to refer, comfort in doing so and lack of experience to name a few. Late referral can be associated with unnecessary increased costs, delay in palliative care for the patient and support for the family of the dying patient.

Methods: At Via Christi, a retrospective study looked at one major hospice center used by residents over a one-year period. We observed the average times from both date of referral-to-death and date of admission-to-death. The number of referrals from clinic and the referrals from the hospital were also calculated.

Results: Of the 50 patients that were referred to hospice from our resident clinics and teaching hospital, 30 qualified for services. Our study demonstrated that, on average, patients received services for a total of 3.64 days. The time from referral to hospice until death averaged 4.07 days. In addition, only 8% of patients were referred from clinic. Finally, 87% of patients received services for less than 7 days.

Conclusion: Conclusions generated about our local level of performance compared to the National Hospice and Palliative Care Organization shed an idea about need for discussing barriers to early hospice referral. Recommendations generated from this study are discussed, as well as a prospective resident comfort level and overall fund of knowledge that will allow the possibility of generating a standardized hospice referral curriculum for primary care residents.

Contact Information:
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Do Medical Student’s Surgical Examination Scores Correlate with Performance Markers?

Austin George, MD¹, Abbie Schuster, MD¹, Stephen Helmer, PhD², Rachel Drake, MEd², Therese Cusick, MD¹, Jacqueline Osland, MD¹, Alex Ammar, MD¹

KU School of Medicine – Wichita¹, Via Christi Regional Medical Center²

Background: Some medical school training consists of oral examinations. The purpose of this study was to determine the predictive associations between USMLE Step 1 scores, oral surgery examination scores, NBME Surgery Subject Exam (SSE, ie. Shelf) scores, and Step 2 scores.

Methods: A 9-year retrospective review was conducted of testing data for third-year medical students enrolled in a General Surgery clerkship from 2003-2012. Data collected included demographics, clerkship grade [comprised of the oral examination grade (10%), a case presentation (5%), clinical grade (50%), and the SSE raw score (35%)], and USMLE Step 1 and Step 2 scores.

Results: A total of 481 students were included in the study. Step 1 showed a moderate to strong association with Period 1 orals (Somers’ D=.297, P<.001), but not Period 2 orals (Somers’ D=.048, P=.053). Period 1 orals (percentage) had a strong association with SSE (Somers’ D=.356, P<.001), and with Step 2 (Somers’ D=.368, P<.001). Period 2 orals (pass/fail) suggested a positive, but not statistically significant, association with SSE (Somers’ D=.334, P=.085) and Step 2 (Somers’ D=.370, P=.055). Step 1 shows a strong association with SSE (Somers’ D=.490, P<.001). SSE showed a strong association with Step 2 (Somers’ D=.506, P<.001).

Conclusion: Orals can be used to identify students that may have difficulty passing the SSE. Step 1 can be used to identify students at risk of poor performance on the SSE, and SSE can be used to identify students at risk for poor performance on Step 2.

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Using Simulation to Improve Medical Students’ Comfort with Selected Procedures

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Background: The use of simulations is becoming widespread in medical education and has often been described in the more procedurally-heavy areas such as intensive care and emergency medicine. However, there is a paucity of literature related to simulation in general pediatrics. We sought to improve third year medical students’ comfort levels and knowledge with selected general pediatric procedures using simulation manikins.

Methods: During a workshop, 3rd year medical students were instructed in techniques for examining tympanic membranes and infant hips, performing lumbar punctures and performing circumcisions using simulation manikins. Students took a pre- and post-encounter assessment regarding their confidence level, procedural knowledge and perceived usefulness of the simulation experience using a combination of short-answer questions evaluated for accuracy by a physician and a 6-point Likert scale.

The Wilcoxon Signed Rank test compared the pre- and post-experience to determine change in students’ confidence and knowledge levels for each procedure. Because we performed multiple comparisons, the Boneferoni correction was used, with alpha = 0.008.

Results: Sixty medical students (100%) participated in the study during the 2012/2013 academic year. Confidence increased significantly on all procedures following the simulation experience (p<0.001), as did knowledge (z=-6.977, p<0.001). Perception of usefulness of the training showed a positive trend but did not reach significance (Z=-2.353, p=0.019).

Conclusion: Medical students gained confidence and knowledge through the simulation experience, demonstrating that simulations are a useful tool for medical students to learn in a safe environment.

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Technology Use in Psychiatrically Hospitalized Adolescents

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Background: Technology use is expanding among adolescents and has the potential for being a valuable component of a mental health treatment plan. Specific aims of this project were to explore the following among psychiatrically hospitalized youth: 1) the type and pattern of electronic technology use, 2) potential effects on hospitalization and sleep, 3) positive and negative impacts of technology on patients, and 4) the potential for its use in ongoing treatment.

Methods: Surveys were developed and distributed to psychiatrically hospitalized adolescents to gather information on their use of electronic technology, and to assess whether it may be used as a meaningful component of aftercare. Eighty-nine percent of eligible patients consented, resulting in a sample size of 134.

Results: Because only 16% of patients thought technology was involved in their admission, its relationship to technology use could not be statistically assessed. Reported technology use was inversely related to the reported amount of sleep (r=0.315). The majority of adolescents (87%) expressed interest in the potential use of technology in aftercare. Although 25% of patients reported that they thought their use of technology was excessive, 33% reported that others had told them it was excessive. About 25% of patients had seen something negative about themselves online, and 25% admitted to posting something negative about someone else online.

Conclusion: Limitations included small sample size, retrospective recall of technology use, and that the data was self-reported. Implications for the use and monitoring of technology in psychiatrically hospitalized adolescents will be discussed.

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Turnaround Time for Patient Notification of Image-guided Breast Biopsy Results: A Multicenter Survey

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**Background:** Women have shared that waiting for breast biopsy results is the worst part of the biopsy experience. However, there are no current practices or standardization regarding turnaround times of image-guided biopsy results.

**Methods:** IRB approved survey consisting of 15 multiple choice questions via SurveyMonkey to 1,715 members of The Society of Breast Imaging over a six-week period. Predictor variables included type of breast center, number of daily biopsies, on or off-site pathologist, and method for notifying patients. Associations were evaluated with Spearman’s rho and Chi-square tests using IBM SPSS Statistics, version 20.

**Results:** 428 of 1,715 members responded. Median turnaround time for notifying patients was two days. Most were from a hospital-based outpatient facility. Variables that trended toward statistical significance included the referring office taking three or more days to notify patients (59%) compared with mail(48%), phone(40%) or in-office visit(36%) at a Breast Imaging Center(BIC) or Center of Excellence(COE) and longer notification time by a BIE(52%) versus a COE(42%). No significant association was found with on versus off-site pathology, peer reviewed biopsy, and number of biopsies performed daily.

**Conclusion:** Median turnaround time for reporting biopsy results to patients was two days with variables trending toward statistical significance such as longer notification period if results were given by the referring office rather than by mail, phone, or in-office visit at a BIE or COE and longer notification times at standard BIC versus COE. Opportunities for quality initiatives in improving notification times of results may focus on direct patient notification and adopting strategies used by COE.

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Endoscopy Experience in a Community-based Surgical Residency: Resident Case Number and Rate of Meeting Quality Measures

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Background: In 2006, the Residency Review Committee for Surgery increased the total number of required endoscopy cases for graduating residents. Our goal was to evaluate general surgery resident experience in endoscopy, focusing on quality measures.

Methods: A 9-year retrospective review was conducted of 29 residents. Total number of endoscopies performed throughout residency was recorded. Procedures performed as fifth year residents with only indirect supervision were evaluated for quality measures.

Results: Each resident averaged 75.9 EGDS and 147.0 colonoscopies through their first 4 years of residency. As chief residents they performed an average of 16.4 EGDs and 22.1 colonoscopies. Of colonoscopies performed during their fifth year, 191 were performed while the resident had only indirect supervision. During these cases cecal intubation was achieved in 90.6% of cases, an average of 0.48 polyps were identified, and average scope withdrawal time was 13.4 ± 7.1 minutes.

Conclusion: A surgery resident appears to achieve competency in colonoscopy prior to performing 140 colonoscopies. Our data support the premise that a surgery residency can function as an excellent training ground for endoscopy.

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The Death of the Vaginal Hysterectomy

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Background: Due to advancements in technology, numbers of vaginal hysterectomy cases available for resident physician education have changed over the years. This study examined the trend in vaginal hysterectomy numbers versus other hysterectomy types, and attending physician availability for resident physician instruction in vaginal hysterectomy techniques in the future.

Methods: After obtaining IRB approval, numbers of vaginal hysterectomies and all types of hysterectomy cases for three resident-affiliated surgical centers for each academic year between July 2007 and June 2013 were retrospectively collected. ICD-9 procedure codes (68.31 to 68.9) and CPT codes (58260 to 58571) affiliated with hysterectomy procedures were utilized to categorize each procedure. All attending physicians were contacted and given the choice to opt out of the study. Number of vaginal hysterectomies performed and year of birth were collected for each consenting physician.

Results: Over the six year period, 84.5% of all hysterectomies and 72.4% of vaginal hysterectomies were performed in one hospital. The percentage of vaginal hysterectomies decreased significantly over the past six years (p<0.0001). Vaginal hysterectomies cases performed by faculty have also decreased. In addition, five physicians available to teach resident physicians accounts for 67.6% of all vaginal hysterectomy. Two of these five physicians are close to the expected retirement age (65 years).

Conclusion: Vaginal hysterectomy percentages significantly decreased over the study period, leading to a paucity of cases available for resident education. If current trends continue, future graduating residents may not have adequate training to handle complex vaginal cases and affiliated complications.

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The Minimal Screw Length for Tricortical Syndesmosis Fixation in Ankle Fracture: A Cadaveric Study

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Background: The objective is to determine the minimal tricortical syndesmosis screw length for tibiofibular syndesmosis reduction fixation.

Methods: Fifteen fresh-frozen lower extremities cadaver were used. A specially designed apparatus was used to stabilize the specimen and rotate the ankle joint internal rotation of 25° or external rotation of 35° for 9 times each rotation. Three stages were tested: intact, injury, and fixation. Fixation with three different groups and each with a single 3.5 mm cortex metallic syndesmosis screw with different screw length. Group-I fixed with <35% across the cortical hold in the tibia across the distal syndesmosis; whereas Group-II fixed with between 35% and 65%, and Group-III fixed with >65% across the cortical hold in the tibia across the distal syndesmosis. Torque and rotational angle were recorded.

Results: Results indicated that simulated pronation external rotation type injury the foot lost 74% and 61% torsional strength compared to intact specimen for the foot externally rotated 35° and internally rotated 25°, respectively. No significant difference detected in foot torsional strength between the three groups of screw fixation specimen and simulated injury specimen for either foot rotations. When external rotated 50° it was found not significantly different between each group (Group-I: 9±5Nm; Group-II: 8±3Nm; Group-III: 13±5Nm). However, increased number of fibula fractures were detected when increased screw length.

Conclusion: The length of screw has no effect on stability for a single tricortical syndesmosis screw fixation. It is strongly advised that patients should not bear weight in the immediate post operative period.

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Analysis of Patients Greater Than or Equal to 65 with Isolated Cervical Spine Fractures

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Background: Fall injuries are common and significant causes of morbidity and mortality in elderly patients, with cervical spine fracture mortality rates ranging from 19%-24%. Few studies have specifically looked at dysphagia in this group and more information is needed regarding discharge outcomes of survivors. This study evaluated patients with isolated cervical spine fractures (ICSF) in regards to mortality, disposition, and enteral feeding options.

Methods: An 11-year retrospective review was conducted of patients ≥65 years of age with isolated cervical spine fractures at an ACS-verified level 1 trauma center from January 2001 to December 2011. Data included injury severity, mortality, discharge disposition, need for enteral nutrition, invasive adjuncts (tracheostomy, G tube or PEG tube), complications, and mortality.

Results: A total of 145 patients met inclusion criteria. Majority of patients were female (56.6%), with a mean age of 80.2 ± 7.6 years and a median Injury Severity Score of 5. Forty-three (29.7%) patients underwent swallow evaluation, ten (6.9%) had a gastrostomy/PEG tube placed, and thirteen (9.0%) had a NG/DHT for enteral nutrition. Fifty-two patients were discharged to a skilled nursing unit (35.9%) and forty-nine patients went home (33.8%). Nine patients (6.2%) died and sixteen patients (11%) were made comfort care.

Conclusion: Elderly patients with ICSF were associated with unfavorable dispositions, mortality rates, and dysphagia. More than one-third of patients were discharged to a skilled nursing unit, but more long-term studies are needed to determine who would eventually return home. A swallowing study is recommended for those who fail a bedside clinical evaluation.

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The Effect of the Quadriceps Tendon on the Knee Flexion-extension Gap for Posterior-stabilized Total Knee Arthroplasty: A Cadaveric Study

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Background: The objective is to evaluate the effect of sectioned quadriceps and applied quadriceps force on knee flexion-extension gap for the posterior-stabilized (PS) total knee arthroplasty (TKA) construct and compare this to a collateral study with an entirely intact quadriceps mechanism.

Methods: Ten fresh-frozen cadaveric knees with mean age of 60.6 years (range: 51-82 years) were used. The flexion-extension gap data were recorded using a navigated knee system with dedicated software. Triathlon PS TKAs were used. Flexion-extension was repeated six times from 0° to 120° of flexion with distraction load of 22N on a custom designed knee testing apparatus. Two test constructs were performed: 1) PS TKA construct with the quadriceps tendon sectioned and unloaded, and 2) PS TKA construct with quadriceps sectioned and loaded with 222N.

Results: When compared the sectioned and loaded quadriceps tendon constructs, the range of distraction tibiofemoral gap was from 1.85mm to 5.22mm and 1.46mm to 4.60mm, respectively. When quadriceps tendons loaded, the distraction tibiofemoral gap has reduced in a range of 0.01% to 5.34%. At full extension the distraction tibiofemoral gap was 1.45mm (quadriceps sectioned) and 1.06mm (quadriceps loaded) more compared to previous published data. At 45° flexion, the distraction tibiofemoral gap was almost the same for both constructs, but was about 2mm more compared to previous published data.

Conclusion: Our results support the hypotheses as either unloaded or loaded sectioned quadriceps tendon influence to the distraction tibiofemoral gap in a PS TKA construct. These findings suggest that intact extensor mechanisms needed to perform kinematics of TKA.

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Initial Assessment of Frequency and Contributing Causes of Readmissions to a VA Hospital

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Background: The National Veteran Affairs (VA) readmission rate is 13.8%. We sought to determine the local readmission rate for Dole Veteran Affairs Medical Center and analyze contributing causes for readmissions.

Methods: Two data streams were utilized. First was data provided by VA Central Office and the second was locally collected data for consecutive readmissions collected by local Utilization Review Nurse.

Results: The unadjusted readmission rate for the last fiscal year (10/2012 - 9/2013) was 23%. After excluding patients who were transferred to other VA’s and Community Living Centers the adjusted readmission rate was 12.8%. The causal relationships between the original and readmission were: same medical problem (48%), new problem related to or a consequence of first problem (20%), and new problem that was unrelated to first admission (32%). Regarding gaps in the transition of care, 40% had a visit and 84% had a phone call with a healthcare provider between admissions.

Conclusion: Local readmission rates are similar to National VA readmission rate. In this initial study we quantified opportunities exist to improve the transition of care after discharge from our VA hospital.

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Risk Factor Profiles of African Americans with Peripheral Arterial Disease

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Background: African Americans are twice as likely as non-Hispanic whites to suffer from peripheral arterial disease (PAD) - chronic atherosclerosis of abdominal aorta and arteries of lower extremities. However, little is known about their PAD risk factor profiles. The purpose of this study is explore common atherosclerotic risk factors associated with PAD among African Americans.

Methods: A cross-sectional study was conducted with older African Americans recruited from a community-wide initiative to increase exercise for those at risk for PAD. Exclusion criteria were prior foot or lower leg amputation or leg ischemia and an inability to walk for exercise. Participants were evaluated for PAD using the ankle-brachial index and completed a telephone survey that included an assessment of sociodemographics, comorbidities and readiness to engage in exercise. Criterion for diagnosing PAD was ABI < 0.995 in either leg. Chi-squares and Mann-Whitney U tests were used to compare responses by PAD status. Where data were sparse, exact 2-tailed tests were used.

Results: Participants included 83 African American adults; 43 (51.8%) were diagnosed with PAD, 64 were females (32 with PAD), 19 were males (11 with PAD); group differences were not significant. Females with PAD were significantly older than females without;p=0.006. Results were similar for males,p=0.004. Those with PAD reported significantly more comorbidities,p=0.019; especially for arthritis coexisting with hypertension, 33.3% vs. 17.1%.

Conclusion: More comorbidities and advancing age were significantly associated with PAD, which appears to go undiagnosed. Further studies should consider arthritis and hypertension interactions as potential risk factors for African Americans with PAD.

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Health Literacy and the Older Adult: A Systematic Review

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Background: It is estimated adults 65 and older will account for 20% of the population by 2030. National estimates report only 3% of older adults to be proficient with health literacy skills. Low health literacy levels are reported predictors of disparaging health outcomes.

Methods: This review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta Analyses. Medline was used to identify peer-reviewed literature that included a combination of free-text and thesaurus terms for concepts including “health literacy, elderly, geriatrics, older adult, and low health literacy” combined with a qualitative and quantitative methods filter, respectively. Two article screens were conducted, a practical and methodological screen based on population age and health literacy measurement.

Results: A total of 208 articles were identified for review, eight articles met the final criteria after both screens and a hand search. All studies were conducted in urban settings in the United States. Study sample size ranged from 33-3,000 participants. Two studies evaluated health-related outcomes and reported significant associations between low health literacy and poorer health outcomes. Three studies confirmed the relationship between cognition and health literacy. Two other studies investigated the impact of health literacy on medication management, reporting mixed findings.

Conclusion: Efforts to fully understand the variables that influence health literacy were hindered by use of mixed health literacy measures. The findings of this review highlight both the importance of improving health literacy of older adults and need for a standardized and validated health literacy screening tool for older adults.

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Using the March of Dimes "Becoming a Mom" Program to Improve Prenatal Knowledge and Attitudes

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**Background:** Premature birth/low birth weight, birth defects and Sudden Infant Death Syndrome were identified as issues contributing to infant mortality in Kansas. The Becoming a Mom (BAM) prenatal program was implemented in four counties identified with high infant mortality rates and significant birth numbers (Geary, Saline, Sedgwick, and Shawnee) by the Kansas Blue Ribbon Panel. The purpose of this study is to identify the changes in prenatal knowledge and attitudes among BAM program participants.

**Methods:** Patients participated in multiple prenatal sessions. A pre-post-test design was implemented during the prenatal sessions. Paired t-tests were used to assess the difference in knowledge questions from pre and post-test. Changes in attitudes were assessed using descriptive statistics.

**Results:** Participants were 69% White, 87% spoke English, 64% were under age 26, 41% were employed full time, 45% had some high school or had a diploma, 39% had Medicaid, and 49% were enrolled in WIC (N=114). Participants demonstrated a statistically significant increase in knowledge among 14 out of 32 questions including: identifying signs of preterm labor, what to do during preterm labor, postpartum symptoms, and baby sleep position. There were also changes in prenatal attitudes including: need for prenatal care as soon as possible, continuing prenatal care when feeling healthy and not smoking during pregnancy.

**Conclusion:** BAM program participants reported improvements in prenatal knowledge. The BAM program can help improve maternal knowledge during prenatal care which can in turn result in better maternal and child health outcomes when combined with quality prenatal healthcare.

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Completeness of Information Available to an Internal Medicine Faculty Clinic after Hospital Discharge

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Background: Care transitions from hospital to home can impact patient safety if there is incomplete information at the time of hospital follow-up. The 30 day readmission rate for KUSM-W Hospitalist service at Wesley is 10% and Via Christi St. Francis is 18%.

Methods: All patients from KU Wichita Adult Medicine Clinic who were seen in hospital follow-up were identified from May 30, 2013 to February 25, 2014. A retrospective review of records available at the time of follow-up was completed using a structured survey tool. Incomplete medication reconciliation was defined as not including dosage, frequency, or route for all medications.

Results: Twenty-nine unique patient visits were reviewed. Median time to follow-up from discharge was 6.5 days (interquartile range [IQR], 4-8 days). Twenty six (93%) patients reported contact by phone after hospital discharge from the faculty clinic. A discharge summary was available and complete for fifteen patients (53.6%) with no discharge available at the time of hospital follow-up for ten patients (35.7%). Twenty patients (69%) had either incomplete medication reconciliation or misunderstanding of discharge medications when seen at follow-up. Of these, the medication reconciliation was inadequate in 15 patients (53%) or unavailable in 8 patients (28.6%) and incomplete in 7 patients (25.0%). Twenty-five patients (89.3%) did not have documentation of pending lab results or tests. Fourteen (50%) patients were attended by KUSM-W Internal Medicine Hospitalist service.

Conclusion: Incomplete information, which prior research suggests may compromise patient safety was common in this faculty practice clinic.

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Residents as Medical Student Mentors During the Obstetrics and Gynecology Clerkship

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Background: Residents are at the forefront of medical school education in the hospital and during medical student clerkships. The objective of the project was to establish and evaluate a medical student mentoring program (MSMP) for students during their general Obstetrical and Gynecology clerkship.

Methods: One senior obstetrics and gynecology resident was assigned one or two medical students per six week rotation. Residents were given information regarding MSMP requirements, and randomly assigned to students. Students were provided MSMP information during clerkship orientation. Surveys were administered to students during orientation prior to meeting their residents and at the end of clerkship. Surveys were administered to residents during the last week of clerkships.

Results: Surveys were collected from 29 students. All students reported not having a MSMP available on other clerkships. Post-clerkship, students indicated they would participate in the MSMP again (80%), felt other students would benefit from having a mentor on other clerkships (75%), and felt the clerkship was beneficial to their medical education (82%). Students indicated the MSMP had a positive effect on their clerkship (65%), reported receiving educational (42%) and clinical (82%) instruction, personal development feedback (63%), and career advice (23%) from mentors. Mentors returned 16 feedback surveys; residents were not burdened by students (75%), and all mentors responded that they would participate in the MSMP again.

Conclusion: Establishing a mentoring program for medical students during core clerkships is novel for the University of Kansas School of Medicine-Wichita, and may provide potential benefits and one-on-one instruction to medical students.

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Results of a Prenatal Knowledge Survey of Pregnant Women in an Urban Midwestern Residency Setting

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Background: In 2007 infant mortality in the United States was 6.77 and 7.12 in Kansas per 1,000 live births. Although infant mortality rates in the United States have declined overall, the mortality rate among Kansas infants remains high and there continues to be a disparity in infant mortality by race. The purpose of this study was to assess baseline and post-intervention prenatal knowledge among pregnant women in an urban residency setting.

Methods: A sample of 64 pregnant women participating in a prenatal care study in an urban Midwestern residency clinic was approached to complete a 31-question pre and post maternal health knowledge survey for the March of Dimes’ Becoming a Mom curriculum. Frequencies of correct survey responses and overall survey scores were calculated to determine participant knowledge.

Results: Overall, the majority of pregnant women participating in this study were non-Hispanic Black (42.2%), unemployed (53.3%), have other children (80.8%), have Medicaid (49.2%), and have a high school education or less (57.8%), and were between ages 21-25 (46.0%). Study participants had moderate levels of pre-test prenatal care knowledge (mean score=74.5%). To date, 37 participants have completed post-test questionnaires with a mean score of 77.6%. Included among the more substantial knowledge gaps were preterm labor signs and postpartum symptoms.

Conclusion: The results of this study suggest that women in this population do not have sufficient maternal health knowledge. Women in an urban residency setting represent an important target for maternal health education and present an opportunity to address health disparities in hard-to-reach populations.

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Atherectomy of the Common Femoral Artery: A Safe and Reasonable Alternative

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Background: Within the last decade, endovascular techniques such as angioplasty and stenting have become first line therapy. Atherectomy offers the distinct advantage of removing rather than fracturing the obstructing atherosclerotic disease. Ideally atherectomy results in less barotrauma, provides a more physiologic outcome, and potentially avoids the use of a stent altogether, helping to preserve future bypass or endovascular access in a crucial anatomic site. We present a series of patients who presented with claudication secondary to disease of the CFA who were treated with atherectomy. The objective of this poster is to raise the awareness of atherectomy as a safe and reasonable technique in the CFA.

Methods: A retrospective review of all interventional procedures performed at two separate facilities from July 2011-2013, revealing 6 cases in which atherectomy was used to treat symptomatic common femoral artery lesions. The patient’s pre-procedural and post-procedural claudication symptoms and ABI’s were reviewed.

Results: All patients had moderate-severe claudication symptoms (Rutherford category 3) before atherectomy was performed. In 6 patients treated with atherectomy followed by balloon angioplasty, there were no major complications. Mean follow up was 8.2 months. 5 patients demonstrated symptomatic improvement. 5 patients had post-procedural ABI’s and demonstrated improvement as well.

Conclusion: Atherectomy of the common femoral artery is a safe procedure to treat symptomatic lesions of the common femoral artery. This intervention may be a reasonable alternative in those patients who suffer primarily from disease of the CFA, and future bypass or endovascular interventions are anticipated.

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Predicting Follow-up Compliance after Psychiatric Crisis: A Prospective Cohort Study

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Background: Psychiatric patients often fail to follow up with an outpatient provider after crisis. Such non-compliance leads to overuse of psychiatric emergency room services (PES), increases costs and lowers treatment efficacy. The purpose of this research was to identify factors associated with non-compliance immediately following psychiatric crisis.

Methods: Follow-up compliance was evaluated in a multi-site, prospective cohort study. Differences were measured in adults discharged with prescheduled aftercare appointments versus those without. Patients were recruited from June 2012 through September 2013 following discharge from either the PES or psychiatric inpatient unit (PIU). Study eligibility included adults who were cognitively intact and GAF >40. Two local IRB’s approved the study. Participants were followed up to 14 days. The primary outcome measure was compliance to aftercare. Data were extracted from electronic medical records. Analyses included Pearson’s Chi-square and t-tests.

Results: Participants included 608 adults: 52% had aftercare scheduled, 43% did not and 5% were excluded. Results on compliance to aftercare: Attended (47%), No show (17%), and Lost to follow-up (36%). Significant differences were observed by appointment status, diagnosis and by prior 6 month psychiatric service utilization. Non-compliant patients were more often males, unscheduled, diagnosed with Adjustment disorder, lack psychotropic medication, and more likely to over utilize emergency services.

Conclusion: Prescheduling patients prior to discharge may improve treatment compliance and prevent overutilization of emergency services, especially for those with adjustment disorders. Proposed plan to improve patient outcomes include implementation of targeted patient discharges and scheduling aftercare appointment for all patients.

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Improving an Uninsured Population’s Colorectal Cancer Screening Rate through Mailed Fecal Occult Blood Testing

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Background: Efforts to improve colorectal cancer (CRC) screening in low-income or underinsured populations have focused on increasing physician recommendations for screening, increasing patient reminders and education, and mailing FOBT kits for patients to complete at home. This quality improvement project aimed to improve the rate of becoming up-to-date for appropriate CRC for uninsured patients.

Methods: In February 2013 an electronic registry identified all uninsured patients at Salina Family Healthcare Center not appropriately up-to-date for CRC screening. Patients received an automated phone reminder for CRC screening. Two hundred randomly selected patients received a mailed reminder containing a FOBT with postage-paid return envelope. The remaining one hundred eighty patients received a mailed reminder without a FOBT included.

Results: The two groups had similar baseline characteristics. The two groups had similar contact rates with the phone reminder (85.5% FOBT versus 85.5% no FOBT) and returned undelivered mailing (2.5% FOBT versus 3.3% no FOBT). Four months after the mailing, the FOBT group had a 14.5% FOBT completion rate and the no FOBT group had a 1.1% FOBT completion rate. All method up-to-date CRC screening was 16.5% in the FOBT group and 3.3% in the no FOBT group.

Conclusion: Combined reminder phone call and mailed FOBT with postage paid return envelope may be an effective strategy to increase the CRC screening rate through increased FOBT completion in our uninsured community health center population.

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Retrospective Data Review of Smoking Rates Following Implementation of the 5A Method of Smoking Cessation

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**Background:** Smoking is the number one preventable cause of death among adults in the United States. The Smoky Hill Family Medicine Residency Program implemented a team-based 5A smoking cessation program (Ask, Advise, Assess, Assist, Arrange) through staff training and new office protocols. At intake of every visit, medical assistants asked about smoking status, advised smokers to quit and assessed interest in quitting. Clinicians assisted patients through further counseling, handouts, and medications and then arranged a follow up plan. Documentation occurred through EMR templates. A quality improvement project of 5A commenced to identify changes in smoking status.

**Methods:** Smoking status data from September 1, 2010 to September 1, 2012 were pulled for non-pregnant adults from the clinic EMR. Smokers prior to the intervention and at their initial intervention visit were identified. The percent of sampled smokers with a status of non-smoking at their last recorded appointment defined smoking cessation. Descriptive statistics evaluated demographics of the sample.

**Results:** Initial inclusion criteria found 16,340 unique appointments representing 1,926 patients. Among them, 661 smoked before and at initiation of the intervention. Post intervention, 7.4% stopped smoking, 90.9% remained smokers, and 1.6% fluctuated their status but were non-smokers at their last appointment. The demographics of those who stopped smoking were 78% female, 86% white, 90% non-Hispanic, and an average age of 45.5 years.

**Conclusion:** There were modest changes among smokers who underwent the 5A smoking cessation intervention. Future studies utilizing a randomized controlled trial would be required to evaluate overall and cost-time effectiveness of 5A.

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The Effect of the 39 Weeks Elective Delivery Guideline on the Rate of Unscheduled Cesarean Delivery

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Background: The Hospital Corporation of America (HCA) and American Congress of Obstetricians and Gynecologists discourage the scheduling of elective deliveries before 39 weeks’ gestation due to associated worsened neonatal outcomes. Delayed scheduling may result in unplanned labor and delivery in the early term period (37–39 wk) and unscheduled cesarean deliveries (CD) may be riskier than scheduled CD. Thus, we chose to examine changes in the rate and numbers of early term unscheduled CD before and after implementation of the “hard stop” policy.

Methods: This retrospective chart review was conducted at a regional HCA women and infants’ center with >6000 deliveries annually. We compared the rate and numbers of unscheduled early term CD in the two-year Pre-Rule period to the rate and numbers in the two-year Post-Rule period. Independent samples t-tests were performed for statistical analyses.

Results: The overall CD rate was 29.6% in the Pre-Rule period [3,730 CD] and 31.7% in the Post-Rule period [4,075 CD] (P=0.0003). Despite the increase in overall cesarean sections in the Post-Rule time frame, the Pre-Rule period had more early term CD [1,022 vs. 729], and a higher early term CD rate [8.1% of all deliveries vs. 5.7%, (P<0.0002)]. As expected, the rate of unscheduled deliveries was greater in the Post-Rule period (58.2% vs. 66.8% (P=0.0001).

Conclusion: Our study demonstrated that implementation of the “hard stop” policy resulted in a decrease in overall early term and unscheduled early term CD numbers even though the actual rate of early term unscheduled CD was increased in the Post-Rule period.

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User Performance, Satisfaction, and Preference of EMR Access via Desktop and Tablet

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Background: Providers are now accessing EMRs built for desktop platforms on mobile devices. Survey findings indicate that these EMR systems built for desktop platforms may not be accessed using mobile devices due to limited screen real-estate, increased scrolling, inaccurate interactions, and constant zooming to read information. Despite the conveniences offered by mobile devices, survey findings appear to indicate that users are aware of the mismatch between the device and the interface (Teves et al., 2013). The purpose of this study was to conduct a usability test to compare user performance and satisfaction of a commercial EMR on a desktop and an iPad.

Methods: Participants were 16 attending physicians, 6 males and 10 females, who had an average of five years of experience at the urban pediatric hospital where the study was conducted. Participants performed seven EMR tasks on both the desktop and the iPad.

Results: Participants took longer to complete the EMR tasks on the iPad and were less efficient than when doing the same tasks on the desktop. In addition, participants perceived higher workload and rated the tasks as more difficult on the iPad.

Conclusion: These results indicate that use of an interface created for a desktop computer on a mobile device may result in a less efficient and less satisfying user experience. Further research is necessary to examine the use of custom native mobile apps versus a desktop interface to accomplish EMR-related tasks on mobile devices.

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Comparisons of Medical Student Knowledge Regarding Life-threatening CT Images Before and After Clinical Experience

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Background: No standard exists for radiographic education of computed tomography (CT) in medical school. This study’s purpose was to quantify medical students’ current knowledge reading CT images.

Methods: Third year (MS3) students’ knowledge reading CT scans was compared to fourth year students (MS4) by evaluating eleven life-threatening images. Questions regarding injury diagnosis and treatment were scored incorrect, partially correct, or correct.

Results:

Participants included MS3 (n=65) and MS4 (n=9). Proportions of incorrect responses (POIR) were calculated. MS4s demonstrated non-significant differences in lower POIR compared to MS3s with two exceptions: grade III liver laceration (95.4% vs. 100%) and grade IV renal injury (96.9% vs. 100%). Statistically significant reductions included: IPH hemorrhage (93.5% incorrect by MS3 vs. 66.7% incorrect by MS4s, CI [1.0, 63.2]); subdural (SHD) hemorrhage (86.2% MS3 vs. 44.4% MS4, CI [6.9, 71.6]); small bowel thickening (98.5% MS3 vs. 66.7% MS4, CI [.3, 67.6]); grade III liver injury (100% MS3 vs. 66.7% MS4, 95% CI [8.1, 69.1]); and colon infarction (90.8% vs. 55.6%, 95% CI [4.3, 68.6]). Epidural hematoma demonstrated the least incorrect responses for both diagnosis and treatment: MS3 (33.8% and 18.5%) vs. MS4 (11.1 and 0%). Overall range for incorrect responses was MS3 (75.4% to 100%) vs. MS4 (44.4% to 100%).

Conclusion: Statistically significant improvements in residents’ ability to identify an appropriate diagnosis and treatment from CT scan were reported for 5 out of 22 questions. Despite these improvements, these results indicate the need for formal didactic lectures regarding CT interpretation in traumatic injury.

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Implantable Central Venous Access Ports Placed in Mastectomy Incision Sites: A Safe and Viable Option

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Background: For patients undergoing mastectomy, there is an option to place implantable central venous ports within the mastectomy incision eliminating the need for an additional surgical incision. The aim of this study was to determine if placement of ports via a mastectomy incision increased the risk of catheter-related infection.

Methods: A three year retrospective review was conducted of breast cancer patients who had implantable central venous ports placed for chemotherapy administration. Data collected included patient demographics, surgery characteristics, port placement group (mastectomy incision vs separate incision), port removal, reason for port removal, port-related complications, and interval between placement and removal or last known follow-up.

Results: Of the 343 patients included, 67 had a port placed in a mastectomy incision and 276 in a separate incision. The mastectomy incision group was younger (49.6 ± 11.2 vs. 54.4 ± 12.1 years). Comorbidites associated with port complications (diabetes, smoking, and obesity) were similar between groups. Of the 343 ports placed, 21 (6.1%) were removed due to complications. Overall complication rate was significantly higher in the mastectomy group (11.9 vs 4.7%, p=.027). In the mastectomy group, a trend existed for removal of ports due to malfunction (7.5 vs 2.9%, p=.079). Infections resulting in port removal were not different between mastectomy and separate incision groups (4.5 vs 1.4%, respectively; p=0.138).

Conclusion: Based upon our current findings, it appears there is no increased risk of infection placing a port in a mastectomy incision versus a separate incision. Larger studies are needed to verify this data.

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Utilizing Peer Review to Evaluate Teamwork and Leadership among Medical Trainees

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Background: Physicians must function effectively in interdisciplinary teams, but how to best evaluate the team member dynamics and augment their skills is unclear. Through a series of studies we evaluated peer review for measuring teamwork.

Methods: Study 1. Internal Medicine residents completed TeamSTEPPS survey on attitudes towards teamwork.
Study 2. Senior medical students in a Quality Improvement course evaluated teammates using Likert scales that measured attributes of teamwork, forced rankings of teamwork skills, and narrative comments.
Study 3. Questions formed from the Alliance for Academic Internal Medicine (AAIM) milestones that mapped to domains of teamwork, leadership, or the domain of “flexibility and respect” based on the Team-Based Learning Collaborative (TBLC) were added to the existing monthly peer evaluations by the Department of Medicine.

Results: Study 1. Our residents’ TeamSTEPPS scores were higher than reported by the AHRQ and did not correlate with year of training.
Study 2. For each medical student, the summary TBLC score significantly correlated with the summary forced ranking score (rho = 0.7303; p = 0.003). The weighted score significantly correlated with all external measures of the team members.
Study 3. Overall peer evaluation score significantly increases with year of training for questions measuring teamwork (rho=0.6417; p=0.000) and leadership (rho=0.7488; p=0.000).

Conclusion: TeamSTEPPS, which uses self-report, may be subject to a ceiling effect. Ratings by peers, whether simple Likert scores or forced rankings, correlate with external measures. Medical trainees will benefit from peer feedback regarding teamwork skills.

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A Look at the USMLE 2: Analysis of Scores among Applicants to an Obstetrics and Gynecology Residency Program

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Background: The National Residency Match Program 2012 Program Director Survey results indicate USMLE Step 2 scores were used to select applicants to interview in 70% of programs. However, little research has been conducted to explore the associations between degree type, gender, GPA, and USMLE Step 1 and Step 2 scores.

Methods: Applicants to the University of Kansas School of Medicine-Wichita Obstetrics and Gynecology program between the years 2011-2013, receiving a medical degree from accredited allopathic (MD) or osteopathic (DO) medical programs in the United States, were eligible for analysis. Information was collected regarding test scores, testing year, gender, degree program type (MD/DO), gap in years between USMLE Step 1 and USMLE Step 2, and grade point average (GPA) were analyzed.

Results: Among the 311 eligible applicants, 222 (67.1%) were MD students and 109 (32.9%) were DO students. Majority (79.5%, n=263) of the applicants were females. Average USMLE Step 2 score was 226.6 (SD=16.7, range 185-271). MD applicants had a higher average USMLE Step 2 score as compared to DO applicants (227 and 224 for MD and DO, respectively). Female applicants had a higher average USMLE Step 2 score than males (228 and 221 for females and males, respectively). A generalized linear regression analysis revealed that USMLE Step 1 score and GPA were the significant predictors associated with USMLE Step 2 score.

Conclusion: There was no difference in USMLE Step 2 scores between MD and DO applicants, neither was there a difference in Step 2 score between males and females.

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Targeting Areas to Improve Patient Centeredness Using Health Literacy Findings from the Kansas Behavioral Risk Factor Surveillance System (BRFSS)

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Background: The purpose of this study was to conduct a population-based assessment of health literacy using the Kansas BRFSS. The study was designed to identify patients’ demographic and health status characteristics and to assess the relationship with health literacy. This study is unique because no previous work has identified factors associated with health literacy using the state-specific BRFSS.

Methods: Researchers from the University of Kansas School of Medicine – Wichita, in collaboration with the Kansas Department of Health and Environment, added a three question health literacy screening tool to the state-specific module of the BRFSS telephone survey in 2012. Bivariate and multivariate analyses were conducted to assess the association between demographic and health status characteristics with health literacy scores (low, moderate, high).

Results: Most residents of Kansas had moderate health literacy (61.6%), followed by high (29.8%), and low (8.6%) health literacy. Demographic variables that were significantly associated with health literacy were education, employment status, income, gender, and age. After adjustment for demographic characteristics, poorer general health status, having chronic conditions, having activity limitations due to health problems, and poor physical and mental health were associated with lower health literacy.

Conclusion: A state-specific BRFSS survey may be a feasible and valuable tool for evaluating health literacy of adults. Several factors were associated with health literacy in Kansas. Results from this study highlight the need to improve health literacy in population subgroups. In addition, clinicians treating patients with low health literacy need to tailor messages to ensure understanding in this vulnerable population group.

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Newborn Hepatitis B Vaccine Coverage and Maternal Characteristics that Prevent Vaccination at Birth in Sedgwick County, Kansas 2005-2012

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Background: Before national Hepatitis B viral (HBV) vaccination guidelines in 1990, HBV infection during pregnancy was high (US 30-40%) During this time Kansas had a 32% incidence of HBV infection. Perinatal HBV transmission is preventable by at-birth HBV vaccination. Kansas and Sedgwick County have adopted the recommendations of the Advisory Committee on the Immunization Practices (ACIP) and the Healthy People 2020 (HP2020) goal on the at-birth vaccination of all newborns. The HP2020 goal for coverage of at-birth HBV vaccination is 85%. This is the first study aimed at exploring maternal characteristics and at-birth HBV vaccination coverage rates in Sedgwick, County, KS.

Methods: This is a cross-sectional study of vital records data. We included infants born in Sedgwick County, Kansas from 2005-2012. Infants were classified based on vaccination status.

Results: A total of 61,951 births were selected over the period of interest. In 2005 versus 2012, there was a significant decrease in the proportion of at-birth HBV vaccinations in Sedgwick County (92% to 88%, P<0.001). The likelihood of vaccination (OR) also decreased in 2012 compared to 2005 [OR = 0.74; 95% CI = (0.67, 0.83)].

Conclusion: Contrary to expectations per the ACIP recommendations and HP2020 goals, HBV vaccination in Sedgwick County has declined over the years. The decline may be due to maternal socio-demographic characteristics; race, education, payment sources, and also prenatal care as potential factors influencing decisions on vaccination coverage. These findings deserve increased attention and further analysis will explore populations who do not vaccinate for this preventable disease.

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Comparative Effectiveness and Safety of Empiric Ampicillin Plus Gentamicin or Empiric Piperacillin-Tazobactam in the Neonatal Intensive Care Unit

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Background: We changed from ampicillin and gentamicin (AG) to piperacillin–tazobactam (PT) for routine treatment of suspected early-onset sepsis. The rationale for this change included ototoxic and renal toxic effects of gentamicin, resistance to gentamicin in late-onset infections and emergence of ampicillin resistant Escherichia coli (E. coli). A before and after study was designed to assess whether PT was associated with altered outcomes in infants > 1500 g birth weight. The use of PT in infants less than 2 months is not included in the package insert indications.

Methods: An unmatched comparison of AG (2007-2009) and PT (2010-2012) exposed infants is reported. Cohorts were evaluated for initial effectiveness, congenital infection, adverse events, subsequent morbidities and mortality.

Results: Data from 1682 patients were collected (653 AG and 1029 PT). No significant differences in demographics or initial Apgar scores were noted. There were no significant differences in systemic or diaper rash. PT was associated with higher Glomerular Filtration Rate (GFR) on day 2. There was no difference in mortality noted. Four infants had early onset sepsis with Ampicillin resistant E. coli (3AG/1PT). One of these, in the PT group, had Intermediate sensitivity to Gentamicin as well. One additional PT infant had Haemophilus Influenzae sepsis at birth which was sensitive to Ampicillin.

Conclusion: Use of PT as the initial empiric antibiotic was not associated with adverse outcomes. The increasing challenge of ampicillin resistant E. coli should encourage others to consider this change.

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Seminal Hyperviscosity: Predictive and Associated Factors

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Background: Seminal hyperviscosity (SHV), found in 26.6% of male partners in subfertile couples, is associated with poor reproductive outcomes. The pathogenesis is unknown and likely multifactorial. This study aimed to identify predictive and associated factors of SHV.

Methods: Semen analyses from 7,100 patients were reviewed in this retrospective study. The specificity and sensitivity of semen analysis were used to assess the chronicity of SHV. Repeated logistic regressions were conducted to identify predictive and associated factors of SHV.

Results: This study found semen analyses to have low sensitivity (42.8%) and high specificity (90.7%) with regard to viscosity. SHV was associated with decreased durations of abstinence (P < 0.001), decreased seminal motility (P < 0.001), and normal leukocyte concentrations (P = XXXX). Age had no effect on SHV (P = 0.2535).

Conclusion: The chronicity of SHV remains unknown, largely due to the poor sensitivity of semen analysis in assessment of viscosity. This study found decreased incidence of SHV following prolonged periods of abstinence and confirmed the effect of SHV on decreased sperm motility. While age was found to have no effect, the presence of leukocytes at normal concentrations correlated with SHV. Further research is needed to clarify the pathogenesis, assessment, and treatment of SHV.

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Characteristics of Acute Heart Failure Patients Rehospitalized within Thirty Days

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Background: Hospitalization for management of heart failure is a multi-billion dollar entity in the US. Hospitals are assigned ratings based on adherence to performance measure guidelines regarding optimal management of patients with heart failure. This study investigated performance within our local hospital community compared with other published rates of performance in these areas.

Methods: A retrospective cohort study was conducted in three hospitals within one community network. Thirty-four patients were identified by the hospitals as having required hospital readmission within thirty days with the same principal diagnosis of heart failure during the year 2012.

Results: The average patient had a net weight loss of 2.9 pounds from hospital admission to discharge. Forty-seven percent of patients did not have discharge instructions documented in the medical record. Twenty-nine percent of patients were identified as active cigarette smokers and eighty percent of those patients were not offered smoking cessation programming. Fifty-three percent of patients were prescribed an ACE-inhibitor or ARB medication on discharge, and sixty-eight percent of patients were prescribed a beta-blocker on discharge. Seventy-nine percent of patients did have documented LVEF.

Conclusion: The small magnitude of weight loss questions whether optimal volume status was achieved during hospitalization. Approximately half of these patients were not provided with clear discharge instructions, including documentation of their updated medication regimen. The results of this study indicate that adherence to simple, low-cost interventions which have been recommended for management of heart failure patients might prevent 30-day rehospitalization.

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Background: We aim to present a step-by-step approach to assessing a patient prior to transcatheter aortic valve replacement (TAVR) using computed tomography angiography (CTA) and postprocessing techniques.

Methods: Using a 64-slice computed tomography (CT) scanner, we obtain electrocardiography-gated thin-section CTA images through the heart and entire aorta, as well as the iliac vessels and the common femoral artery (CFA). Following that, we will outline the steps for postprocessing.

Results: Our goal is to present a clear, step-by-step protocol for evaluating the critical structures through CTA and provide the operators with all relevant information prior to their procedure. We will also include any potential pitfalls and troubleshooting tips during postprocessing.

Conclusion: TAVR is a relatively safe and effective alternative for patients who are not surgical candidates but who would benefit greatly from aortic valve replacement. We will provide a step-by-step guide for image-based preprocedural evaluation for a patient undergoing TAVR.

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Smoking among Pregnant Women Enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in Kansas

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Background: Smoking during pregnancy is associated with poor birth outcomes. The purpose of this study was to examine differences in smoking rates before, during, and after pregnancy by urban versus rural residence among women enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children in Kansas.

Methods: A secondary analysis was conducted using the Pregnancy Nutrition Surveillance System dataset of enrolled women between 2005 and 2011. Geographic residency status was obtained through application of the Census tract-based rural-urban commuting area codes. Chi-square tests of association were used to assess differences. A P-value of ≤ .05 was considered statistically significant. A seven-year trend analysis by rural and urban residency was conducted.

Results: Low-income, rural pregnant women in Kansas smoked at higher rates before, during, and after pregnancy compared to their urban counterparts. High smoking rates have remained unchanged since 2008. Differences in smoking rates along socio-demographic variables between urban and rural women were observed.

Conclusion: Results from this study indicate that the WIC population in rural areas may have different needs regarding smoking cessation programming than the urban WIC population. Interventions must be culturally, geographically, and demographically appropriate. Findings will inform WIC program administrators and help enhance current services and their delivery to the WIC population.

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Might Teaching Hospitalists Provide Lessons on Optimizing Heart Failure Outcomes?

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Background: Studies have evaluated the utility of the hospitalist model in the management of heart failure patients. However data is lacking on the outcomes among patients hospitalized to teaching hospitalist services compared to other physician categories.

Methods: We conducted a retrospective cohort study of 1735 adult patients hospitalized for heart failure over two years in three community hospitals in the United States. We compared the clinical outcomes by 3 teaching hospitalist groups, non-teaching hospitalist groups, cardiologists, nephrologists and community primary care physicians (PCPs). Outcome measures included: in-hospital mortality, 30-day readmission rates, hospital length of stay and rates of discharge to different disposition destinations.

Results: The teaching hospitalists had the lowest in-hospital mortality rate (0.94%, p<0.05). The average length of stay was significantly shorter with the teaching hospitalists and non-teaching hospitalists (5.2 and 5.3 days respectively) compared with the other physician categories. A higher proportion of patients was discharged home by the teaching hospitalists (79%, p<0.05) compared with the other physician categories, while there was no difference in the proportion of patients discharged to hospice. The teaching hospitalists had a significantly lower 30-day readmission rate (3.3%, p<0.05) compared to Cardiologists, PCPs and non-teaching hospitalists.

Conclusion: Patients admitted by teaching hospitalists had the lowest mortality rates, average length of stay, and had a higher proportion discharged home compared to other physician categories. There is need for studies to determine factors that may explain the differences in outcomes and to provide lessons on how to improve clinical outcomes of hospitalized heart failure patients.

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Private Health Care Businesses and Provision of Preventative Health Care Services in Mbuji Mayi (Democratic Republic of the Congo)

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Background: Little is known on the creators and on the involvement in the provision of preventative health care services (PPHCS) of private health care businesses (PHCBs) in developing countries. We conducted a study aimed at exploring PHCBs in Mbuji Mayi (Democratic Republic of the Congo) and comparing PHCBs created by physicians, nurses and lay entrepreneurs in terms of PPHCS.

Methods: We surveyed and obtained data from sixty-eight PHCBs including but not limited to information on professional background of their creators and on involvement in provision or not of health education, immunization, prenatal care, well-baby monitoring, home health care and obstetrical care. Individual scores of involvement (yes=1 or no=0) in each of the aforementioned six areas of preventative health care services were summed up to form composite scores of preventative services (SPS). This six-item scale was evaluated in terms of internal consistency (Cronbach alpha =.86).

Results: The majority of PHCBs (82%) are sole proprietorships. About 40% are created by nurses, 17.6% by physicians and 39.7% by other lay entrepreneurs. Physician-created PHCBs have higher SPS scores (n=12; Mean=3.83; S.D. 1.69) than nurse-created PHCBs (n=22; Mean=3.00; S.D. 2.01) or lay entrepreneur-created PHCBs (n=17; Mean=3.41; S.D. = 2.18).

Conclusion: There is a need both to revamp the relatively low SPS scores of physician-created PHCBs and to explore and address the determinants of the much lower SPS standing of the majority of PHCBs created by nurses and lay entrepreneurs.

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Displaying Citations in Two Dimensions to Guide Selection of Citations from PubMed

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Background: Selecting relevant citations from MEDLINE is difficult. This may partly be due to the low precision of available search engines. Current search engines sort results in one dimension, such as publication year. In this study, we assess the feasibility of displaying citations in two dimensions in order to increase the ability to identify relevant citations.

Methods: This study is designed as a feasibility study of a concept we call The Frontier of Trials. A Frontier of Trials are those for which there are no trials both more recent and published in a journal with a AI Score higher than a specified distance. To confirm that the frontier identified relevant trials, we have used three existing meta-analyses of clinical trials.

For each meta-analysis, we displayed the included studies in a plot of publication year by the Article Influence (AI) Score of the journals that the trials were published in in order to identify a frontier of trials. We compared the the magnitude of risk measures from the original meta-analyses to those limited to trials on the frontiers. A two-dimensional display of the frontier of trials and corresponding citations are provided.

Results: In all three meta-analyses, the results of meta-analysis of the trials in the reduced subset on the frontier agreed with the full meta-analyses.

Conclusion: In this initial investigation, a two-dimensional display of citations identified smaller and more relevant subsets of trials to answer clinical questions.

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Connecting the Dots: Pathways and Propagators of Inflammation

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Background: The purpose of this study was to elucidate the pathways and propagators of inflammation. Understanding the mechanisms by which inflammation is initiated and perpetuated in the body is essential to precisely and effectively combating inflammatory diseases. Inflammation is a key component of many different diseases, such as rheumatoid arthritis, diabetes mellitus, coronary heart disease, and cancer.

Methods: While most available studies focus on specific elements of inflammation within the context of certain diseases, this study differs in that it synthesizes data from medical journals across various specialties into a comprehensive overview of inflammatory pathways in the body.

Results: Among the pathways studied, two of the most important are the arachadonic acid-derived pathways: the cyclooxygenase (prostaglandin) pathway and the lipoxygenase (leukotriene) pathway. We examined the ways in which Non-Steroidal Anti-inflammatory Drugs (NSAIDs) inhibit inflammation through the cyclooxygenase pathway. From the research, it was deduced that the arachadonic acid-derived pathways are connected to various cytokine networks through TNF-alpha, superoxide, and nitric oxide. In addition, the studies demonstrated that cytokines interact with one another through feedback loops.

Conclusion: Three major inflammatory pathways—cytokine, prostaglandin, and leukotriene—are connected through the various actions of TNF-alpha, nitric oxide, and superoxide. The interrelationships between the different sources and pathways of inflammation should be further examined to enhance understanding of inflammation in auto-immune diseases. This research implies that collaboration between medical researchers from various specialties may yield significant breakthroughs in the understanding and management of inflammation.

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Lifestyle Factors that Affect Inflammation

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Background: According to a CDC census from 2004-2009, there has been a dramatic increase in cases of obesity and diabetes with a possible connection to the relative quality of regional diets. Recent studies indicate a strong correlation between inflammation and diseases, including diabetes mellitus, rheumatoid arthritis, cardiovascular disease, and cancer. Moreover, the prevention of inflammation has been demonstrated to be significantly affected by lifestyle. Therefore, exercise, diet, and stress levels can have a direct effect on the incidence of these possibly fatal diseases.

Methods: Researchers started their medical literature search with UpToDate, an evidence based clinical decision resource for physicians. Further literature reviews included the Journal of the American Medical Association, Linus Pauling Institute, National Institute of Health, and other epidemiology research studies.

Results: These studies indicate that following a balanced, low-glycemic index diet paired with complete exercise programs and stress reducing practices can be of great benefit. This compilation of scientific articles discusses the relationship between these lifestyle factors and inflammation to aid in decreasing the prevalence of these inflammatory diseases.

Conclusion: This study is unique because it encompasses data from numerous medical specialties and recommends a complete and balanced lifestyle to reduce inflammation. Recommendations for future studies would include specific case studies in which one group would serve as the control and the other group would follow a holistic approach with diet and exercise. Risk factors and genetics would also have to be determined before selection of these groups.

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Do Elastic Abdominal Binders Reduce Post-Operative Pain and Blood Loss?

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Background: Patients delivered by cesarean section (C/S) are a unique subset of postoperative patients with possible complications that include postpartum hemorrhage and pain. A potential non-pharmacologic way to reduce these complications is with an abdominal binder: a soft, elastic band that can provide circumferential compression on the wound.

Methods: Patients scheduled for C/S were randomized to receive a binder or to a control group (no binder). Pain levels were reported by questionnaire one day after surgery using a 0 to 10 scale. Patient characteristics and blood loss were assessed by medical record review. An intention-to-treat analysis was conducted despite the fact that four control group patients received a binder.

Results: Of the 56 patients completing the study, 29 (51.8%) were randomized to the binder group and 27 (48.2%) were randomized to the control group. Indications for C/S were previous cesarean (n=50, 89.3%) or breech presentation (n=6, 10.7%). Most patients received an epidural (n=55, 98.2%). There was no difference in BMI, age, previous surgery, infant birth weight or estimated blood loss between randomization groups. Lowest pain score (1.66 vs. 2.56 for the binder and control groups, respectively, p=.019) and average pain score (3.45 vs. 4.48 for the binder and control groups, respectively, p=.024) were significantly lower in the treatment group. There was no difference in pre-to post-operative hemoglobin levels by treatment group.

Conclusion: Abdominal binders improved pain scores but did not affect postoperative hemorrhage. Due to small sample size, further confirmation of these outcomes is desirable.

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Food Insecurity and Peripheral Arterial Disease in Racially/Ethnically Diverse Populations

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Background: Food insecurity, defined as the limited or uncertain availability of nutritious and safe foods, is a complex phenomenon and is linked to poor nutrition and diet-sensitive chronic diseases. Food insecure individuals report reduced consumption of nutrient-rich foods and increased consumption of animal proteins, saturated fat, and disordered eating patterns. Dietary patterns that include saturated fats and meat products are potential risk factors for the progression of PAD. This study explored whether there is a relationship between food insecurity and PAD among a national sample.

Methods: We conducted a cross-sectional data analysis using data from the 1999-2004 National Health and Nutrition Examination Survey. All participants with PAD were included (Ankle Brachial Index (ABI) score ≤ 0.9). Food security was assessed using the US Household Food Security Survey Module. Bivariate analyses were conducted using the Rao-Scott Chi-square test to examine associations between variables.

Results: We found no association between food insecurity and peripheral arterial disease $X^2(1, N=1518)=.02, p=.89$. We did find statistically significant associations with food insecurity and race/ethnicity $X^2(2, N=1518)=103.81, p <.05$, education $X^2(2, N=1518)=49.05, p <.05$, marital status $X^2(3, N=1518)=53.87, p <.05$, income $X^2(2, N=1518)=100.03, p <.05$, and health status $X^2(2, N=1518)=121.77, p<.05$.

Conclusion: Our results indicate a lack of a statistically significant association between food insecurity and PAD. However, we found an association of food insecurity with several socioeconomic factors. Further research is needed to determine the association of these factors with dietary habits among persons with PAD.

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Family Physician Characteristics that Impact Comfort Level in Assessment and Treatment of Mental Illness

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**Background:** This project sought to better understand demographic factors that impact community family medicine physician self-perceived comfort levels diagnosing and treating mental illness.

**Methods:** This was a cross-sectional, prospective survey with purposive sampling. Participants were asked to rate their comfort levels diagnosing and treating seven psychiatric diagnoses: psychotic disorder, depression, anxiety, substance abuse, geriatric psychiatry, bipolar disorder, and ADHD. Comfort level was measured on a Likert-scale (1= not at all; 4=very). Demographic information included: sex, age, years in practice, practice location, and whether participants were residency faculty members.

RQ1) Are community family medicine physicians more comfortable diagnosing and treating certain diagnoses?  
RQ2) Are there differences in overall comfort level diagnosing and treating diagnoses based on physician demographics?  
RQ3) Are there differences in comfort level diagnosing and treating specific diagnoses based on physician demographics?

Statistical analyses included a series of one and two-way analyses of variance (ANOVAs) and multivariate analysis of variance (MANOVA).

**Results:** Forty-six physicians filled out the survey. Participants felt more comfortable diagnosing and treating certain conditions over others (e.g., depression vs. bipolar disorder, psychosis, and substance abuse). Overall, men were more comfortable diagnosing substance abuse than women and those with 11-20 years of experience felt most comfortable than those with more experience treating bipolar disorder, depression, and anxiety.

**Conclusion:** Family physicians find some psychiatric diagnoses easier to diagnose and treat than others. There are specific demographic variables associated with higher comfort level. Increased responsibility for specialty mental health in primary care signals the need for more training.

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Can Serial B-type Natriuretic Peptide Measurements Shorten Hospital Length of Stay in Patients with Acute Heart Failure?

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Background: Acute decompensated heart failure is the leading cause of hospitalization in US. There is a strong need to avoid readmission and decrease length of stay. We determined whether the use of serial B-type natriuretic peptide measurements improves the outcome, decreases 30 day readmission rate and shortens hospital length of stay in patients with acute heart failure.

Methods: A retrospective cohort study was conducted in two community hospitals in United States. 554 charts of patients with heart failure admitted to the hospital over one year were reviewed for primary end-point length of stay, secondary end-point discharge status, mortality rate, and readmission rate.

Results: The more BNPs taken, generally the longer the length of stay. Patients of physicians who order at least one BNP have a significantly lower average length of stay than those whose physicians order more than one BNP (average LOS 4.34 vs 6.11). There were no differences in the average admit BNP between physicians who ordered one BNP compared to those who ordered more than one BNP (1145.39 vs 1194.99).

There were no difference between the number of BNPs and 30 day readmission status (readmission vs no readmission 2.56 vs 2.56).

No difference was found between the number of BNPs and mortality rate (died vs survived, 2.54 vs 2.56).

Conclusion: Repeated BNP measurements did not shorten hospital length of stay, improve heart failure outcomes or decrease 30 day readmission rate. More studies need to be done to recognize new biomarkers to guide and predict treatment and prognosis of heart failure.

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The Relationship between Hemoglobin Level and Outcomes in Patients Hospitalized with Acutely Decompensated Heart Failure

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Background: Anemia is a frequent complication of advanced heart failure and is associated with poor prognosis. Prior studies have demonstrated evidence of disordered iron homeostasis associated with progressive heart failure and worsening functional status, although the mechanism remains unclear. The relationship between anemia and hospitalization for acute heart failure has not previously been explored. This study investigated the prognostic role of anemia among patients hospitalized with acutely decompensated heart failure.

Methods: A retrospective cohort study was conducted in three community hospitals in the United States. A total of 436 charts of patients with heart failure admitted over one year were reviewed. The primary end-point was length of stay, and secondary end-points included discharge status, mortality rate, and readmission rate.

Results: The average hemoglobin level on admission was not different among patients who were readmitted within 30 days and those who were not (11.1 v 11.8, p=0.07). There was no significant correlation between admission hemoglobin level and length of hospital stay (average hgb 11.7, average LOS 5.5d, r=-0.6, p=0.09). There was a trend toward lower admission hemoglobin levels being associated with in-hospital mortality, however the results were not significant (11.7 in survivors, 10.9 in non-survivors, p=0.18). There was no significant difference between admission hemoglobin levels and discharge disposition.

Conclusion: Decreased hemoglobin level at hospital admission was not associated with poorer outcomes in patients hospitalized with acute heart failure.

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Compliance with Guidelines on Group B Streptococcal Sepsis Prophylaxis among Selected Women who Require Unscheduled Cesarean Section

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**Background:** Group B Streptococcus (Streptococcus agalactiae) or GBS has been a recognized cause of neonatal morbidity and mortality since the 1970s. Antibiotic prophylaxis guidelines have been established by the American Academy of Pediatrics (AAP) and the American College of Obstetrics and Gynecology (ACOG) to reduce early onset of GBS sepsis; however, adherence to the established guidelines in some instances may be suboptimal. Women in active labor or those having ruptured membranes before unscheduled cesarean section may not receive recommended prophylactic antibiotics.

**Methods:** A retrospective, consecutive medical record review of GBS positive women at term gestation that delivered via unscheduled cesarean section between 1/1/2011 - 12/31/2013 was conducted. Records were eligible for review if women were 37-39 weeks gestational age (WGA) at time of unscheduled primary or repeat cesarean section, GBS culture positive status, and either had spontaneous rupture of membranes (SROM) or active labor prior to cesarean section. Compliance was determined based on evidence of appropriate antibiotics for GBS (taking allergies into consideration) according to ACOG guidelines.

**Results:** Of 116 records reviewed (18 unavailable for review), 84 (72.4%) cases were primary and 32 (27.6%) were repeat cesarean section. Women averaged 38 weeks, 1 day WGA. 35 cases (30.2%) were considered noncompliant with ACOG guidelines for GBS. Of those non-compliant, 28 cases (80%) were because no antibiotics were given for GBS and 7 cases (20%) received inappropriate antibiotics.

**Conclusion:** Adherence to ACOG GBS prophylaxis guidelines is inadequate prior to unscheduled cesarean section, and additional interventions, education, and training are needed to improve compliance.

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A Systematic Review of Health Literacy and Rare Diseases in Rural Populations

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Background: Patients with rare diseases face barriers when seeking current information on their specific disease; this problem can be compounded the patient has a low health literacy level or lives in an area that geographically isolates them from the healthcare system. The purpose of conducting this systematic review was to assess the current knowledge about health literacy in patients’ with a rare disease living in rural areas.

Methods: This review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta Analysis. Five electronic databases were searched, only the articles published from January 2010 to April 2013 were included. Review articles, commentaries, etc. were initially excluded. Inclusion criteria were: health literacy measurement, patient population with rare disease, and empirical methodology.

Results: Our search results yielded 603 articles, of which 137 used a health literacy measurement tool within a population characterized by a specific disease process. Searching the database on the NORD website revealed only one article that had a rare disease confirmed by NORD.

Conclusion: Analyzing the current literature has shown that patients with low health literacy are more susceptible to hospitalization; patients with a high educational level can also have low health literacy; and the current health literacy assessments tools overlook areas of disease management that are affected by the patient’s health literacy status. Research is needed to determine if patients with rare diseases are more likely to have lower health literacy levels and if living in rural areas has an impact on their health literacy.

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Insulin Dose Changes in Patients Preparing for Bariatric Surgery

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Background: Weight loss surgery (WLS) is an effective treatment for obesity and type II diabetes mellitus (DM). Although glycemia control among patients with diabetes mellitus prior to surgery results in superior post-operative outcomes, no investigation has been undertaken to identify insulin dosage adjustments required during the pre-operative low-calorie diet prior to WLS. We compared several key measures of glycemic control on subjects as they performed their pre-operative diet.

Methods: A retrospective chart review was performed on 40 individuals with DM who had undergone a two week pre-operative low-calorie diet at Via Christi Weight Management between 2005 and 2012.

Results: Majority (90%, n=36) of the 40 individuals were Caucasians. More than half (65%, n=26) were females. Average age was 51.2 (SD 7.47) years, with the average duration of DM being 13 years (SD 8.89). Half (50%, n=20) of patients had three comorbidities at baseline, 27.5% (n=11) had 4 or 5 comorbidities, and the remaining (22.5%, n=9) individuals had one or two comorbidities. Participants used an average of 1.07 (SD=0.67) units/kg/day of total insulin at baseline, which decreased to 0.66 (SD=0.43) units/kg/day at week one (P<0.0001). Significant factors associated with a decrease in the total insulin included: baseline insulin (p<0.0001) and baseline A1c (p=0.0126). Age, number of comorbidities, DM duration and immediate past participation in a medical weight loss program were not associated with the reduction in total insulin.

Conclusion: In patients undergoing a pre-operative low-calorie diet, an insulin dose adjustment of a total daily insulin dose of 0.42 units/kg/day seems safe and effective.

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Decreased Renal Function is Associated with Heart Failure Readmission

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**Background:** Heart Failure is the leading cause of morbidity and mortality, as well as hospitalization rates in the US. An impetus has been created to identify improved predictors to prevent hospital readmission. The aim of this study was to determine if renal function has an association with heart failure readmissions.

**Methods:** A retrospective cohort study was performed utilizing data from three community hospitals in the United States. A total of 127 patients with heart failure were evaluated over one year comparing *glomerular filtration rate (GFR)* at admission and discharge and 30-day readmission status.

**Results:** There is a significant difference by readmission status in the change in GFR from admission to discharge. The GFR of patients readmitted in 30 days had an average decrease in GFR by 2.46 mL/min/1.73 m2 whereas patients not readmitted in 30 days had an average increase in GFR by 1.92 mL/min/1.73 m2. In the 28 readmitted patients, 13 (46%) had a decrease in GFR, 6 (21%) had an increase, and 9 had no change (32%). In the 99 patients not readmitted, 33 (33%) had a decrease in GFR, 48 (48%) had an increase, and 18 (18%) had no change.

**Conclusion:** A decline in renal function over hospitalization in patients with heart failure is associated with an increase in readmission for heart failure. Close monitoring of renal function soon after discharge is recommended to prevent rehospitalization.

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Do Higher Platelet Counts Limit Extension of Subependymal Hemorrhages?

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**Background:** Intraventricular hemorrhage (IVH) is multifactorial with prematurity, circulatory instability and hemostatic factors. Studies suggest that premature infants have limited hemostatic capacity and may not be able to prevent rupturing of the germinal matrix into the intraventricular space. The lack of platelets, or their consumption, may permit the extension of germinal matrix hemorrhage (GMH). Some guidelines recommend platelet transfusions when platelets are <50x10^9/L (normal counts are >150x10^9/L). It is unknown if platelet levels >200x10^9/L could prevent intraventricular extension of GMH as postulated by Coen et al (Frontiers in Pediatrics, Sep 2013, Vol 1, Article 22).

The objective of our study was to confirm that platelet counts less than 200x10^9/L are associated with more severe IVH

**Methods:** We conducted a retrospective review of infants with gestational age 23-28 weeks born at Wesley between 1/1/2005 and 12/31/2012.

IVH was categorized as A) confined to the germinal matrix (Grade 0 and I); B) involving cerebral ventricles (Grade II and III) and C) bleeding into the parenchyma (Grade IV). The lowest platelet count during the first week was analyzed according to head ultrasound findings.

**Results:** 417 low birth weight infants were included. The mean gestational age was 26 weeks and mean birth weight 920g (Table 1). 88% were treated for a PDA and 66% were delivered by C-section. Infants with lower GA were found to have lower platelet counts. A greater proportion (78%) of infants developed Grade II and III IVH (group B) when platelet counts were <200x10^9/L (Table 2).

**Conclusion:** Maintaining platelet counts >200 x 10^9/L may prevent germinal matrix hemorrhage extension.

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Directed Migration of Embryonic Stem Cell Derived Motor Neuron in an Applied Electric Field

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Background: Stem cells may generate improved functional recovery of injured spinal cord by promoting endogenous regeneration, or directly replacing neurons. Effective directional migration of grafted stem cell derived neural cells to the lesion of neural tissue to reconstruct functional connections is crucial in the process. Steady direct current (DC) electric fields (EFs) play an important role in the development of the central nervous system (CNS). One strong biological effect of EFs is the guidance of axonal growth and induction of directional cell migration. It was shown that EFs can direct hippocampal neuron migration.

Methods: In this study, we investigated the guided migration of embryonic stem cell derived neuron in an applied EF. Mouse embryonic stem cells derived motor neurons or embryoid bodies were cultured in a glass chamber for migration experiments. The plastic surface of the chamber was coated with poly-DL-ornithine and laminin. Steady DC EFs in the range 50–200 mV/mm was applied to the cultured OPCs in culture chambers. Cell migration was recorded with a Zeiss Axio Observer microscope. Time-lapse imaging for single cell migration was analysed by NIH Image J program.

Results: We found the migration of neural stem cells from embryoid body was toward cathode pole of the applied EFs. Single motor neurons migrated to the cathode of the EFs and the reversal of EFs poles reversed the migration direction of the cells.

Conclusion: Our work is the first study to show the migration of embryonic stem cell derived neurons can be guided by EFs.

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Flexion-extension Gap in Cruciate-retaining versus Posterior-stabilized Total Knee Arthroplasty: A Cadaveric Study

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Background: The purpose of this study is to re-examine experimental model results using half-body specimens with intact extensor mechanisms and navigation to evaluate cruciate-retaining (CR) and posterior stabilized (PS) component gaps though an entire range of motion.

Methods: Six sequential testing regimens were conducted with the knee intact, with a CR TKA in place, with a PS TKA in place, with and without traction at each stage. The amount of traction used was 22N. Each knee (n=10) was taken through 6 full ranges of motion from 0° to 120° at every stage using navigated knee system to record component gapping. At each stage, a modified gap balancer was used to take static gap measurements at 0° and 90° with 12in.lbs of torque was applied.

Results: There was no significant difference between loaded and unloaded component gaps, and there was no statistically significant difference in component gapping between CR and PS knees throughout a full range of motion. Flexion-extension gap measurements were significantly different from previously published data (at 90° flexion). When comparing the static flexion-extension gap data to that of Mihalko study, the difference in full extension gap data was statistically significant (current study: 0.11±0.82mm, Mihalko: 0.4±0.45mm). However, the difference in 90° flexion gap data was significant (current study: 0.09±1.48mm; Mihalko: 5.26±1.90mm).

Conclusion: There was no difference in kinematics when comparing CR and PS TKA component designs. This finding suggests that intact extensor mechanisms may be required to perform proper kinematic studies of TKA.

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Investigation of the Inflammatory and Osteolytic Effects of Chromium Sensitivity and Collagen Induced Arthritis on the Response to Particulate Cobalt-Chromium Debris in the Murine Air Pouch Model

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**Background:** The re-introduction of metal-on-metal joint replacements and their subsequent poor performance has increased interest in the response to metallic debris, particularly metal hypersensitivity, and its relationship to osteolysis. It is also unknown whether the immunology of rheumatoid arthritis can affect the survival of joint implants.

**Methods:** DBA/1 mice were sensitized to chromium, type II collagen, or keyhole limpet hemocyanin, and then received air pouches with syngeneic bone implanted. Antibodies to chromium and collagen were measured. Animals were divided into three groups, receiving saline, polyethylene, or cobalt-chromium particles in the pouch. Arthritis progression was assessed daily. Mice were sacrificed 26 days after particle injection. Pouch thickness, cell count, inflammation, lymphocyte infiltration, and implanted bone density were assessed histologically.

**Results:** Inflammatory responses displayed differences based on the type of biomaterial, regardless of immunological sensitization. Polyethylene was consistently the most inflammatory debris. There were no significant differences in lymphocytic infiltration or bone resorption between groups. High variability was observed in responses, with some mice exhibiting little inflammation and lymphocytic infiltration and others showing severe inflammation and perivascular lymphocytic cuffing. No biomaterial appeared to alter the course of arthritis.

**Conclusion:** Individual responses to immunological stimuli and inflammatory debris are complex and result in variability within the experimental groups. This finding mirrors the patient experience, but hinders investigations of precise factors affecting adverse biomaterial responses. Dominant responses to biomaterial debris are inflammatory, even in the presence of adaptive immunological sensitivity. This research indicates that rheumatoid arthritis does not elicit biomaterial concerns during joint replacement surgery.

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An Assessment of BNP, Ejection Fraction, and Left Ventricular End Diastolic Size in Patients with ADHF

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Background: Acute decompensated heart failure (ADHF) is characterized by dyspnea that is precipitated by rapid fluid filling of the lung interstitium, hampering any possible gas exchange through lung membranes, resulting in tissue hypoxia and worsening of an already threatened myocardium. A focused history, clinical findings, lab work, and prognostic echocardiographic findings guide treatment and help to anticipate overall prognosis. This study assessed the association of brain natriuretic peptide (BNP), ejection fraction (EF), and left ventricular end diastolic size (LVEDS) in patients with ADHF

Methods: A retrospective analysis was completed on a sample of 133 ADHF patients. Admission BNP, EF, and LVEDS were extracted from medical records to calculate correlations. EF was taken in consideration only if 2D echocardiography was completed within three months of admission

Results: Lower EF was correlated with the higher admission BNP (n = 64; r = 0.38; p < 0.002). Moreover, admission BNP was correlated with LVEDS (n = 55; r = 0.42, p < 0.002).

Conclusion: In ADHF, heart failure with lower EF usually has higher end-systolic volume which predicts higher end-diastolic size and higher BNP levels. For patients with a similar clinical presentation, higher BNP is expected in patients with lower EF than higher EF. As BNP is released as a reflex to high ventricular filling pressure, increased LVEDS may be associated with, regardless of EF, a higher BNP

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The Association of Inotropes on Discharge Status in Patients with ADHF

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Background: Acute Decompensated Heart Failure (ADHF) is characterized by frequent hospitalizations, evolving treatment modalities, a high rate of complications, poor quality of life, and ultimately death. IV inotropic agents sometimes are used to improve the hemodynamic status in patients with severely low EF admitted for ADHF. This study assessed the association of inotropes on discharge status in patients with ADHF.

Methods: A retrospective analysis assessed a sample of 132 patients with ADHF which included 33 patients who were readmitted within 30 days. The patients in this sample who received IV inotropes (dobutamine, dopamine or milrinone) plus diuretics were assessed for inpatient mortality or hospice discharge and compared to those who received only diuretics.

Results: Eleven (8.3%) patients received IV inotropes and 121 (91.7%) patients received only diuretics. Inpatient mortality or hospice discharge was 10% in diuresis group compared to 27% for inotrope group (p > 0.05). Then subgroup analysis included only patients who were readmitted within 30 days. Of those, 67% (2 of 3) who were on inotropes died as compared to 25% (3 of 12) who were on diuretics. For every death or hospice discharge, the patient was nearly three times more likely to have received inotropes.

Conclusion: Preliminary results support judicious use of IV inotropes as adjunct therapy in the management of ADHF as increases were noted in mortality and discharge to hospice. Thirty-day readmission may be an independent risk factor. Although these results are not statistically significant because of the small sample, the clinical trend is apparent.

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Intravenous Immunoglobulin and Acute Renal Failure

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Case Report

Background: Acute kidney injury is a rare complication of intravenous immunoglobulin (IVIG) that is seen in about 1% of infusions. Certain preparations of IVIG especially Carimune® are known to result in ‘sucrose nephropathy’ the basis behind the renal damage. We present a case who developed kidney injury after receiving Carimune®.

Description: A 52-year-old male with history of focal segmental glomerulosclerosis and hypertension presented with chest pain and shortness of air after receiving Carimune® for his pure red cell aplasia secondary to developing parvovirus infection. He also had received Octagom® about a week earlier. He was admitted after his creatinine had jumped from his baseline of 1.4 to 2.5 mg/dL. Intravenous hydration was done along with holding an ACE inhibitor and hydrochlorothiazide. He improved considerably by Day 4 leading to his discharge.

Conclusion: The only sucrose-based IVIG in USA is Carimune®. Judicious selection of IVIG is imperative which should be based on patient’s characteristics and associated conditions. Varying sucrose containing products such as Carimune® should not be selected in patients with significant chronic kidney disease. Screening for risk factors for renal disease is crucial. Toxicity to proximal tubule cells because of high osmotic stress and leading to vacuolization is the likely pathophysiology.

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Primary Care - CBC Not Always Helpful to Diagnose Leukemia

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Case Report

Background: Renal infiltrates are not uncommon in Acute Lymphoblastic Leukemia. Presentation involving fairly normal CBC without blasts along with palpable kidneys and acute kidney insufficiency is rare. We present a case with repeated nonspecific symptoms and a ‘normal’ CBC count initially but was later confirmed by bone marrow and renal biopsies as Acute Lymphoblastic Leukemia B-cell type.

Description: A 15-year-old male was seen by his pediatrician for fatigue and ‘cold’. His labs including CBC were ‘normal’. On subsequent visits within a month, he had persistent symptoms including palpable kidneys. He had a white blood count of 3.4/ mm3, hemoglobin of 10.8g /100ml, platelets of 188,000/ml, and ANC of 1800/ml. A CT scan revealed enlarged bilateral kidneys each measuring 18 cm in length with no calculi but significant hydronephrosis. Renal biopsy and subsequent bone marrow biopsy confirmed the presence of ALL B-cell type.

Conclusion: An insignificant CBC could be associated with ALL in the initial phase. Physical exam could be helpful in arriving to underlying diagnosis with splenomegaly, enlarged lymph nodes, and, as in this case, palpable kidneys. Renal involvement is not unheard of in ALL but presentation with kidney injury albeit rare is plausible. The more organ infiltration, the more one would expect blast formation. In our patient, however, there was no presence of blasts even with kidney involvement. Rather than just relying on CBC to diagnose Leukemia, equal importance needs to be given to physical examination.

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Rectal Cancer Metastases to Muscle

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Case Report

Background: Colorectal cancer metastasis to muscles is a rare entity; there are nine reported cases in the literature. In these case reports, lesions were detected through different imaging mechanisms including ultrasound, computed tomography, and magnetic resonance imaging.

Description: We present a case of a 44-year-old male with a history of rectal cancer diagnosed at the age of 41. He was initially treated with low anterior resection, chemotherapy, and radiation therapy. He later presented with headaches and visual changes and was found to have lesions in the brain as well as biopsy proven lung metastases. The patient underwent another course of chemotherapy and radiation therapy. 10 months later, the patient presented with pain in his left thigh. Initial radiographs were normal, but MRI demonstrated multiple lesions in the thigh musculature that proved to be metastatic colorectal adenocarcinoma on biopsy. Asymptomatic swelling in the right shoulder led to an ultrasound that showed two masses also concerning for metastatic disease.

Conclusion: Metastases to skeletal muscle are a rare entity for any malignancy, though lung, gastric, and genitourinary tumors have been the most reported. MRI was used for finding the initial muscle metastases in this case, but CT and ultrasound can be used for evaluation of soft tissue mass in cancer patients presenting with new muscular pain.

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Cerebral Air Embolism in a Patient Status-post Esophagoduodenoscopy for Foreign Body Removal

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Case Report

Background: Clinically apparent effects from air emboli are rare; however, they are accompanied by significant morbidity and mortality. It is important to recognize situations where patients are at risk for air embolism and to know the signs of systemic air embolism so that immediate action can be taken.

Description: A 57-year-old male had a piece of steak become lodged in his esophagus and underwent an EGD at a rural hospital. He was placed in the left lateral recumbent position with a propofol drip used for sedation. During the EGD, myoclonic activity was noted and the patient seemed to have difficulty maintaining his airway. He was not able to be awakened and so he was intubated and the EGD was completed. A head CT revealed right-sided intracerebral air, concerning for an air embolism. The patient was then transferred from the rural hospital and admitted to our neuro ICU. He was started on lorazepam and anti-epileptics for refractory seizures. Over the next two days, he continued to have increasing right-sided cerebral edema despite maximal therapy with mannitol, hypertonic saline and hyperventilation. Repeat head CT on hospital day two showed multiple areas of infarct and significant right-sided cerebral edema causing a midline shift. It was determined that surgical intervention would be unlikely to benefit the patient and his family agreed to organ donation on hospital day three.

Conclusion: Important aspects of this case involve recognizing mechanisms that cause air embolism and how to take precautions to reduce the chance of air embolism.

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Cardiac Arrest at Emergence: The utility of perioperative bedside echocardiography

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Case Report

**Background:** The benefits and effectiveness of bedside echocardiography in acute cardiovascular collapse or as a preoperative evaluation tool are not well defined. This unusual case outlines the utility of bedside anesthesiologist-performed echocardiography in diagnosis and management of a cardiac arrest during emergence from general anesthesia.

**Description:** A 44 year-old female with end stage renal disease, MRSA bacteremia, sepsis, and purulent cholecystitis status post percutaneous cholecystostomy presented to the operating room for urgent cholecystectomy. Induction of anesthesia proceeded uneventfully with judicious use of IV fluids and vasopressors as needed to offset the apparent vasodilation and relative hypovolemia produced by general anesthesia and sepsis. Reversal of vecuronium with standard doses of glycopyrrolate and neostigmine led to bradycardia, followed by hypotension and hypoxemia, then pulseless electrical activity. CPR continued for three minutes prior to return of spontaneous circulation. Bedside echocardiography by the anesthesiologist revealed a large circumferential pericardial effusion with tamponade physiology. A pericardial drain was placed under ultrasound guidance, yielding frank pus with hemodynamic stabilization upon removal of 30 mililiters of purulent pericardial fluid. Emergent pericardial window was performed expeditiously without further intra-operative incident.

**Conclusion:** Perioperative echocardiography has been associated with decreased mortality in surgical patients. Although increasingly used in emergency departments and intensive care units, bedside echocardiography is likely underutilized in the perioperative environment. This case illustrates the importance of appropriate equipment and training of anesthesiologists in bedside echocardiography and highlights its potentially life-saving benefits with minimal risk to patients.

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Diffusion-weighted Imaging: A sequence not to miss for diagnosis of Creutzfeldt-Jakob Disease

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Case Report

Background: Creutzfeldt-Jakob Disease (CJD) is a rapidly progressive and fatal disorder of the central nervous system. It occurs worldwide with an incidence of 0.5-1 new cases per million per year. No specific treatment is available and management is limited to supportive care. Diagnosis of CJD remains a challenge considering that brain biopsy is the sole confirmatory test available.

Description: A 57-year-old male was hospitalized for evaluation of acute memory loss, disorientation, and self-care deficit which had progressed acutely over a period of three months. TSH, heavy metals screen, vitamin B12, and MRI of the brain were normal on admission. The physical exam revealed an MMSE of 4/30, inappropriate laughter, left upper extremity rigidity, and myoclonus. A repeated MRI showed diffuse abnormal hyperintense signal on diffusion-weighted imaging (DWI) involving the cortex of both hemispheres and caudate and lentiform nuclei on the right side. DWI was not performed in the first MRI of the brain.

Conclusion: Findings were suggestive of CJD. Cerebrospinal fluid was sent for 14-3-3 assay along with complete paraneoplastic panel. Protein 14-3-3 and Tau protein were positive. The patient was discharged home with hospice and died shortly thereafter. Autopsy showed characteristics of Sporadic CJD (sCJD) VV1.
Sphenoid Wing Capillary Hemangioma Presenting as Sudden Unilateral Vision Loss

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Case Report

Background: Calvarial Hemangiomas are uncommon primary tumors of the bone comprising only 1% of primary bone tumors. Classic appearance has been described and these are recognized easily. However, rarely Calvarial Hemangioma can have atypical presentation, and these can be mistaken for other etiologies. Majority are slow growing and asymptomatic. The atypical tumors can mimic other lesions on imaging and can present with vague symptoms including vision loss depending on location.

Description: MR imaging (MRI) details the pathologically proven right sphenoid wing hemangioma resulting in compression of the orbital apex. Additionally, a full clinical work up of the patient is presented to explore the presenting symptoms. Detailed history, complete ophthalmologic exam, and biopsy for pathologic diagnosis are reviewed. Postsurgical clinical progress also are presented. MR imaging in a young female demonstrates an intraosseous lesion in the right sphenoid wing with resultant mass effect on the lateral orbital wall, specifically on the optic nerve apex. Sphenoid wing meningioma commonly has been described in the literature; however pathology obtained by neurological surgery confirmed capillary type hemangioma.

Conclusion: We describe an unusual case of a right sphenoid wing capillary hemangioma, a presentation commonly associated with sphenoid meningioma.

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Valve Migration during Transcatheter Aortic Valve Replacement

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Case Report

**Background:** Patients with severe aortic stenosis that are not surgical candidates, have few options for treatment. Transcatheter aortic valve replacement (TAVR) is an alternative treatment modality for patients in this situation, but it still comes with risk. A rare complication is valve migration after deployment of the transcatheter aortic valve. The incidence of valve migration is 0.3% and 7.5% in two separate studies. Valve migration may lead to an open aortic valve replacement, as illustrated in this case presentation.

**Description:** A 91 year old female with a history of severe aortic stenosis [aortic valve area of 0.5 cm²] and non-ischemic cardiomyopathy [ejection fraction 35%]. Patient was deemed inoperable for surgical aortic valve replacement. Patient proceeded with a less invasive TAVR. After an uneventful induction with ketamine and etomidate, rapid ventricular pacing was initiated. Balloon aortic valvuloplasty was performed, followed by deployment of aortic valve. After deployment the valve subsequently migrated about a centimeter and occluded the coronaries which resulted in cardiac arrest. Subsequent successful CPR the valve embolized to the arch of the aorta. The cardiothoracic surgeon decided to perform sternotomy and place patient on cardiopulmonary bypass to replace the aortic valve. She expired the second day after the surgery.

**Conclusion:** This case highlights a rare but serious complication of TAVR. The key to approaching these cases is preparation for a possible open procedure. Further studies are needed to evaluate the main cause of valve migrations and what is the best approach to fix the problem when it occurs.

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A Case Series of Bradycardia after High-dose Buccal Administration of Dexmedetomidine

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Case Report

Background: Sedation with dexmedetomidine in pediatrics has offered the avoidance of the typical adverse effects of other medications, including respiratory depression or paradoxical hyperactivity. This drug may have other unanticipated adverse effects specifically in the pediatric population, with hypotension and bradycardia.

Description: We present a case series of five patients selected from our facility, ages two to nineteen, who presented for outpatient procedural sedation from a time period of 1/22/2010 to 5/11/2010. This was a retrospective chart review at Wesley Medical Center, with IRB approval at this facility. All five patients qualified for a severity index of “life-threatening” per FDA categorization, and qualify for a “Probable” classification per WHO guidelines for causality. Three patients obtained an EEG, and two obtained a BAER. All patients had baseline vital signs within normal limits, and none had any previously known adverse reactions to drugs. A total of 5.5 to 6 mcg/kg of dexmedetomidine was given orally during each respective procedure. All had a 25% to 39% decrease in systolic blood pressure at some point during the sedation. Each also had a substantial drop in baseline heart rate between 42% and 76%, with one patient experiencing a complete asystole event for nine seconds. Interventions included Atropine infusion or intravenous fluid.

Conclusion: Dexmedetomidine is not a completely innocuous drug in the pediatric population. The provider must be diligent in monitoring hemodynamic parameters during sedation. A proposed mechanism for these incidents may have been introduction of cold substances creating a vagal response after administration of dexmedetomidine.

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Mitral Valve Osteosarcoma Presented as Atrial Fibrillation

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Case Report

Background: A primary malignant cardiac tumor is very rare. The majority of malignant tumors are angiosarcoma, leiomyosarcoma, mesothelioma, and fibrosarcoma. Cardiac osteosarcoma is extremely rare and the prognosis is poor.

Description: A 50-year-old man with a past medical history of hypertension was referred because of palpitation and lightheadedness. The patient was in atrial fibrillation with rapid ventricular response. Troponin was negative. CBC and basic metabolic panel and liver function tests were normal. Transthoracic echocardiography demonstrated normal left ventricular systolic function and mitral valve anterior leaflet with mobile echodensity highly suspicious for endocarditis. The patient was started on antibiotics empirically. Transesophageal echocardiography showed the anterior mitral valve leaflet was severely thickened with a mobile mass. Two blood culture sets were negative. He was scheduled for mitral valve replacement. The mitral valve showed no evidence of endocarditis. A mechanical mitral valve was placed. Pathology showed osteosarcoma. CT of the head revealed no primary lesion. Chest, abdomen, and pelvis CT showed a questionable lesion on the L3 vertebra. Biopsy showed no evidence of malignancy. The patient was started on Doxorubicin and Cisplatin. At the three-month follow-up visit, a repeat CT of the chest, abdomen, and pelvis showed multiple liver lesions. The patient died in 4 months.

Conclusion: Malignant tumors should be distinguished from vegetation and benign tumors such as myxoma because of the early resection. Cardiac osteosarcoma can lead to arrhythmias by local invasion. Tumor grade appeared to be prognostically important in cardiac sarcoma, with poor prognosis in high grade tumors.

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Airway Management in Recessive Dystrophic Epidermolysis Bullosa

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Case Report

Background: Epidermolysis bullosa (EB) is an inherited disorder of the skin. This involves collagen type VII mutations, which makes the anchoring fibrils between the dermis and epidermis. Patients have blistering and scarring as the skin and mucosa are traumatized. Multiple dental caries result from poor oral hygiene and mucosal scarring follows eating and brushing.

Description: A 22-year-old male patient with a known history of recessive dystrophic epidermolysis bullosa presented for multiple dental extractions. Intravenous access was not available pre-operatively due to the presence of scarring along both arms and legs as well as elastic wrappings present on extremities. The patient underwent uneventful inhalational induction with oxygen, nitrous oxide and sevoflurane with a petroleum jelly coated mask. After induction, an 18G right external jugular IV was placed and sutured. Intubation was attempted with a pediatric Glidescope size 2 disposable blade and a 5.5 oral RAE. A regular 5.5 oral ETT was placed with an adult stylet. Blistering was noted surrounding the vocal cords following intubation. The ETT was tied in place with umbilical tape.

Conclusion: When presented with a potentially difficult airway, many anesthesiologists use prior anesthetic records as a guide. Scar formation after intubation can make future intubations difficult, as may the natural progression of EB. Patients with EB undergo many surgeries from an early age. Anesthesiologists should plan for difficult airways in all EB cases, regardless of the ease of past intubation. It may be of benefit to avoid intubation in pediatric patients to prevent difficult airway conditions from developing with maturation.

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Atypical Teratoid Rhabdoid Tumors: CT and MRI findings in a pediatric series

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Case Report

Background: Atypical teratoma/rhabdoid tumor (AT/RT) previously known as malignant rhabdoid tumor is a rare tumor with a high mortality and is mostly seen under three years of age. AT/RT histopathology reportedly overlaps other tumors such as medulloblastoma and historically per review of the literature has been misdiagnosed as a medulloblastoma. As the prognosis of an AT/RT is much lower than that of a medulloblastoma, AT/RT is important to recognize. We retrospectively reviewed MR and CT imaging findings of five patients with AT/RT.

Description: Pathology database was searched in a 13 year period from May, 1999 to January, 2012. Six patients were identified. One patient was excluded due to lack of imaging. Available MR and CT findings in each of the five remaining patients are described (median age: 93 days, age range: 1–240 days).

MRI was performed in all patients. CT was performed in four patients. Three patients had infratentorial and two patients had supratentorial masses. MRI and CT findings are reviewed. All tumors were large, heterogeneous, and contained cystic components. Most had findings suggesting hemorrhage.

Conclusion: AT/RT is a rare malignancy that has a high mortality and is mostly seen in children under three years of age. Reviewed literature indicates that AT/RT may be pathologically misdiagnosed as a medulloblastoma. In addition, AT/RT has extremely poor prognosis. Therefore, it is important to be aware of the imaging characteristics of AT/RT. MR and CT findings of five patients at our institution are discussed.

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Probable Famotidine-induced Thrombocytopenia: A case report

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Case Report

Background: Thrombocytopenia is defined as a decrease in platelet count to less than 150,000 platelets/mm3 or of >50% from baseline. Drug-induced thrombocytopenia (DITP) can result from a decrease in platelet production through a direct toxic effect on the thrombopoietic mechanisms in the bone marrow or an increase in platelet destruction through immune-mediated mechanisms.

Description: Thrombocytopenia is a rare adverse effect of famotidine therapy. Four cases of famotidine induced thrombocytopenia have been reported in the literature so far. We present a case of 56 year old male presenting with vomiting and abdominal pain diagnosed with small bowel obstruction. The patient was started on total parenteral nutrition (TPN) because of severe malnutrition. Famotidine was included in his TPN. On admission complete blood count showed normal platelets counts. However repeat investigations showed falling platelet counts after initiating famotidine. After excluding other causes of thrombocytopenia, we concluded that famotidine was the cause of this atypical drug reaction, more so when the thrombocytopenia resolved within 72 hours of famotidine withdrawal.

Conclusion: In cases of severe thrombocytopenia unexplained by other causes, a pharmacological cause must be suspected, including Famotidine. Other alternate drug regimens for prophylaxis of stress ulcer should be considered especially in critically ill patients. The diagnosis of this critical condition is based on clinical suspicion and is a diagnosis of exclusion.

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