

Research Abstracts

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Department: Preventive Medicine and Public Health
Faculty Mentor: N/A
Poster Number: 1

Category: Faculty
Session: Morning Poster
Location: Dean's Entrance

Promoting Walking Among African Americans with Peripheral Artery Disease

Kelsey Lu, M.S., Tracie Collins, M.D.

University of Kansas School of Medicine-Wichita

Introduction

We compared the efficacy of motivational interviewing (MI) versus a scripted counseling approach (Patient-centered Assessment and Counseling for Exercise [PACE]) versus control to improve walking distance at 6- and 12 months in a cohort of African Americans with peripheral artery disease (PAD).

Methods

We completed a five year NIH funded study. Participants completed baseline, 6- and 12-month visits. Two counseling interventions were delivered bi-weekly for three months and monthly for three months. Walking distance was assessed using the six minute walking test. We used linear regression modeling for the analysis.

Results

Among the 174 African Americans enrolled, the mean age of the cohort was 63.7 years (SD 11.1). There were no differences between the three groups in baseline characteristics. Mean baseline walking distance for the entire cohort was 1,173.06 feet (SD 234.67) and, by group, mean walking distance, measured in feet, was as follows: MI 1203.16 (SD 239.02), PACE 1148.79 (SD 231.67), and control 1167.50 (SD 234.15). For between group changes, there was a statistically significant decline in walking distance at 12 months among participants randomized to MI versus PACE [-70.51 (SE 24.14)], $P=0.004$. There was a statistically significant improvement in walking distance at 12 months comparing PACE to control at 48.63 (SE 23.83), $P=0.043$.

Discussion

In a cohort of African Americans with PAD, PACE was efficacious to improve walking distance at 6- and 12 months. Efforts are needed to assess the implementation of this intervention in clinical practice.

Contact:
Kelsey Lu, MS
(316) 293-2627
llu2@kumc.edu

Department: Preventive Medicine and Public Health
Faculty Mentor: N/A
Poster Number: 2

Category: Faculty
Session: Morning Poster
Location: Dean's Entrance

Promoting Walking Among Latino Adults at Risk for Peripheral Artery Disease

Galbriela Valverde, B.S., Maria Valverde, B.S., Tracie Collins, M.D.

University of Kansas School of Medicine-Wichita

Introduction

We sought to determine the efficacy of text messaging to promote physical activity among Latino adults, English or Spanish-speaking.

Methods

We conducted a 3-month, 2-arm randomized trial among Latino adults with one or more atherosclerotic risk factors. We adapted a scripted, counseling approach (Patient-centered Assessment and Counseling for Exercise [PACE]) into text messages and combined this intervention with brief motivational interviewing delivered by telephone. We assessed changes from baseline to three months in steps walked, quality of life, and exercise behaviors using non-parametric tests.

Results

We enrolled 69 patients, 35 in the text messaging arm and 34 in the control arm. Mean age of participants was 58.6 years (SD 6.4) in the text messaging arm and 58.73 (SD 7.32) in the control arm (P=NS). At baseline, there were no differences between the groups on the three outcomes. At three months, change in mean steps walked per week was 28486.6 (SD 31549.0) for the intervention group compared to 12848.34 (SD 28763.0) for the control group, P=0.076. For within group differences, there were statistically significant improvements in exercise behavior scores (P<0.0001) for both groups. Further, there were statistically significant improvements in all quality of life subscale scores for both groups with the exception of role-physical for the control group.

Discussion

Among Latino adults with one or more atherosclerotic risk factors, there was a trend toward an increase in mean steps walked per week among those randomized to a text messaging intervention versus control.

Contact:
Tracie Collins, M.D.
(316) 293-2627
tcollins2@kumc.edu

Department: Preventive Medicine and Public Health
Faculty Mentor: Elizabeth Ablah, Ph.D., MPH
Poster Number: 3

Category: Student
Session: Morning Poster
Location: Dean's Entrance

Perceptions of Kansas Physicians Regarding Utility and Benefits of Expansion of KTRACS Database

Clay Jarrell, MS-4, Natalie Hagman, MS-4, Justin Moore, M.D., Elizabeth Ablah, Ph.D.

University of Kansas School of Medicine-Wichita

Introduction

Medication non-adherence has been associated with preventable increases in morbidity and mortality in patients with chronic disease. As physicians and patients are inconsistent in detecting non-adherence, medication tracking systems, such as Kansas Tracking and Reporting of Controlled Substances (KTRACS), are used to augment physician estimation of refill compliance. This study sought to determine the reported perceptions of physicians in Sedgwick County, Kansas regarding the utility and benefits of expanding KTRACS or creating a similar database, to track refill compliance of non-controlled substances.

Methods

A cross-sectional study of Medical Society of Sedgwick County physicians was conducted. A 17 item survey was distributed via email. Qualitative data was examined for trends and recoded accordingly. Univariate analysis was then performed.

Results

The survey had a 35% (N = 160) response rate. Results showed nearly half (47%) of respondents reported being 'likely' or 'very likely' to use an expanded KTRACS system. Moreover, 39% of physicians reported improved patient adherence as a possible benefit of an expanded KTRACS.

Discussion

The majority of respondents reported using KTRACS. They also reported they did not have a program to track medication refills other than KTRACS. This gap could be filled by expansion of KTRACS. Physicians in Sedgwick County that have been in practice less than 20 years reported being more likely to use an expanded version of KTRACS than physicians who have been in practice 20 years or longer. Many physician respondents reported they would be likely or very likely to use an expanded KTRACS.

Contact:
Clay Jarrell, MS-4
(316) 772-7195
cjarrell@kumc.edu

Department: Preventive Medicine and Public Health
Faculty Mentor: Michelle Redmond, Ph.D.
Poster Number: 4

Category: Student
Session: Morning Poster
Location: Dean's Entrance

Diet and Exercise Behaviors in African American Women at Risk for PAD

Letisha Ferris, MS-4, Michelle Redmond, Ph.D., Tracie Collins, M.D., MPH

University of Kansas School of Medicine-Wichita

Introduction

African-American (AA) women have the highest prevalence of peripheral arterial disease (PAD). Dietary patterns in this population are associated with an increased risk for PAD. Prospective studies on diet and PAD are lacking. Our prospective observational study aims to determine the level of nutritional self-efficacy in AA women at risk for PAD.

Methods

Women were recruited from a population that was determined to be ineligible for a parent study that examined walking impairment in AAs within the Wichita and Kansas City area. Inclusion criteria for participation: Female, AA, PAD risk factors, no objective evidence of PAD (ankle-brachial index > 0.95), and age (> or = 55 years). Participants completed demographic surveys and nutrition and physical activity questionnaires. Preliminary data was analyzed using SPSS. Frequencies were tabulated on demographic questions and nutrition behaviors.

Results

We interviewed a total of 93 African American women (mean age = 68). The majority were retired (67%), and had received some college education (48%). Preliminary data reveals that the majority of AA women possess a high level of nutritional self-efficacy. We found most participants were confident they could reduce fat in cooking (74.2%) and in their diet (75.3%), maintain portion control (75.3%), increase fruits/vegetables (51.6%), and select lower calorie foods (73%).

Discussion

Further data evaluation will help to determine if there is a correlation between the development of PAD and nutritional self-efficacy. Interventional studies are needed to further evaluate the impact of diet modification on the onset and progression of PAD.

Contact:
Letisha Ferris, MS-4
(316) 461-6143
lferris3@kumc.edu

Department: Preventive Medicine and Public Health
Faculty Mentor: Elizabeth Ablah, Ph.D., MPH
Poster Number: 5

Category: Student
Session: Morning Poster
Location: Dean's Entrance

An Exploration of Health, Beauty, and Body Satisfaction in African American Women with Diabetes

Kristin Constance, MS-4, Alejandra Vega, MS-4, Michelle Redmond, Ph.D., M.S.,
Elizabeth Ablah, Ph.D., MPH

University of Kansas School of Medicine-Wichita

Introduction

Historically, African American (AA) women have described greater body satisfaction than Caucasian women. Body satisfaction in AA women has not been explored within the specific diagnosis of diabetes. This study examined the interactions of health, beauty, and body satisfaction in AA women with diabetes.

Methods

AA women ages 18 and older with type 2 diabetes were interviewed about their definitions of health, beauty, and body satisfaction. Participants were asked 11 open-ended questions, focused on two broad categories of health status and body image. Interviews were individually analyzed by three members of the team in two rounds of coding.

Results

Five broad themes were identified: defining health, self-accountability, defining beauty, body satisfaction, and connections between health, beauty, and body satisfaction. Various subthemes were identified, such as defining the body in terms of appearance or in terms of function, and media influence on beauty.

Discussion

This study suggests a multifactorial approach is needed to understand an AA woman's experience of having diabetes. The study demonstrated three major contradictions. The first within the context of beauty, in which participants directly and indirectly defined themselves in contrasting ways. The second contradiction was participants rejection of the media's definition of beauty as 'thin,' while also rejecting themselves for being overweight. The final contradiction was acceptance of the body in terms of functionality, and rejection in terms of appearance. These contradictions suggest an internal struggle is present within AA women with diabetes about how to view themselves within the context of their disease.

Contact:
Kristin Constance, MS-4
(316) 312-6827
kconstance@kumc.edu

Department: Obstetrics & Gynecology
Faculty Mentor: David Grainger, M.D., MPH
Poster Number: 6

Category: Resident
Session: Afternoon Poster
Location: Dean's Entrance

Larks versus Owls: Chronotype Based on Medical Specialty Choice

Janet Eddy, M.D., Jennifer Duong, MPH, Jordan Meyer, MS-4, Milan Bimali, Ph.D., Laura Tatpati, M.D., David Grainger, M.D., MPH

University of Kansas School of Medicine-Wichita

Introduction

Chronotype is the propensity for an individual to prefer a certain time of day for sleeping and activities; which is broken down to morningness chronotype (MC) or 'lark' and eveningness chronotype (EC) or 'owl.' Many psychologic and physiologic functions are thought to be linked by this fluctuation in circadian rhythm. This study aims to determine chronotype among physicians and medical students, and determine if there is an association between chronotype and medical specialty choice.

Methods

A web-based survey was sent to forth year medical students attending KUSM-W, KUSM-W resident physicians, and the Department of Obstetrics and Gynecology attending physicians. Survey questions included the validated 13-item scale of morningness, and respondent demographics. Surveys were collected for two months.

Results

Of 147 respondents, the majority fell into the intermediate chronotype (IC) category (49.7%, n=73). Twelve (8.2%) respondents were ECs. Of respondents either practicing or interested in Obstetrics and Gynecology, 51.2% (22 of 43) were MCs. Among all other specialties, the majority of respondents were ICs (51.9%, 54 of 104). IC was most common amongst both women and men (51.9% and 47.1%, respectively), and across three age groups (18-24y, 25-34y, 45-54y).

Discussion

Chronotype is thought to influence psychologic and physiologic functions, which may be considered when choosing a medical specialty. Our results suggest respondents practicing or interested in Obstetrics and Gynecology tended toward morningness. Many questions remain in the area of medical specialty determination and satisfaction, and further study is needed to assess whether chronotype is insightful during career decision making.

Contact:
Jennifer Duong, MPH
(316) 962-3126
jduong@kumc.edu

Department: Family & Community Medicine
Faculty Mentor: N/A
Poster Number: 7

Category: Faculty
Session: Afternoon Poster
Location: Dean's Entrance

Is Interviewing for Family Medicine Less Burdensome than Other Specialties?

Kari Nilsen, Ph.D. ¹, Anne Walling, M.D. ¹, Jill Grothusen, MS-4², Samantha King, MS-4², Cole Gillenwater, M.D. ¹, Paul Callaway, M.D. ¹

University of Kansas School of Medicine-Wichita¹, University of Kansas Medical Center²

Introduction

This study compared cost and time spent interviewing for family medicine residency positions with those interviewing for other specialties.

Methods

A 33-item survey covering cost, time, and other factors was sent to all students who participated in the 2016 national residency matching program (NMRP) at the University of Kansas School of Medicine. Students were surveyed electronically for four weeks immediately after announcement of NRMP results. Class leaders sent social media reminders up to three times per week. An incentive donation to the class graduation celebration fund was proportional to the overall response rate.

Results

The response rate was 84% (163/195). The 31 (19%) FM applicants completed significantly fewer applications, 19 versus 43 for other specialties, but received equivalent number of interview offers (16) as classmates applying to other specialties (17). They also reported significantly less expense, fewer days, less out of state travel, and less disruption of interview plans. The average costs were \$2,300 for FM and \$3,800 for other specialties with ranges from less than \$100 to \$12,000. Fifty-four percent of FM applicants spent under \$1,000. Applicants to FM reported 18.7 days interviewing compared to 26.9 for other specialties. Students reported <90 days interviewing. For FM, 84% of applications resulted in an invitation to interview compared to 40% for other specialties. About one third of interview offers did not result in a completed interview.

Discussion

FM applicants had lower expenses and spent less time than classmates applying to other specialties, but were offered and completed equivalent number of interviews.

Contact:
Kari Nilsen, Ph.D.
(316) 293-1894
knilsen@kumc.edu

Department: Obstetrics & Gynecology
Faculty Mentor: David Grainger, M.D., MPH
Poster Number: 8

Category: Resident
Session: Afternoon Poster
Location: Dean's Entrance

Improving Feedback to Medical Students and Opinions Regarding Gamification in Obstetrics and Gynecology

Angela Strang, M.D.¹, Tiffany Leverenz, M.A.², Jennifer Duong, MPH¹, Evan Palmer, Ph.D.²,
David Grainger, M.D., MPH¹

University of Kansas School of Medicine-Wichita¹, Wichita State University²

Introduction

Feedback is essential to clinical education, but students report being dissatisfied with feedback quality. Gamification is successful in many domains, with positive student perceptions of gamified interventions, but mixed results in education have delayed adoption in this field. Our program evaluated the possibility of adding gamification to enhance clerkship experience and improve feedback to medical students. This study investigated the quality of feedback medical students receive during clerkships and attitudes toward gamifying the obstetrics and gynecology clerkship.

Methods

Third and fourth year medical students were invited to complete a survey rating quality of feedback regarding surgical skills, weekly evaluations, midterm, and overall feedback. Following the survey, students were invited to participate in focus groups exploring feedback received during clerkships and opinions regarding methods of feedback (specifically gamification) that could be implemented during the obstetrics and gynecology clerkship.

Results

Overall quality scores were in the moderate range, averaging 3.185 across all categories, corresponding to 'Good' on the 5-point Likert scale. Focus group participants stated feedback received in this clerkship is superior to other clerkships and was best for surgical skills and weekly evaluations. Focus groups revealed reluctance toward gamification, fearing added competition.

Discussion

Students stressed the importance of actionable feedback for performance improvement. Being intrinsically motivated to succeed in a competitive environment made students apprehensive about gamification. Students were open to intrapersonal gamification, such as tracking their clerkship progress, which should be explored further. Further research is needed to determine if gamification would be successful within medical student clerkships.

Contact:
Jennifer Duong, MPH
(316) 962-3126
jduong@kumc.edu

Department: Psychiatry & Behavioral Sciences
Faculty Mentor: Matthew Macaluso, D.O.
Poster Number: 9

Category: Resident
Session: Afternoon Poster
Location: Dean's Entrance

Residency Education Surrounding the Use of Contraception and Family Planning
Counseling in Patients with Severe and Persistent Mental Illness (SPMI): A Survey
Study

Christina Bowman, M.D.¹, Rosey Zackula, M.A.¹, Christina Bourne, M.D.², Donna Sweet, M.D.¹,
Matthew Macaluso, D.O.¹

University of Kansas School of Medicine-Wichita¹, UC Davis²

Introduction

Individuals with severe and persistent mental illness (SPMI) have complex symptoms and require ongoing treatment. Residency curriculums across specialties should include training and education on these topics. The primary goal of this study is to assess adequacy of training in the areas of contraceptive prescribing and family planning for patients with SPMI.

Methods

Survey invitations were emailed to multiple residency programs within the United States. REDCap, a web-based database, was used to administer the survey. Survey questions assessed resident training, knowledge, attitudes, and barriers regarding contraceptive use in patients with SPMI.

Results

All submitted surveys were included in the analysis. Over 60% of all respondents 'disagree' or 'strongly disagree' that they received adequate training on prescribing contraceptives for patients with SPMI. Over 51% of participants stated they would be 'willing to prescribe contraception to SPMI patients if they had adequate training during residency.' Regarding training barriers, almost 40% of residents reported 'limited training regarding types of contraception that are appropriate for SPMI patients.' Over 38% reported they were 'unsure of drug interactions' and 38% reported 'limited training about the reproductive health needs of SPMI patients.'

Discussion

Residents agreed education and training on contraception in the SPMI patient population was lacking. The willingness of most residents to prescribe contraception is encouraging; however, they reported a need for more education. Results indicate the need for additional education and training regarding contraceptive use in the SPMI population. We hope that by identifying this issue, residency programs will modify their curricula to allow for additional training.

Contact:
Christina Bowman, M.D.
(410) 253-8101
cbowman2@kumc.edu

Department: Emergency Medicine
Faculty Mentor: Bradley Jackson, M.D.
Poster Number: 10

Category: Student
Session: Morning Poster
Location: Sunflower Room

Predictive Nature of Prior Benzodiazepine Dosing On Future Requirements in Repeated Acute Alcohol Withdrawal

William Cleek, MS-4¹, Bradley Jackson, M.D.², Elizabeth Ablah, Ph.D.¹,
Niaman Nazir, M.D., MPH², Stephen Thornton, M.D.²

University of Kansas School of Medicine-Wichita¹, KUMC-KC²

Introduction

Repeated alcohol withdrawal episodes bring about persistent changes in neuronal excitation that exacerbate the severity of subsequent withdrawal episodes. This study sought to assess if past benzodiazepine dosages for the treatment of alcohol withdrawal syndrome (AWS) are predictive of the amount of benzodiazepine therapy used in subsequent admissions for acute alcohol withdrawal.

Methods

This retrospective chart review was conducted with patients admitted for AWS from December 1, 2007 and February 15, 2017. Benzodiazepine administrations and dosages were abstracted. Patients with two or more admissions for AWS were used to assess for a relationship between withdrawal number and benzodiazepine requirements.

Results

Most patients (83.92%) were treated with a medication from the benzodiazepine drug class, 55.05% of whom were treated using Lorazepam. The mean Lorazepam dosage requirements decreased by an average of 2.94mg from a patient's first to last admission. The average dose required per admission decreased from 13.14mg to 11.15mg across the first two admissions before gradually increasing to an average of 20mg over admissions two to five.

Discussion

The results suggest that Lorazepam was the most utilized medication for treatment of AWS at the University of Kansas Hospital. On average, patients did not require more Lorazepam in subsequent admissions for AWS. Future studies need to control for potentially confounding variables such as length of stay, complicating medical conditions, and the administration of treatment medications not included in the final analysis of this study.

Contact:
William Cleek, MS-4
(913) 907-8680
wcleek@kumc.edu

Department: Internal Medicine
Faculty Mentor: N/A
Poster Number: 11

Category: Faculty
Session: Morning Poster
Location: Sunflower

Is the ACP Correct to Recommend Tramadol as Treatment for Chronic Back Pain?

Lisa Le, M.D., Robert Badgett, M.D.

University of Kansas School of Medicine-Wichita

Introduction

Chronic back pain is a common and vexing problem. The American College of Physicians (ACP) 2017 guideline recommends tramadol as second line treatment whereas the CDC recently discouraged opiates. We will reanalyze and update the Cochrane systematic review that underpinned the ACP recommendation.

Methods

We updated the Cochrane meta-analysis with a search for newer trials using a mix of methods as described at openMetaAnalysis (<https://openMetaAnalysis.github.io/>). We subgrouped the trials based on registration prior to execution. We conformed to methodological recommendations by using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines except for negative conclusions we did not qualify the of strength of evidence with a Grading of Recommendations Assessment, Development and Evaluation (GRADE) Profile.

Results

Results are online at <https://openMetaAnalysis.github.io/tramadol>. When all trials are pooled together there is small, significant reduction in pain (standardized mean difference -0.34; 95% confidence interval: -0.65 to -0.02) from tramadol; however, the heterogeneity was substantial ($I^2 = 89%$; 95% confidence interval: 81% to 94%). We found significant differences in results between registered and unregistered trials with benefit confined to unregistered trials. Unregistered trials may lead to inflated results due to both publication bias and selective reporting bias. Two of the four unregistered trials reported selecting patients after an open-label run-in phase - which may also inflate results. In addition, the short duration of these trials (the longest lasting 13 weeks) does not seem relevant to the treatment of a chronic disease.

Discussion

We disagree with the ACP recommendation of tramadol for chronic back pain.

Contact:
Lisa Le, M.D.
(316) 706-1086
lle@kumc.edu

Department: Internal Medicine
Faculty Mentor: Jing Liu, M.D.
Poster Number: 12

Category: Student
Session: Morning Poster
Location: Dean's Entrance

The Effect of Compliant CPAP Use on Weight Change in Obstructive Sleep Apnea

Francis Phan, MS-4, Ramon Nola, MS-4, Menaka Mahendran, M.D., Danse Bi, MS-4, Mallory Forsyth, MS-4, K. James Kallail, Ph.D., Jing Liu, M.D.

University of Kansas School of Medicine-Wichita

Introduction

Obstructive sleep apnea (OSA) is the most common sleep-related breathing disorder and obesity is the strongest risk factor. The metabolic hormone dysregulation in OSA may lead to subsequent weight gain. Compliant treatment with continuous positive airway pressure (CPAP) could improve the underlying hormone dysregulation and lead to weight loss. This study sought to evaluate the relationship of compliant CPAP therapy on weight among Veterans Affairs (VA) patients with OSA.

Methods

This retrospective cohort study included patients 21 years or older and newly diagnosed with OSA through polysomnography. All patients followed-up at one and two years. Patients with central hypoventilation syndromes or in a weight loss program were excluded. Patients were stratified into CPAP compliant and noncompliant groups. Weight was recorded at diagnosis and again at one and two years after initiation of CPAP therapy.

Results

Most patients were male with a mean age of 62. The mean weights (in pounds) at diagnosis, one year, and two years respectively, were 236, 236 and 237. There was no difference between the two groups in age, OSA severity, or presence of comorbidity. For compliant and noncompliant groups respectively, the mean weights in pounds at diagnosis were 236 and 236, at one year were 234 and 238, and at two years were 238 and 235.

Discussion

Compliance with CPAP therapy was not associated with weight change. However, effective therapy should lead to better overall health. With compliant CPAP use, patients should be more mentally and physically prepared to make lifestyle changes for weight loss and health benefits.

Contact:
Francis Phan, MS-4
(316) 990-3481
fphan@kumc.edu

Department: Internal Medicine
Faculty Mentor: K. James Kallail, Ph.D.
Poster Number: 13

Category: Student
Session: Morning Poster
Location: Sunflower

HIV Preventative Care in Asian and Pacific Islanders in Kansas

Pie Pichetsurnthorn, MS-2, Stephanie Pankow, D.O., Christina Frank, B.A., Donna Sweet, M.D.,
K James Kallail, Ph.D.

University of Kansas School of Medicine-Wichita

Introduction

Although HIV prevalence among Asian and Pacific Islanders (APIs) is low, it is the only ethnic group with a significant average annual increase in diagnosis rates since 2001. Without evidence to indicate APIs are at a higher level of risk behaviors than other ethnic groups, there are additional cultural, linguistic, economic, and legal barriers to HIV prevention among this group. The purpose of this study was to investigate how education, resource accessibility, and cultural taboo contribute to the effectiveness of HIV preventative care in APIs in Kansas.

Methods

Eleven Kansas API patients diagnosed with HIV each participated in a one hour, audio-recorded interview. Questions included knowledge of HIV preventative care prior to and after diagnosis, and perception of API community awareness of HIV-related resources. Interviews were transcribed and a qualitative narrative themes analysis was completed by two independent evaluators.

Results

Overall, a lack of patient awareness was revealed concerning HIV prevention related to education and resources for the API population. Sexual behavior was identified as a cultural taboo in all interviews. Common misconceptions concerning HIV transmission and prevention, such as HIV only affecting gays and 'bad people', fueled this taboo and were highly stigmatized.

Discussion

HIV testing is a USPTF grade A recommendation. Physicians should be mindful and diligent in their approach to screening API patients. The lack of patient awareness in APIs was driven by a complex cultural dynamic that established a closed, intolerant community, provided a false sense of security, and reinforced the desire for cultural preservation.

Contact:
Pie Pichetsurnthorn, MS-2
(316) 737-9458
ppichetsurnthorn2@kumc.edu

Procalcitonin Guided Antibiotics in Sepsis: A Living Systematic Review and Meta-analysis

Fredy Nehme, M.D.¹, Habiba Hassouna, M.D.², Robert Badgett, M.D.¹

University of Kansas School of Medicine-Wichita¹, Cleveland Clinic Foundation²

Introduction

Severe sepsis accounts for high ICU admissions and mortality rates requiring prompt diagnosis and initiation of antimicrobial therapy. However, overuse of antibiotics is also problematic, which makes the use of biomarkers such as Procalcitonin (PCT) for guiding antibiotic therapy appealing. Currently, hospitals do not consistently incorporate PCT into management of sepsis.

Methods

We included randomized trials that compared PCT guided antibiotics versus usual care in patients with sepsis admitted to the ICU. We searched PubMed, Google Scholar, and Cochrane Central Register of Controlled Trials through November 2016. We followed PRISMA guidelines and qualified strength of evidence with a GRADE Profile.

Results

We included 11 randomized control trials comparing PCT-guided antibiotics with usual care in our final analysis. We found significantly shorter duration of antibiotics with PCT-guided therapy without increase in mortality. Meta-regression found significant influence of the duration of antibiotics in the control group and how early the PCT algorithm was invoked but not the cut-off level of PCT. However, substantial heterogeneity remained after meta-regression. GRADE profile assesses quality of evidence as low.

Discussion

Low quality evidence suggests that PCT-guided therapy may aid antimicrobial stewardship without change in mortality or other health care outcomes. This would ultimately decrease healthcare costs and consequences of unnecessary usage of antimicrobials. In addition, the correlation of benefit with duration of antibiotics in the control groups suggests benefit is focused in either hospitals with sicker patients or lesser antibiotic stewardship. However, given the heterogeneity of the studies, applying PCT-guided algorithms universally remains controversial and further studies are needed.

Contact:
Fredy Nehme, M.D.
(316) 350-5577
fnehme@kumc.edu

Department: Surgery
Faculty Mentor: K. James Kallail, Ph.D.
Poster Number: 15

Category: Student
Session: Afternoon Poster
Location: Sunflower

Oronasal Fistula and Velopharyngeal Insufficiency Following Primary Cleft Palate Repair Performed at the Wichita Cleft Palate Clinic from 2006 through 2015

Jacob Smith, MS-4¹, K. James Kallail, Ph.D.¹, Bruce Ferris, M.D.²

University of Kansas School of Medicine-Wichita¹, Plastic Surgery Center²

Introduction

Cleft palate has an estimated prevalence of 11.5 cases per 10,000 births in the United States. Oronasal fistulas and velopharyngeal insufficiency (VPI) are two complications of primary cleft palate repair. Previous studies are conflicting regarding the relationship between cleft type and these complications. The purpose of this study is to evaluate the frequency of oronasal fistula and VPI at the Wichita Cleft Palate Clinic (WCPC) and to evaluate the association between cleft type and oronasal fistula and VPI.

Methods

This was a 10-year retrospective review of patients who underwent primary cleft palate repair with one surgeon at the WCPC. Complications were the formation of an oronasal fistula and/or VPI. Descriptive statistics were calculated and chi-square analyses were performed to determine if cleft type was associated with formation of these complications.

Results

Eighty-six patients were examined in this study; 19.8% developed an oronasal fistula and 9.3% developed VPI following primary cleft palate repair. No association was found between cleft type and these two complications.

Discussion

The frequencies of oronasal fistula and VPI in the study population were greater than those published in the literature. These findings and the lack of an association between cleft type and oronasal fistula or VPI may be related to the small sample size, low surgical volume, or other un-measured patient factors. The findings of this study can be used by the WCPC providers to inform their clinical decisions regarding cleft patient management.

Contact:
Jacob Smith, MS-4
(913) 961-8249
jsmith27@kumc.edu

Department: Internal Medicine
Faculty Mentor: Rami Mortada, M.D.
Poster Number: 16

Category: Student
Session: Afternoon Poster
Location: Sunflower

Does Knowledge of Anti-Müllerian Hormone Level Assist Medical Students and Residents with Pregnancy Planning?

Maxwell Magee, MS-4, Kaitlin Ditch, M.D., Russell Locks, MS-1, K. James Kallail, Ph.D.,
Rami Mortada, M.D.

University of Kansas School of Medicine-Wichita

Introduction

The mean age of mothers at first birth in the United States has steadily increased since 1970. As fertility and ovarian reserve decline with age, women who delay pregnancy may miss their fertility window. Anti-Mullerian hormone (AMH) level is one screening tool for ovarian reserve. This study explored pregnancy plans of medical students and residents and if knowledge of AMH levels would alter their timing of pregnancy.

Methods

Medical students and residents at one medical school were recruited to complete a survey and have their AMH level measured. The survey assessed patient characteristics, pregnancy history, and future pregnancy plans. Participants were notified of AMH levels, educated on potential clinical implications, and asked if knowledge of their AMH level would alter their timing for future pregnancy.

Results

There was a total of 53 participants. Residents (n=35, mean age 29) were most likely to report wanting a child in the next 0 - 3 years, whereas medical students (n = 18, mean age 26) were most likely to report wanting a child in the next 3 - 5+ years. Eleven percent (n = 6) of participants reported plans to change their timing of pregnancy after learning their AMH level.

Discussion

Participants were most likely to report planning pregnancy during the final years of training. When presented with AMH levels, some women reported changing their pregnancy plans. This may indicate that AMH has utility in screening ovarian reserve for medical students and residents to assist with pregnancy planning.

Contact:
Maxwell Magee, MS-4
(913) 669-9336
mmagee2@kumc.edu

Department: Internal Medicine
Faculty Mentor: Robert Badgett, M.D.
Poster Number: 17

Category: Resident
Session: Afternoon Poster
Location: Sunflower

A Preliminary Analysis of Minimizing Blood Transfusions with Conservative Phlebotomy

Layth Al Attar, M.D., Robert Badgett, M.D.

University of Kansas School of Medicine-Wichita

Introduction

Critically ill patients are at risk of transfusion. Minimizing volume of blood drawn for laboratory testing may avoid transfusions.

Methods

We conducted a living systematic review with methods of openMetaAnalysis (<http://openmetaanalysis.github.io/>) . We searched for studies using a mix of methods as described at openMetaAnalysis. We conformed to methodological recommendations of PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines except due to negative conclusions we did not qualify the strength of evidence.

Results

All studies addressed adults in intensive care with arterial catheters. Across all studies, conservative phlebotomy non-significantly reduced the proportion of patients receiving transfusion (Relative Risk 0.76; 95% confidence interval: 0.54 to 1.08). The heterogeneity of results was moderate ($I^2 = 47%$; 95% confidence interval: 0% to 76%). To address heterogeneity, a subgroup analysis by type of intervention showed strong, but still statistically insignificant results from combining the return of dead space volumes from in-line arterial sets to patients and the use of small-sized blood collection tubes. Using the judicial analogies of Diamond, there is 'reasonable suspicion' of benefit from using small tubes. Results are available online at: <http://openmetaanalysis.github.io/blood-draw-anemia>.

Discussion

Results show no statistically significant benefit of using conservative phlebotomy. The projected benefit is potentially meaningful, especially for using small tubes, and a larger study is required. The results are at risk of publication bias due to no available large, registered, randomized trials. In addition, there are no comparisons of commercial VAMP closed system with ad hoc closed system.

Contact:
Layth Al Attar, M.D.
(316) 677-7300
lalattar@kumc.edu

Do Characteristics of Resident Applicants Predict Future Board Certification in Psychiatry?

Tara Richardson, M.D., Matthew Macaluso, D.O., Rosey Zackula, M.A.

University of Kansas School of Medicine-Wichita

Introduction

The overall goal of this study was to understand if residency applicants in psychiatry could be studied in a systematic way that informs resident selection. In order to do so, we completed a pilot study using a retrospective, cross-sectional design to identify characteristics of residency applicants that predicted certification by the American Board of Psychiatry and Neurology (ABPN).

Methods

We extracted data from personnel files and application materials of 106 residents who entered the psychiatry program at the University of Kansas School of Medicine-Wichita between 1972 and 2010. A dichotomous outcome (certified or not certified) was utilized to evaluate associations between applicant characteristics and future ABPN certification. To estimate the missing data and correct for the possibility of a biased sample, we conducted five runs of multiple imputations. All available information was incorporated into the runs, including personal characteristics, medical school performance, and residency performance.

Results

Pooled model results showed that applicants with prior experience in volunteer work (RR_{adj} ranging from 1.3 to 3.5) or research (RR_{adj} ranging from 2.9 to 7.9) were significantly more likely to become board certified when compared with those with no such experience.

Discussion

Our data show that medical students who are involved with volunteer work or research are significantly more likely to achieve ABPN certification. An interesting finding from our sample was the lack of association between performance on USMLE/COMLEX step examinations and future board certification, which contradicts literature from other specialties. These results demonstrate that systemic evaluation of residency applicants may inform candidate selection.

Contact:

Tara Richardson, M.D.
(316) 619-3739
trichardson4@kumc.edu

Department: Biomedical Engineering
Faculty Mentor: Kim Cluff, Ph.D.
Poster Number: 19

Category: Student
Session: Morning Poster
Location: Sunflower

Toward the Development of a Skin Patch Sensor to Monitor Cardiac Function: An investigation into the Electromagnetic Properties of Fluid in the Left Ventricle of a Bovine Heart

Fayez Alruwaili, B.S., Kim Cluff, Ph.D., Jacob Griffith, B.S., Jeremy Patterson, Ph.D.

Wichita State University

Introduction

The importance of ventricular stroke volume (SV) for the assessments of cardiac function has been clearly investigated. Thus, the focus of this study was to develop a simple to use, point-of-care sensor that could be applied like an adhesive bandage that could potentially measure SV.

Methods

A patch sensor was designed from a single baseline component, comprised of a trace of copper, configured into a square planar spiral. The sensor self-resonates when impinged upon by a specific range of radio frequency (RF) waves. An elastic bladder was inserted into the left ventricle (LV) of a bovine heart and a 100 mL syringe was used to simulate stroke volume. Shifts in the sensor's resonant frequency were registered as fluid was pumped into the LV chamber. A statistical correlation analysis and an ANOVA followed by a multiple comparison test adjusted for a Bonferroni ($\alpha = 0.05$) was performed to determine the sensor performance in measuring SV.

Results

Changes in the dielectric properties in the left ventricle (LV) due to changes in fluid volume were directly correlated to the measurements of SV. Stroke volume was registered as shifts of 80.16 kHz in the sensor's response signal. Shifts in the principal resonance frequency and volume changes in the LV had a statistical correlation of $R^2 = 0.9849$.

Discussion

This work presents a foundation for the development of a skin patch sensor that may be used as a non-invasive, point of care diagnostic to identify abnormal heart function by assessing the fluid dynamic of the LV chamber.

Contact:
Fayez Alruwaili, B.S.
(316) 990-6514
fhalruwaili@gmail.com

Department: Orthopaedics
Faculty Mentor: N/A
Poster Number: 20

Category: Faculty
Session: Morning Poster
Location: Sunflower

Pluripotent Cells from Mouse Peripheral Nerves after BMP-2 Challenge Can Be Induced into Osteoblastic Cells

Shang-You Yang, M.D., Ph.D.¹, Renyi Sun, M.D.², Xuan Gong, M.D.²,
Michael Heggeness, M.D., Ph.D.¹

University of Kansas School of Medicine-Wichita¹, Wichita State University²

Introduction

Improvement of biologic treatments for non-union of fractures is much needed in orthopaedic practice. Bone morphogenetic protein-2 (BMP-2) has been emerged as a potent regulator in promoting bone growth. During our recent investigations to understand the direct effects of rhBMP-2 on peripheral nerves using a mouse model, a population of quiescent cells within the peripheral nerves of adult mice was identified that responded to BMP-2 stimulation and rapidly proliferated. Our hypothesis is that this population of cells may represent a special group of pluripotent stem cells which could be induced into other types of cells such as osteoblastic cells. We refer to them as Nerve Derived Adult Pluripotent Stem cells or, NEDAPS cells. The current study examined the mouse NEDAPS cell potential to differentiate into osteoblastic cells. NEDAPS cells were isolated from BMP2-challenged mouse sciatic nerves by collagenase and trypsin extraction.

Methods

Cells were cultured in a stem cell maintenance medium and confirmed expression of KLF4, Sox2, c-Myc, and Oct4 before differentiation. Cells were then sub-cultured in a complete osteogenic cell induction medium for seven days, followed by histological and molecular analyses.

Results

After induction, cells showed strong staining for type I collagen and alkaline phosphatase, suggesting the structural and functional properties of the osteoblastic cells. Further, real-time PCR revealed significant expression of the osteoblast markers osteocalcin, osteopontin, and type I collagen.

Discussion

It appears that the NEDAPS cells can be readily induced to osteoblastic cells, suggesting a potential therapeutic means for bone repair and other regenerative therapies.

Contact:
Shang-You Yang, M.D., Ph.D.
(316) 268-5455
syang6@kumc.edu

Department: Medical Sciences
Faculty Mentor: John Thyfault, Ph.D.
Poster Number: 21

Category: Student
Session: Morning Poster
Location: Sunflower

Angptl4 Expression in Skeletal Muscle is Associated with High Aerobic Capacity and Protection Against High Fat Diet-Induced NAFLD and Insulin Resistance

Tommy Robinson, MS-2, John Thyfault, Ph.D.

University of Kansas School of Medicine-Wichita

Introduction

The most common liver disease in the United States is non-alcoholic fatty liver disease (NAFLD), which can progress to non-alcoholic steatohepatitis (NASH), cirrhosis, and hepatocellular carcinoma. NAFLD is also associated with insulin resistance (IR). Low aerobic capacity is a risk factor for NAFLD and IR, but the mechanism(s) underlying susceptibility are unknown.

Methods

To investigate these links, we used rats bred by divergent selection for high or low endurance running capacity [High-capacity runners (HCR) and low-capacity runners (LCR)], providing rats of intrinsically high (HCR) and low (LCR) aerobic capacities in the absence of exercise. We also utilized acute high-fat diets (HFD) (45% kcal fat) to induce NAFLD and IR. A hyperinsulinemic-euglycemic clamp revealed that the LCR displayed IR on the acute HFD while the HCR displayed protection against this insult. Further analysis revealed that skeletal muscles of HCR had a unique increase in glucose disposal during the HFD, while glucose disposal stayed unchanged in LCR. RNA sequencing was performed in white gastrocnemius to determine mechanisms impacting HFD-induced IR.

Results

A primary up-regulated gene in the HCR over LCR was Angiopoietin-Like 4 (Angptl4), which was validated by follow-up rtPCR.

Discussion

Angptl4 has been shown to inhibit lipoprotein lipase (LPL), thereby inhibiting the use of fatty acids for energy in skeletal muscle. Up-regulation of Angptl4 in the HCR may allow for more efficient glucose disposal during HFD conditions. Further investigation of Angptl4 will lead to a better understanding of how increased aerobic capacity may prevent HFD-induced IR and NAFLD.

Contact:
Tommy Robinson, MS-2
(620) 344-7541
trobinson6@kumc.edu

MiRNA-762 Causes Aortic Stiffening by Inhibiting Sprouty1

Brandon Layton, MS-2¹, Kim Montaniel, Ph.D. Candidate², Mark Harrison, M.D.¹

University of Kansas School of Medicine-Wichita¹, Vanderbilt Clinical Pharmacology Research²

Introduction

One of the most detrimental effects of hypertension is aortic stiffening which leads to end-organ damage in the brain, kidney, and blood vessels. MicroRNA-762 (miR-762) plays an important role in the pathogenesis of aortic stiffening. This study aims to show that miR-762 causes fibrosis through inhibiting Sprouty1.

Methods

1: To show that miR-762 directly targets the 3'UTR of Sprouty1, a luciferase assay was performed. It was expected that miR-762 mimic should have decreased the Sprouty-1 containing luciferase signal in a dose-dependent manner. 2: miR-762 was transfected to Sprouty1-expressing cells, and sprouty1 mRNA levels were analyzed via qRT-PCR. 3: To test miR-762 inhibition of Sprouty1 at the physiological level, qRT-PCR was used to analyze Sprouty1 protein levels in the aortas of hypertensive mice treated with a miR-762 inhibitor (LNA-762).

Results

1: The expression of luciferase and the 3'UTR of Sprouty1 was significantly depressed in a dose-dependent manner with increasing levels of miR-762 co-transfection. 2: Transfection of miR-762 to the Sprouty1-expressing cells led to the disappearance of Sprouty1 mRNA. 3: Hypertensive mice that were treated with LNA-762 had significantly upregulated expression of Sprouty1 protein in their aortas.

Discussion

These three lines of evidence demonstrate that miR-762 promotes aortic stiffening through its inhibitory effects on Sprouty1, making inhibition of miR-762 a potential treatment for aortic stiffening.

Contact:
Brandon Layton, MS-2
(316) 312-3031
blayton@kumc.edu

Department: Wichita Collegiate High School
Faculty Mentor: Maricar Harris, B.S.
Poster Number: 23

Category: Student
Session: Morning Poster
Location: Sunflower

Health Benefits of n-3 Fatty Acids

Lauren Johnson, Zhonghao (Charlie) Xu, Matthew Bajaj, Kevin Edwards, Taylor Cusick-Wetta,
Maricar Harris, B.S.

Wichita Collegiate School

Introduction

Research studies have continued to show the importance of n-3 fatty acids, such as docosahexaenoic (DHA) and eicosapentaenoic (EPA) acid, on human health. Potential health benefits have been seen in respiratory, cardiovascular, ocular, and muscular systems. In addition, extensive research has linked n-3 to improved cognitive health and performance throughout the stages of human life. The purpose of our study was to examine and explore specific impacts n-3 has on cognitive health and the mechanisms of the effects.

Methods

We examined articles from scientific journals accessed from online sources including the National Center for Biotechnology Information, ScienceDirect, ResearchGate, and The American Journal of Clinical Nutrition.

Results

N-3 fatty acids have various cognitive benefits. Their consumption in gestating mothers and young infants has been linked with children performing at higher cognitive levels. Dietary consumption of n-3 has been associated with increased neural fluidity, which can improve reaction time and memory storage. N-3 has also aided in neuronal repair of patients suffering from traumatic brain damage largely due to its roles in facilitating endothelial proliferation, controlling inflammation levels, and reducing oxidative stress and plaque buildup. Despite the positive effects of n-3, there is concern over contaminants found in our sources of n-3 fatty acids. Fish, the single largest source of n-3 fatty acids, are negatively affected by the natural process of bioaccumulation.

Discussion

There is a positive association between n-3 fatty acids and human health, but more research and analysis needs to be conducted before statements of causation can be made.

Contact:
Maricar Harris, B.S.
(316) 634-0433
mharris@wcsks.com

Department: Wichita Collegiate High School
Faculty Mentor: Maricar Harris, B.S.
Poster Number: 24

Category: Student
Session: Morning Poster
Location: Sunflower

Gas Chromatography: Analysis of Alpha-Linolenic Acid in Grass-fed Beef

Ellen Mines, Nicholas Dubois, Jacob (Jack) Bendell, Anthony Oyama,
Emily (Tessa) Sutherland, Maricar Harris, B.S.

Wichita Collegiate School

Introduction

Previous studies have demonstrated that grass-fed beef has a higher concentration of beneficial omega-3 fatty acids than grain fed beef. Although our synthesis procedure successfully extracted eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) from salmon samples, in order to consistently extract alpha-linolenic acid (ALA) from beef samples, the procedure required changes.

Methods

Variables were changed from our salmon procedure in order to thoroughly cook the beef. We used thinner slices of beef to increase surface area to maintain a cooking time of five to seven minutes. More than 100 samples of salmon and beef were collected and analyzed using a gas chromatograph. Using a GC standard, we identified peaks of ALA, EPA, and EHA.

Results

Using the standard, the ALA peak was at 14.782 minutes. Our samples averaged a time of 14.702 minutes. In order to get consistent ALA peaks, the beef must be fully cooked before extracting the lipids. The fat is best extracted from the beef once it has solidified and then re-heated.

Discussion

We found substantial amounts of EPA and DHA within the fatty acid content of our salmon. Revising our procedure allowed us to consistently obtain ALA peaks using beef samples. Next year's chemistry research class will use our results in order to continue research into the relative fatty acid concentrations of grass-fed and grain-fed beef.

Contact:
Maricar Harris, B.S.
(316) 634-0433
mharris@wcsks.com

Department: Orthopedics
Faculty Mentor: Bradley Bruner, M.D.
Poster Number: 25

Category: Resident
Session: Afternoon Poster
Location: Sunflower

Effect of BMP-2 Adherent to Sutures on Cartilage Repair in a Rat Xyphoid Model

Nathan Drummond, M.D., Bradley Bruner, M.D.

University of Kansas School of Medicine-Wichita

Introduction

Meniscal tears are a common orthopaedic problem, and are most commonly treated by arthroscopic meniscectomy. However, removal of meniscal tissue has been shown to have a negative impact on the biomechanical function of the knee joint, leading orthopaedic surgeons to repair meniscal tears when possible. Unfortunately, meniscal repairs often fail to heal, so a reproducible and inexpensive model to study cartilage repair and tissue engineering for meniscal repair is attractive. The specific aims of the current study are twofold: first to establish a reproducible, accurate, and inexpensive model of meniscal repair by using a surgical tear in the cartilage of the rat xyphoid process, and second to use this model to evaluate the influence of BMP-2 coated suture material on the repair of cartilage tears.

Methods

A longitudinal cut in rat xiphoid process was created then repaired using a single loop of suture coated in BMP-2 or an uncoated suture. At nine and 21 days post operatively, the rats were sacrificed and histologic specimens of the rat xiphoids were analyzed. In a blinded fashion, investigators assessed the healing of each specimen by grading on a scale from 0 - 5.

Results

The average healing scores seen in the BMP-2 coated suture groups at days nine and 21 were 4.083 and 3.222, respectively. In comparison, the average scores in the control groups (sutures without BMP-2) were 1.667 and 2.222. There was a statistically significant difference in the healing when comparing the control group day nine to both BMP groups ($P < 0.001$), and the control group day 21 to both BMP groups ($P < 0.004$).

Discussion

This study demonstrates the success of the rat xyphoid process model for studying cartilage repair. Additionally, this study demonstrates that BMP-2 introduction promotes healing of an avascular cartilage structure - with creation of cartilaginous tissue and not just a fibrous intermediary. Further investigations with increased sample size are warranted to characterize and quantify the improved cartilage healing seen with BMP-2 coated suture material.

Contact:
Nathan Drummond, M.D.
(210) 857-3814
ndrummond@kumc.edu

Department: Orthopedics
Faculty Mentor: Ryan Pate, M.D.
Poster Number: 26

Category: Resident
Session: Afternoon Poster
Location: Sunflower

Arthroscopy Knots Tying in Orthopaedic Education: A Three-Month Study of Individual Skill Progression

Tyler Bron, M.D., Ryan Pate, M.D.

University of Kansas School of Medicine-Wichita

Introduction

Multiple studies have shown a high rate (12% to 95%) of rotator cuff repair failures after arthroscopic surgery. The specific aim of this proposal was to evaluate and compare the level of training needed for learning and tying arthroscopic knots by evaluating biomechanical properties of the arthroscopic knots. The properties tested included knot security, loop security, time taken and overall comfort with tying knots.

Methods

Participants in this study were divided by experience level; PGY 1 residents, PGY 3 residents, and Sports trained surgeons. The two knots used in this study were the Tennessee Slider and the Weston. Each group went through three separate phases of knot tying, the first was tying knots without cannula or knot pusher, the second was with a knot pusher and the third was with a knot pusher through a cannula. The third phase was to simulate arthroscopic knot tying during surgery. During each phase participants tied four of each knot type.

Results

Group one took the most time between stages. There were significant differences in results based on the level of training of subjects in the study. The inexperienced subjects (PGY 1) made significant gains in measured parameters throughout the study with both knot configurations. While the more experienced subjects (PGY 3) showed modest gains and the most experienced group (Sports trained surgeons) had consistent results throughout.

Discussion

The results show that training inexperienced surgeons in simulated arthroscopic knot tying leads to improved knot performance, decreased time to tie, and increased overall comfort with the procedure.

Contact:
Tyler Bron, M.D.
(913) 526-8293
tbron@kumc.edu

Department: Surgery
Faculty Mentor: James M. Haan, M. D.
Poster Number: 27

Category: Student
Session: Afternoon Poster
Location: Sunflower

Pediatric Falls: Which Fall Variables Matter in Triage?

Michelle Baalman, MS-4¹, Ali Rueschhoff, MS-4¹, Kelsey Lu, M.S.¹, Elizabeth Ablah, Ph.D., MPH¹, Kelly Lightwine, MPH², James M. Haan, M.D.²

The University of Kansas School of Medicine – Wichita¹, Via Christi Hospital Saint Francis²

Introduction

It is difficult to assess severity and appropriately triage pediatric falls because many variables must be taken into account, including the height and type of fall, landing position and surface, and the patients age. These variables have not been adequately translated into a triage protocol for use among first responders for pediatric traumas. The purpose of this study was to determine what variables are potential indicators of severity for pediatric falls.

Methods

A retrospective review was conducted of all trauma patients aged ≤ 18 years who sustained fall related injuries admitted to an ACS verified Level 1 trauma center from January 1, 2006 through December 31, 2015. Data collected included demographics, injury characteristics, fall details, hospital outcomes, and disposition.

Results

Of the 905 patients included, most patients were Caucasian (72%, n=650), male (64%, n=582) and between 1 and 4 years old (33%, n = 299). Falls were most likely to occur from a height of 3 to 6 feet (42%, n=76). The most likely landing surface was concrete (29%, n=42), and the most common mechanism of landing involved hitting of the head (57%, n=129). The average GCS on presentation was 14 (SD 1.93), and the average ISS was 5.69 (SD = 4.81). Those involved in skateboard falls had the highest ISS ($p=0.02$), and those involved in falls from stairs had the lowest ISS ($p=0.03$).

Discussion

In pediatric trauma secondary to falls, these fall characteristics must be well-documented. This would aid in determining triage status and reduce the number of over-and under-triaged traumas, thereby reducing costs and providing the best possible care to patients.

Contact:
Michelle Baalman
(316) 93-9752
mbaalman@kumc.edu

Department: Family & Community Medicine
Faculty Mentor: Gina Berg, Ph.D., MBA
Poster Number: 28

Category: Student
Session: Afternoon Poster
Location: Sunflower

Pediatric Tracheostomy: Review of Post-Insertion 30 Day Readmission

Jimmie Stewart, MS-4, Kimberly Molik, M.D., Gina Berg, Ph.D., MBA

University of Kansas School of Medicine-Wichita

Introduction

Trauma centers are bound by EMTALA to provide equal treatment to trauma patients, regardless of payer source. However, growing evidence suggests disparities in care exist. Currently, no study has investigated the relationship between payer source and average number of procedures received to better understand disparities in care in an adult trauma population.

Methods

This was a retrospective trauma registry analysis of a Level I trauma facility from 2005 to 2014. Payer source of adult (> 18 years) trauma patients was identified, demographics and variables associated with trauma outcomes were abstracted, and a multivariate logistic regression was used to determine differences in the number of overall, diagnostic, surgical procedures.

Results

Of 12,870 records reviewed, 69.1% were commercially insured, 21.2% were uninsured, and 9.6% had Medicaid. Commercial insurance averaged more overall procedures (4.30) than uninsured (3.35) or Medicaid (3.34) and more diagnostic (2.59) procedures than uninsured (2.03) or Medicaid (2.04). Surgical procedures were unaffected by payer source.

Discussion

The data from this study suggests that disparities, as measured by average number of procedures compared to payer source, exist in the care of trauma patients. Future research should focus on secondary factors that influence levels of care such as number of consults made, and non-medical patient factors such as health literacy. Ultimately, the goal for research in this area should be not only to identify where disparities in care exist but to provide insight as to what can be done to mitigate these occurrences.

Contact:
Jimmie Stewart, MS-4
(620) 521-6741
jstewart4@kumc.edu

Department: Pediatrics
Faculty Mentor: Barry Bloom, M.D.
Poster Number: 29

Category: Resident
Session: Morning Poster
Location: West Atrium

An Evaluation of Potential Impact of More Restrictive Transfusion Guidelines on the Number of Transfusions Given at a Neonatal Intensive Care Unit

Andrew Christensen, D.O., Stephanie Binder, M.D., Carolyn Ahlers-Schmidt, Ph.D., Matthew Engel, MPH, Barry Bloom, M.D.

University of Kansas School of Medicine-Wichita

Introduction

The neonatal population are subjected to more transfusions than the general pediatric population. The criteria for transfusion in neonates is based on expert opinion, with few evidence-based studies supporting current practice. By adhering to transfusion guidelines, a neonate is less likely to be transfused, thus limiting exposure to blood products and risks of transfusion. This study is to better understand the potential impact if we were to adhere to a more restrictive transfusion protocol to match what is being suggested by more recent research.

Methods

In this retrospective evaluation, record of all transfusions for infants admitted to the Wesley NICU between 2012 and 2015 were abstracted. Additionally, hematocrits and clinical indicators during this time were collected. These data were used to estimate how a more restrictive transfusion protocol, amalgamated from recent literature, might modulate the use of blood product at our center.

Results

A total of 955 neonates had a median of 3 (Interquartile range = 1-7) hematocrits drawn during the study timeframe resulting in 4568 hematocrits. Of these, 1989 hematocrits met current criteria for transfusion and 1777 (89.3%) were responded to with a transfusion. Under the proposed protocol, 310 hematocrits would have qualified for transfusions, of which 290 (93.5%) were actually transfused.

Discussion

Revised protocols for neonatal transfusions could result in more judicious use of blood product and avoid unnecessary transfusion events. Prospective study will be necessary to ensure such a change does not adversely affect patient outcomes.

Contact:
Matthew Engel, MPH
(316) 962-1874
mengel2@kumc.edu

Department: Obstetrics & Gynecology
Faculty Mentor: Melissa Hague, M.D.
Poster Number: 30

Category: Resident
Session: Morning Poster
Location: West Atrium

Maternal and Fetal Outcomes Based on Trauma Response on Arrival among Obstetrics Patients Treated at a Midwestern Level I Trauma Center

Abigail Brubaker, D.O., Gina Berg, Ph.D., Jennifer Duong, MPH, Carla Burford, MS-4, Margaret Wilkes, MS-4, Alexandra Melocco, MS-4, David Acuna, D.O., Melissa Hague, M.D.

University of Kansas School of Medicine-Wichita

Introduction

Trauma complicates 1 in 12 pregnancies, and is the leading non-obstetrical cause of maternal death in the United States. Few studies describe morbidity and mortality in pregnant trauma patients. The objective of this project is to determine whether pregnancy should be an indicator for full trauma response, as under-triage may be occurring.

Methods

Patients admitted to Wesley Healthcare for trauma, and were pregnant at the time of arrival between January 1, 2011 to December 31, 2014 were included. Data was collected from the Trauma Registry and from the perinatal database. Patients that delivered at a facility other than Wesley Healthcare were excluded. The primary outcome assessed was fetal mortality by trauma response on arrival.

Results

There were 323 trauma patients. All had singleton pregnancies. The majority of women were white (74.3%, n=240), and Kansas residents (98.8%, n=319). Average maternal age was 24.2±5.5 years old (range: 15-28). In 49.8% (n=161) of cases, primary mechanism of injury was motor vehicle accident (MVA), and no restraint was reported in 5.6% (9/158). Five cases (1.5%) received a full trauma response, and the majority had a partial response (97.5%, n=315). There were two fetal deaths (0.6%) and three neonatal deaths (0.9%). Of these five cases, all were due to MVA, and a lap/shoulder restraint was reported in three cases (60%). Two cases had a full trauma response (40%), and two cases (40.0%) resulted in maternal death.

Discussion

Many pregnant trauma cases are due to MVA. Physiologic and anatomic differences in pregnant patients may necessitate additional trauma resources.

Contact:
Jennifer Duong, MPH
(316) 962-3126
jduong@kumc.edu

Department: Preventive Medicine and Public Health
Faculty Mentor: N/A
Poster Number: 31

Category: Faculty
Session: Morning Poster
Location: West Atrium

Preterm Birth: Does Interpregnancy Interval Matter?

Sharla Smith, Ph.D., MPH, Ryan Sorell, MS-4, Kelsey Lu, M.S., Robert Badgett, M.D.

University of Kansas School of Medicine-Wichita

Introduction

Preterm birth (PTB) is a major factor associated with infant mortality. Publications from the World Health Organization and the American College of Obstetrics and Gynecology state that the length of the interpregnancy interval (IPI) is associated with PTB. However, recent studies using new methods to control for maternal factors present uncertainties in the association highlighted in previous research.

Methods

We executed a living systematic review with features of rapid and scoping reviews. We search for cohort studies with a mix of methods based on citation and vector searching as described at open MetaAnalysis (<https://openMetaAnalysis.github.io/>). We limited our analysis to studies that used matched, conditional logistic regression to control for maternal factors. We conformed to methodological recommendations by using PRISMA guidelines.

Results

Results are online at [http://openmetaanalysis.github.io/preterm birth prediction](http://openmetaanalysis.github.io/preterm%20birth%20prediction). When all cohorts are pooled together there is no association between the length of the IPI and PTB: IPI less than five months, OR = 1.10 (95% CI 0.88 to 1.73, I² = 81%); IPI 6 to 11 months, OR = 1.04 (95% CI 0.91 to 1.19, I² = 64%), and IPI 12 to 17 months, OR = 0.99 (95% CI 0.85 to 1.15, I² = 74%). For all analyses, heterogeneity was 'substantial'.

Discussion

Recent studies suggest that previous research used statistical methods that limit the ability to control for maternal factors, which eliminates the association between IPI and PTB. This review suggests that new research is needed to evaluate the association between IPI and maternal and infant outcomes.

Contact:
Sharla Smith, Ph.D.
(316) 293-1816
ssmith37@kumc.edu

Department: Public Health Sciences
Faculty Mentor: N/A
Poster Number: 32

Category: Faculty
Session: Morning Poster
Location: West Atrium

Assessment of Safe Sleep Environments and Older Caretakers: A Review of the Literature

Amy K. Chesser, Ph.D.¹, Amanda B. Conner, B.S.¹, Carolyn Ahlers-Schmidt, Ph.D.²

Wichita State University¹, University of Kansas School of Medicine-Wichita²

Introduction

Infant mortality in the United States is consistently higher than other industrialized nations at 6.15 deaths per 1000 live births. The American Academy of Pediatrics (AAP) published infant sleep recommendations in 1992. Following the Back-to-Sleep campaign in 1994, there was a dramatic reduction in the number of infant deaths from SIDS. However, in the US, approximately 4,000 infant deaths each year are still attributed to sleep-related deaths. In Kansas, SIDS and sleep-related deaths accounted for 17% of all infant deaths. The objective of this review was to assess published literature of safe sleep and older caretakers.

Methods

Internet searches of peer-reviewed literature were conducted between December 2016 - February 2017 using search terms SIDS, elderly, caretakers, infants, grandparents, safe sleeping, newborns, sitters. Electronic databases searched included Google Scholar, PsychINFO, Social Sciences Full Text, Social Services Abstracts, Sociological Abstracts and PubMed.

Results

All (N = 16) of the studies that met inclusion criteria were conducted in urban settings in the U.S. Study sample size ranged from 28 - 260 participants. Eight studies examined the influence of Grandmothers on parents of newborns and safe sleeping practices, showing that a majority of parents get information from older caretakers rather than a medical professional.

Discussion

Previous research indicates that even when new parents are aware of safe sleeping practices, they do not adhere to these recommendations because of an influence of grandparents. Grandparents are often not well informed, or have old information that could be up to twenty years old or older on safe sleeping practices.

Contact:
Amy Chesser, Ph.D.
(316) 293-3541
amy.chesser@wichita.edu

Department: Pediatrics
Faculty Mentor: Carolyn Ahlers-Schmidt, Ph.D.
Poster Number: 33

Category: Student
Session: Morning Poster
Location: West Atrium

Bridging the 30 Million Word Gap: A Reading Promotion Intervention among Low-Income Pregnant Women

Deshanett Clay, MPH, MS-4, Sudy Yang, M.D., Mary Benton, Ph.D., Matt Engel, MPH, Molly Brown, MPH, Carolyn Ahlers-Schmidt, Ph.D.

University of Kansas School of Medicine-Wichita

Introduction

By age three, children from high-income families hear nearly 30 million more words than those from low-income families. Reading to children can increase word knowledge and success in school. In Kansas, there is great disparity in reading by socioeconomic status. To promote reading to infants among a low-income population, an educational intervention was added to Baby Talk, a free prenatal and newborn educational program in Sedgwick County.

Methods

Participants completed a 10-item pre-survey, engaged with a five minute educational intervention and then completed an eight item post-survey. Surveys assessed perceived benefits, intended behaviors and self-efficacy regarding reading to their child. Demographics were collected.

Results

Of 33 Baby Talk participants, 25 (81%) completed the study. Participants reported being Black (n = 9), Hispanic (n = 7), White (n = 6), and 'other' (n = 3). The average age was 26 years (SD = 7.9); 52% reported having no children in their home. At baseline, most could accurately identify benefits of reading to their child. At post, significantly more pregnant women reported it was important to start reading to their child (84%, n = 21 vs. 52%, n = 13; p = 0.002) and that they planned to start reading to their child at age zero months (64%, n = 16 vs. 44%, n = 11; p = 0.004). Retrospectively, at post, 88% (n = 22) reported being 'more confident' in their ability to read to their child, and 96% (n = 24) reported being 'more likely' to read to their child.

Discussion

Given that early delays in language development and reading comprehension decrease academic performance, this brief intervention showed promise in increasing low-income pregnant women's intentions to read to their child.

Contact:
Deshanett Clay, MPH, MS-4
(310) 413-2917
dclay@kumc.edu

Department: Physical Therapy
Faculty Mentor: Barbara Smith, Ph.D.
Poster Number: 34

Category: Student
Session: Morning Poster
Location: Meadowlark

Comparison Of Wii Balance Board™ Scores In Ballet Dancers and Non-Ballet Dancers

Ashley Johnson, DPT, Brent Davis, DPT, Andrea Dimmen, DPT, Tony Bui, DPT,
Barbara Smith, Ph.D.

Wichita State University

Introduction

Currently, 30% of adults suffer from some type of balance dysfunction. Many studies suggest that dance training can be effective in improving balance and functional mobility tasks. Dance program compliance is much higher than other exercise programs, so it is a good option to help those with balance problems. The Wii balance board was chosen to measure balance because it has demonstrated high reliability and validity when testing center of balance and lateral weight shifts. The purpose of this study is to identify if a significant difference in balance ability exists between ballet dancers and controls.

Methods

Fifteen control subjects and fifteen ballet dancers were measured regarding center of balance, dynamic balance, and static balance on two feet and in single leg stance. The participants were tested using the Wii balance board to collect data for center of balance, single leg balance, yoga tree pose, and the table tilt game. Two trials each for eyes open and eyes closed were completed.

Results

An independent samples t-test was used to evaluate whether scores of dancers and control were different. No significant differences between the Wii balance board scores in ballet dancers and controls were observed.

Discussion

The findings encourage us to look for other ways to assess dancing technique that consequently improve balance or why there are no significant difference between the ballet dancers and controls.

Contact:
Barbara Smith, Ph.D.
(316) 978-5784
barb.smith@wichita.edu

Department: Physical Therapy
Faculty Mentor: N/A
Poster Number: 35

Category: Faculty
Session: Morning Poster
Location: Meadowlark

Building a Better Gluteal Bridge: Electromyographic Analysis of Gluteal Activity during Modified Single Leg Bridges, a Cross-Sectional Study

BJ Lehecka, DPT

Wichita State University

Introduction

The purpose of this study was to determine an optimal position for preferential activation of the gluteus maximus and medius during the single-leg bridge with limited activation of the hamstrings. Evidence shows gluteal strength is important to prevent or treat multiple pathologies. Moreover, reports of hamstring cramping exist during the traditional single-leg bridge position.

Methods

Twenty-eight healthy males and females between the ages of 18 and 30 years old participated in this cross-sectional study. Each subject was tested in five different, randomized single-leg bridge positions. Surface electrodes were placed on the participant's dominant gluteus medius, gluteus maximus, rectus femoris, biceps femoris, and non-dominant rectus femoris. Participants performed a maximal voluntary isometric contraction (MVIC) for each muscle, then underwent electromyographic (EMG) analysis of each muscle in the five positions to find %MVIC.

Results

Among the twenty-eight subjects analyzed, the highest EMG value of gluteus maximus (47% MVIC) and medius (57% MVIC) and lowest EMG value of hamstrings (23% MVIC) was found in a position of 135 degrees of dominant knee flexion, with the flat foot, and the non-dominant knee fully extended.

Discussion

Data show the most efficient single-leg bridge was one with 135 degrees of knee flexion, neutral ankle position, and non-dominant knee fully extended. This position for the single-leg bridge preferentially activates the gluteals compared to multiple alternate positions and the standard single-leg bridge position. Clinicians attempting to strengthen the gluteals can use this novel modification to minimize hamstring activity and maximize gluteal strength gains.

Contact:
BJ Lehecka, DPT
(316) 978-6156
bryan.lehecka@wichita.edu

Department: Orthopedics
Faculty Mentor: Daniel Prohaska, M.D.
Poster Number: 36

Category: Resident
Session: Morning Poster
Location: Meadowlark

Evaluating the Clinical Diagnosis of Anterior Cruciate Ligament Ruptures in Providers with Different Training Backgrounds

Michael Priddy, M.D.¹, Alexander Chong, M.S.², Chelsea Whitetree, PA-C³,
Parker Zimmerman¹, Paul Haeder, M.D.⁴, Daniel Prohaska, M.D.¹

University of Kansas School of Medicine-Wichita¹, Sanford Health², Advanced Orthopaedic Associates³, SOAR Sports Medicine Fellowship⁴

Introduction

While the Lachman test is the gold standard for the clinical diagnosis of anterior cruciate ligament tears (ACL), other tests are also available, such as the Lelli test described in 2014, that may be used to detect partial and complete tears of the ACL. The Lelli test has not been extensively studied, therefore the current study compared the proficiency of the Lelli test among providers with different levels of training.

Methods

Patients with an ACL injury were consented for the study. Exclusion criteria include an injury within 72 hours at the time of examination, chronic knee issues, associated ligament injuries, and previous knee surgery. Twenty-nine consecutive patients that met criteria were tested with pivot shift, Lachman, and Lelli tests before and after the induction of anesthesia in the operating room. These tests were performed by a board-certified sports medicine surgeon and a physician assistant, respectively. Relevant patient demographic information such as BMI, thigh girth, and calf girth were recorded.

Results

No patient characteristics were associated with false negative test results for any of the three tests. No statistical difference was noted for the Lelli test compared to the Lachman test regarding sensitivity for either provider before or after the induction of anesthesia. Kappa-values for intra-observer and inter-observer agreement were calculated where possible, with poor agreement in all cases.

Discussion

The Lelli test may be another useful tool to diagnose ACL injury and was well-received by the providers. Further testing is needed to determine its sensitivity compared to the Lachman test.

Contact:
Michael Priddy, M.D.
(801) 380-2285
mpriddy@kumc.edu

Department: Physician Assistant
Faculty Mentor: Sue Nyberg, MHS
Poster Number: 37

Category: Student
Session: Morning Poster
Location: Meadowlark

BITES Trial: A Randomized Controlled Pilot Trial to Determine the Effectiveness of Bite Technique to Decrease the Development of Postoperative Complications

Megan Holick, PA-S¹, Lauren Simmons, PA-S¹, Calder Young, PA-S¹, Sue Nyberg, MHS¹, Gina Berg, Ph.D.², Clint Gates, M.D.²

Wichita State University¹, University of Kansas School of Medicine-Wichita²

Introduction

The incidence of incisional hernias following median laparotomies range from 11 - 20%. Risk factors for incisional hernias include: diabetes, malignancy, wound infection, malnutrition, previous laparotomy, corticosteroids, and surgical technique. Surgical technique includes suture to wound length ratio, stitch width, and inter-suture spacing. A Netherlands study found decreased wound complications with smaller stitch width and inter-suture spacing. This was a preliminary analysis of six week postoperative data of a multicenter pilot study that will determine the feasibility of a larger randomized control trial.

Methods

Inclusion criteria: adults aged 18 - 75 scheduled for abdominal operation through a midline incision. Patients were randomized between closure techniques including large (1.0cm) versus small (0.5cm) tissue bites. Data were collected at pre-surgery (demographics), surgery (closure details), discharge (hospital course), and outpatient visits (complications).

Results

Nine patients were included (four small bite, five large bite). Postoperative complications from the large bite group included one blood transfusion, one ileus, and one superficial skin dehiscence. Postoperative complications from the small bite group included two ileuses.

Discussion

There was no apparent association between bite size and the rate of wound complication; however, comparison analysis could not be performed due to small sample size. Issues with enrollment, data collection, and participant loss were identified. A study coordinator was hired to promote a smoother research process for the remainder of the study. Data collection is also planned to continue at one year follow up, which will allow for larger sample size and more postoperative complications to appear; however, this is outside the scope of this current study.

Contact:
Calder Young, PA-S
(501) 514-1675
Calderyoung4@gmail.com

Department: Orthopedics
Faculty Mentor: Dan Prohaska, M.D.
Poster Number: 38

Category: Resident
Session: Morning Poster
Location: Meadowlark

Arthroscopic Psychomotor Knot Tying Skills Simulation Training in Orthopaedic
Residency Education

Craig Yager, M.D., Dan Prohaska, M.D.

University of Kansas School of Medicine-Wichita

Introduction

Knot tying in arthroscopic procedures can be both challenging and frustrating. We aim to develop an inexpensive simulated arthroscopic psychomotor knot tying skills model for orthopaedic trainees to learn proper tying of arthroscopic knots.

Methods

Two groups of students in differing levels of training were given instructions for various knots and guided through a four stage protocol where commonly used arthroscopic knots were tied and critically evaluated. Data was collected at each stage including time to tie, stack height, knot circumference, and load to failure. Criteria were met at each stage prior to advancing to next stage.

Results

All participants achieved criteria for successfully tying all knots at the completion of the four stage protocol. Subjective participant confidence improved after the training protocol was completed.

Discussion

A simple, cost-effective method to teach arthroscopic knot tying can be achieved with success utilizing our four stage protocol. This protocol not only teaches the methods of tying, but also sets realistic standards that can be achieved in a logical step-wise manner. Implications for this protocol across the spectrum of orthopedic resident surgical education cannot be underestimated as knot tying is a critical skill.

Contact:
Craig Yager, M.D.
(573) 864-3398
cyager@kumc.edu

Department: Psychiatry & Behavioral Sciences
Faculty Mentor: N/A
Poster Number: 39

Category: Faculty
Session: Afternoon Poster
Location: Meadowlark

Using the Program Evaluation Committee to Meet Maintenance of Certification Part IV Requirements for Faculty

Matthew Macaluso, D.O., Nancy Davis, Ph.D., Gretchen Dickson, M.D.

University of Kansas School of Medicine-Wichita

Problem

To create efficiencies, we used the program evaluation committee (PEC) to help physician faculty meet Maintenance of Certification (MOC) Part IV requirements for performance in medical practice (PIP). The PEC is a committee that oversees quality improvement of clinically based training, which has significant overlap with the requirements for MOC Part IV. This ensures the continued competency of residents, safety of patients, and quality of care provided.

Baseline Measurement

N/A

Design

The PEC is an ACGME required committee tasked with systematically evaluating the clinical curriculum at least annually, with the goal of continued program improvement. The PEC evaluation includes the following items, which can be used by physician faculty to meet MOC Part IV requirements as approved by the University, which is accredited by the ABMS to provide MOC credit for self-assessment and PIP: 1. Resident evaluation of faculty including knowledge, teaching and professionalism; 2. Resident evaluation of the program including resources and patient safety; 3. Evaluation of program processes directly related to patient safety including patient handoff, resident and faculty burnout, and documentation; 4. Evaluation of clinical experiences, service lines, and clinical practice as they pertain to the residency program; 5. Evaluation of ITE scores. This is not an exhaustive list of the PEC's task, but are the items we focused on relative to MOC Part IV requirements.

Results

N/A

Conclusions

Our institution approved the PEC process as meeting the MOC Part IV requirements for performance in medical practice, which creates efficiencies for faculty while maintaining an environment of continued review of practice and quality improvement.

Contact:

Matthew Macaluso, D.O.
(316) 293-2680
mmacaluso@kumc.edu

Department: Psychiatry & Behavioral Sciences
Faculty Mentor: Rachna Kalia, M.D.
Poster Number: 40

Category: Resident
Session: Afternoon Poster
Location: Meadowlark

Minority Mental Awareness in Wichita Kansas

Lisa Harding, M.D., Rachna Kalia, M.D., Matthew Macaluso, D.O.

University of Kansas School of Medicine-Wichita

This project is aimed at increasing the awareness of professional mental health services in minority populations by collaborating with their faith based communities in Wichita. It is significant because more than 80% of the minorities affected by mental health will not seek professional help and no program of this nature has been geared towards African and Hispanic Americans. According to 2014 Census, Pew Research Center, National Institute of Mental Health and SAMHSA, we have extrapolated the following baseline:

- This year approximately 5,500 African Americans will suffer for mental illness. Since approximately 83% are Religious and 84% will not seek professional help, we have a target african american population of 3,800
- Similarly, approximately 7,300 Hispanic Americans will suffer for mental illness. Since approximately 80% are Religious and 85% will not seek professional help, we have a target hispanic american population of 5,000

In addition, as documented by the 2001 Surgeon General Report, faith is an important part of the healing process. As a pilot, faith based environments are ideal for increasing awareness.

This project will

- Collaborate with NAMI and faith based leaders to design an awareness strategy for minority faith communities
- Support NAMI in the delivery of the NAMI FaithNet training
- Create a multi-lingual cultural psychiatrist directory identifying psyhiatrist sensative to the cultural aspects mental health and illness

It is our goal that these activities will increase awareness of local mental health services and ultimately provide professional services to minorities in Wichita Kansas.

Contact:
Lisa Harding, M.D.
(563) 676-8925
lharding@kumc.edu

Department: Family & Community Medicine
Faculty Mentor: Gina Berg, Ph.D., MBA
Poster Number: 41

Category: Student
Session: Afternoon Poster
Location: Meadowlark

Google It! Comparison of Online Information about Idiopathic Scoliosis

Marissa Weaver, MS-1¹, Sarah Heady², Gina Berg, Ph.D., MBA¹, Emily Manlove, M.D.¹,
Jennifer Thuener, M.D.¹, Douglas Burton, M.D.³

University of Kansas School of Medicine-Wichita¹, Baylor University², KUMC-KC³

Quality Improvement

Problem

Idiopathic scoliosis develops in 80% of scoliosis cases, with the majority occurring in adolescents. The quality of online health information has been noted to wide variation in various topics, yet 72% of internet users seek health information online.

Baseline Measurement

Ambiguity in scoliosis screening recommendations and management tips could give online health seekers inconsistent, or even inaccurate, information.

Design

Two organizational reviewers concurrently vetting the top 10 websites resulting from a Google™ search using the keyword 'scoliosis'. The content was organized into categories deemed essential and nonessential information and blinded to source or URL. Content was assessed for readability by grade level. Three physician evaluators rated the content based on quality, accuracy, completeness of information, and willingness to recommend the website to patient consumers.

Results

Content scores ranged from 15.67 - 62.67 (75 possible), with an average score of 47.6. All websites had some content in the essential information categories, but varied in completeness. Readability of the websites ranged from seventh grade to college level. There was unanimous physician agreement to recommend Mayo Clinic, MedicineNet, and Kids Health and disagreement to recommend Google™ Knowledge Graph.

Conclusions

Most essential information provided by identified websites was accurate. Additional information was generally well-rated by physicians, but only available on half the websites. High quality scores were not representative of likelihood of physician recommendation. Website ranking by physicians was inconsistent with ranking order by Google™, indicating that health seekers reviewing the top Google™ ranked websites may not be viewing the websites rated highest by physicians.

Contact:

Marissa Weaver, MS-1
(316) 768-1580
mweaver7@kumc.edu

Department: Family & Community Medicine
Faculty Mentor: Emily Manlove, M.D.
Poster Number: 42

Category: Resident
Session: Afternoon Poster
Location: Meadowlark

Patient's Insights on Missed Appointments in a Family Medicine Residency Clinic: A Qualitative Evaluation

Charles Armstrong, D.O., Isaac Johnston, M.D., Connor Hartpence, M.D., Madison Breeden, MS-3¹, Scott Cooper, MS-4, Samuel Ofei-Dodoo, Ph.D., Emily Manlove, M.D.

University of Kansas School of Medicine-Wichita

Quality Improvement

Problem

No-shows are a problem for most clinics, and reducing their rate increases efficiency and education for residents. Finding some of the specific reasons why some patients do not show will give the primary health care professionals insight into what can be done to reduce their rates. This study sought to find reasons associated with patients' no-shows, and help health care professionals in their efforts in reducing the high rates of patients not showing up to their appointments in primary care residency clinics.

Baseline Measurement

N/A

Design

A qualitative research design study was employed involving patients attending a residency clinic for their health care needs, but often do not show up to their appointments. Ten randomly selected patients who had three or more no shows were called and interviewed on a voluntary and confidential basis. Two research professionals then, individually and as a group, examined the data using immersion-crystallizing method to analyze the content of the interviews.

Results

Patients reported a common reason to miss appointments was "forgetting." Patients also reports problems such as something more important or urgent interfering with the clinic appointment time, not wanting to wait in the clinic for the appointment, and not having transportation.

Conclusions

While the sample size in this quality improvement project is small, the patient's responses can give the clinic a place to begin engaging patients in the problem of missed appointments. For example, as several patients reported "forgetting" the appointment, the clinic may investigate novel forms of reminders, such as utilizing text messaging.

Contact:

Emily Manlove, M.D.
(219) 916-3293
emanlove@kumc.edu

Department: Pediatrics
Faculty Mentor: N/A
Poster Number: 43

Category: Faculty
Session: Afternoon Poster
Location: Meadowlark

Improving Adolescent Depression Screening Using Quality Improvement Methodology

Gretchen Homan, M.D.¹, Natalie Sollo, M.D.¹, Teolinda Milsap, M.D.¹, Sid Sivamurthy, M.D.¹,
Meghan Stimpson¹, Kari Harris, M.D.¹

University of Kansas School of Medicine-Wichita¹, Wesley Medical Center²

Quality Improvement

Problem

Each year, an estimated 12.5% of US adolescents experience a major depressive episode. Despite recommendations from both the American Academy of Pediatrics and the US Preventive Service Task Force, adolescent depression screening is not performed uniformly and remains underreported in many communities.

Baseline Measurement

Early measurements suggested that our screening rate for adolescent depression was uncontrolled, varying from 0 to 80% at baseline.

Design

The screening process in the clinic changed from using screening questions embedded in another instrument to a dedicated and validated depression screen, the modified patient health questionnaire - 9 (PHQ9-M). The PHQ9-M was included in patient information packets for both the patient and parent during the appointment check-in process and various measures were utilized to increase the number of patients who received the forms during their annual well visit. We tracked our rate of success by auditing between 10 and 20 random adolescent charts each month.

Results

The rate of screening has been consistently >80% in the past five months. The rate of detected adolescent depression in our clinic increased from a five month average of 10 to 19%.

Conclusions

Quality improvement methods were effective in improving our clinic's rate of screening for adolescent depression. However, the increased rate of positive depression screens in our clinic as compared to the national rate of adolescent depression, highlight the importance of effective screening in our patient population. Efforts continue to improve our rate of screening to 100%.

Contact:
Matthew Engel, MPH
(316) 962-1874
mengel2@kumc.edu

Department: Surgery
Faculty Mentor: Paul Harrison, M.D.
Poster Number: 44

Category: Student
Session: Afternoon Poster
Location: Meadowlark

Communication of Incidental Findings In Trauma Patients: A Retrospective Study

Patrick McEnulty, MS-4¹, Gina Berg, Ph.D. ¹, MBA, Paul Harrison, M.D. ², Kamran Ali, M.D. ¹,
Chuck McGuire, M.D. ¹

University of Kansas School of Medicine-Wichita¹, Wesley Medical Center²

Quality Improvement

Problem

Patients who present to a Level 1 trauma center frequently undergo CT imaging. While the immediate concern relates to traumatic injuries, it is not uncommon for radiologists to identify abnormalities unrelated to trauma. These incidental findings may not be addressed during the patient's trauma admission.

Baseline Measurement

Design

This was a retrospective study investigating the prevalence and communication of incidental findings in trauma patients who were admitted to a level 1 trauma center within a six-month period. Data were obtained from the EHR, specifically noting incidental findings as well as patient communication of finding in the radiology and trauma documentation respectively. Each incidental finding was classified by degree of clinical concern.

Results

Seven hundred and seventy records were reviewed; incidental findings were discovered in 195 (25%) patients. Of those, 86 (44.1%) had multiple findings, resulting in a total of 337 incidental findings. Of those, 100 (30%) findings were noted in the trauma discharge summary and 42 (12.7%) were listed in the trauma discharge instructions. Moreover, 22 (6.5%) were clinically significant findings and most (16/22; 72.6%) were not documented as reported to the patient in either the discharge summary or instructions.

Conclusions

The low rates of documentation and follow up for incidental findings in trauma patients is likely due, in part, to the absence of a system ensuring these findings are reported. These results establish a baseline to guide how and where system improvement initiatives can be put in place to improve communication of incidental findings to trauma patients.

Contact:
Patrick McEnulty, MS-4
(316) 990-5169
pmcenulty@kumc.edu

Department: Internal Medicine
Faculty Mentor: Hussam Farhoud, M.D.
Electronic Poster Number: 45

Category: Resident
Session: Afternoon
Location: Wichita Room

Coronary Artery Fistula

Menaka Mahendran, M.D., Arjun Mahendran, M.D., Hussam Farhoud, M.D.

University of Kansas School of Medicine-Wichita

Case Report

Introduction

Coronary artery fistulas are often incidental findings noted on echocardiograms or catheterizations. The majority are congenital, but some develop as result of invasive procedures. The significance of such fistulas depends upon size and and location, with more severe occurrences leading to congestive heart failure or myocardial infarction. In this report, we describe the case of a 78 year-old female with a non-ST segment myocardial infarction, likely secondary to a fistula between the left anterior descending artery and right ventricle.

Description

A 78-year-old female with history of hypertension and hyperlipidemia presented to the emergency department for sudden onset dizziness and shortness of breath. Patient was noted to be tachycardic with a minor elevation in troponin. Initial EKG was negative for acute ST/T wave changes. Following transfer to higher level of care, patient reported symptom resolution. Physical exam revealed tachycardia. Repeat EKG showed sinus tachycardia without evidence of ischemic change. Labs demonstrated a troponin of 2.57. Patient was admitted to telemetry unit for further evaluation. Aspirin, beta blocker, statin, and heparin were started. Troponin peaked at 30. A left heart catheterization revealed ejection fraction of 65% with a coronary artery fistula between left anterior descending artery and right ventricle. Percutaneous intervention was not required.

Discussion

Coronary artery fistulas may present as incidental findings or as a result of cardiac symptoms. Significance of such an anomaly is dependent its specific characteristics. The case serves to alert clinicians that isolated events may only necessitate risk-factor modification. However, surgery may be indicated for recurrent episodes.

Contact:
Menaka Mahendran, M.D.
(262) 902-3669
mmahendran@kumc.edu

Department: Physician Assistant
Faculty Mentor: Kayla Keuter, PA-C
Electronic Poster Number: 46

Category: Student
Session: Afternoon
Location: Wichita Room

Ureteral Laceration due to Blunt Force Trauma: A Rare Case Report

Courtney Krisher, PA-S, Codie Armstead, PA-S, Kayla Keuter, PA-C

Wichita State University

Case Report

Introduction

Ureteral injuries are rare, occurring in less than one percent of patients suffering from blunt force abdominal trauma. With the need to emergently manage life-threatening injuries, and maintaining a low suspicion for ureteral injury, diagnosis of ureteral injuries may be delayed or completely missed.

Description

A 31-year-old woman who had been injured in a motor vehicle accident presented with back, chest, and abdominal pain. Computed tomography (CT) of the abdomen and pelvis showed extravasation of the contrast medium from the right ureter consistent with a ureteral injury. An exploratory laparotomy was performed and upon closer examination, the right ureter was found to be transected. Ureteroscopy showed the right ureter completely avulsed from the renal pelvis. Anastomosis of the ureter was performed and a Gore stent was placed. The patient was discharged and the stent was removed two months later.

Discussion

Ureteral injuries should be suspected in patients suffering from blunt force abdominal trauma. Patients presenting with symptoms of flank pain, hematuria, decreased urine output, and fractured transverse processes of their vertebral column should be assessed for ureteral injury. Abdominal CT with contrast will demonstrate a laceration or avulsion of the ureter through extravasation of the contrast medium. Patients with ureteral injuries undergo a surgical procedure involving anastomosis or stent placement depending on the extent of the injury. Through maintaining a high suspicion of ureteral injuries in blunt force abdominal trauma, diagnosis will not be delayed and treatment can be initiated.

Contact:
Courtney Krisher, PA-S
(906) 291-0063
crkrisher@shockers.wichita.edu

Department: Physician Assistant
Faculty Mentor: Sue Nyberg, MHS, PA-C
Electronic Poster Number: 47

Category: Student
Session: Afternoon
Location: Wichita Room

Bilateral Upper Extremity Full Thickness Burns Acquired During an MRI Procedure: A Case Study

Jared Burns, PA-S¹, Gina Everett, PA-S¹, Matthew Sherman, PA-S¹, Sue Nyberg, MHS, PA-C¹, William Waswick, M.D., FACS²

Wichita State University¹, University of Kansas School of Medicine-Wichita²

Case Report

Introduction

Magnetic resonance imaging (MRI) scans are generally considered to be safe, non-invasive, procedures with few potential complications. Adverse thermal injuries can be attributed to both excessive heating of the skin due to prolonged direct contact with the MRI machine or the possible formation of closed loop electrical currents. Proper education on MRI adverse effects and attention to patient detail will contribute to safer imaging procedures.

Description

This case study describes an adult male patient who acquired bilateral upper extremity full thickness burns during a sedated MRI examination. The initial debridement surgery revealed third degree burns with well demarcated areas of necrosis, consistent with electrical type burn injuries. Wound vac therapy, skin grafts, IV antibiotics, and multiple debridements with final flap coverage were all involved in treatment over a several week course of time. He eventually regained full range of motion in both arms.

Discussion

The purpose of this case study is to increase provider and medical staff awareness of the risk factors and adverse events associated with MRI exams. The necessity of sedatives for claustrophobic patients, use of critical care monitoring equipment, increased body mass index, and implanted surgical devices can increase the risk of adverse events. Knowledge of the factors leading to the increased potential for thermal injuries will contribute to clinician discretion in patient management. Quick recognition, diagnosis, and initiation of treatment can be aided by clinician awareness of risks of thermal and electrical burns and signs and symptoms of injury during and following an MRI.

Contact:
Jared Burns, PA-S
(816) 820-5714
jmburns3@shockers.wichita.edu

Department: Internal Medicine
Faculty Mentor: Paul Ndunda, M.D.
Electronic Poster Number: 48

Category: Resident
Session: Afternoon
Location: Wichita Room

Acute Onset Diffuse Myocardial Calcification: A Peculiar Outcome of Sepsis

Cyrus Munguti, M.D., Paul Ndunda, M.D., Salam Kadhem, M.D., Wassim Shaheen, M.D.

University of Kansas School of Medicine-Wichita

Case Report

Introduction

New onset diffuse myocardial calcification in sepsis, often accompanied by depressed systolic function can lead to increased morbidity and mortality. Our case was admitted for sepsis, with pre and post admission CT scans revealing diffuse myocardial calcifications.

Description

A 36-year-old male presented with increasing abdominal and chest pain accompanied by nausea and vomiting. He denied fever, diarrhea, or cough. His abdominal pain was burning, epigastric, and worse on vomiting or ingestion of food. He had hypotension, tachycardia, and tachypnea. Normal labs included WBC with 30% bandemia, renal panel, troponin, and lipase. Ethanol level and lactic acid were high. CT angiography was negative for pulmonary embolism. Blood culture was positive for streptococcus pyogenes. With a diagnosis of septic shock and alcohol intoxication, he was admitted, and started on IV fluid, broad spectrum antibiotics, and alcohol withdrawal protocol. Vasopressors were initiated for hypotension. CT scan abdomen revealed gastric and esophageal wall thickening. He developed acute kidney injury, hypoxic respiratory failure necessitating continuous renal replacement therapy and intubation. An echo revealed severe cardiomyopathy with severely decreased left ventricular systolic function of 15 - 20%. A CT scan revealed diffuse left ventricular wall calcification not present prior. An echo did not show any evidence of myocardial calcification but had improved systolic function to 35 - 40%.

Discussion

Sepsis related myocardial calcification occurs in absence of impaired calcium and phosphorus handling, commonly involving the left ventricle, as in our case. A rare and often incidental diagnosis, it should be considered in septic patients due to associated morbidity and mortality.

Contact:
Cyrus Munguti, M.D.
(316) 258-5560
cmunguti@kumc.edu

The Sling Stone: A Case of Search and Destruction

Rachel Wykes, M.D., Edgar LeClaire, M.D., Jennifer Duong, MPH, Kevin Miller, M.D.

University of Kansas School of Medicine-Wichita

Case Report

Introduction

Although renal calculi occur in 5 - 15% of people, urethral calculi are extremely rare. We report a case of a urethral calculus following malpositioned synthetic sling.

Description

A 50-year-old female with persistent stress urinary incontinence (SUI) following two retropubic synthetic midurethral sling placements (2005 and 2010), presented to the principal clinician in 2012. Cystourethroscopy results performed by her prior surgeon were normal. Urodynamic studies demonstrated positive stress test, stable bladder, and normal postvoid residual volume. A gritty sensation with passage of catheter was noted by the principal clinician. MRI was inconclusive. The patient declined surgical exploration. In 2016, the patient returned with increasing voiding dysfunction and SUI. Physical examination and in-office urethroscopy revealed a large intraurethral calculus (3x3x2cm) embedded in mesh. The patient was taken to surgery for excision of intraurethral synthetic mesh and calculus, removal of malpositioned extraurethral synthetic slings, urethroplasty and reconstruction with adjacent tissue transfer, and cystourethroscopy. Longitudinal, sub-urethral incision was required to allow complete fragmentation and removal of the calculus, and complete excision of the luminal mesh. An autologous pubovaginal sling is planned after 12-weeks postoperatively to treat worsened SUI.

Discussion

Synthetic suburethral slings are most widely used to surgically treat SUI. Complications include, but are not limited to: pain, urethral or bladder injury, obstructed voiding, and mesh erosion into the bladder, urethra, or vagina. In this case, a malpositioned sling likely contributed to formation of a massive calculus over six years. Clinicians seeing women for early midurethral sling failure should consider urethral mesh perforation in their differential diagnosis.

Contact:
Jennifer Duong, MPH
(316) 962-3126
jduong@kumc.edu

Department: Internal Medicine
Faculty Mentor: Jennifer Jackson, M.D.
Presentation Number: 50

Category: Student
Session: Morning Oral Presentation
Location: Roberts Amphitheater

Discharge Criteria to Aid in ED Disposition for Heart Failure (HF) Patients

Mejalli Al-Kofahi, MS-4¹, Elizabeth Ablah, Ph.D., MPH¹, Kurt Konda, M.A.¹, Jennifer Jackson, M.D.²

University of Kansas School of Medicine-Wichita¹, Via Christi Regional Medical Center²

Introduction

ED physicians lack guidelines to aid in the disposition of low-severity HF patients. It has been suggested that discharging this cohort from the ED does not impact their short-term survival rate. The Treat and Street protocol provides guidelines for ED disposition. This study examined the protocol effects on ED admission rates, and 30-day re-admission rates

Methods

This was a retrospective chart review of HF patients presenting with an acute exacerbation. Comparing inpatient admissions, observations, 30-day re-admissions, and discharge rates, before and after the implementation of the protocol. Data were recorded as frequencies and percentages.

Results

A total of 218 patients presented prior to protocol implementation, and 199 patients after. Pre-to post, inpatient admissions were 58% (n=128) and 55% (n=111), observation admissions were 36% (n=79) and 33% (n=67), ED discharge rates were 5% (n=11) and 11% (n=21), and 30-day re-admissions were 27% (n=55) and 28% (n=50), respectively.

Discussion

It is feasible to implement guidelines to discharge low severity HF patients. Implementation of the Treat and Street protocol lowered admissions, and increased 30-day re-admission rates for the low severity HF patient population. Instructed follow-up, type of provider to follow-up with, and attendance rate of patients at those follow-ups need to be investigated, as it may explain the increased 30-day re-admission rates.

Contact:
Mejalli Al-Kofahi, MS-4
(785) 312-1036
mal-kofahi@kumc.edu

Department: Surgery
Faculty Mentor: James Haan, M.D.
Presentation Number: 51

Category: Student
Session: Morning Oral Presentation
Location: Robert's Amphitheater

Proximal Humerus Fractures in the Elderly: Concomitant Fractures and Management

Kelly Zachariasen, MS-4¹, Sara Verga, MS-4¹, Elizabeth Ablah, Ph.D. ¹, Kelly Lightwine²,
James Haan, M.D.¹

University of Kansas School of Medicine-Wichita¹, Via Christi Regional Medical Center²

Introduction

Proximal humerus fractures are the third most common fracture in the elderly (> 65 years), yet few studies have evaluated their management and common concomitant fractures. This study's purpose was to identify injuries commonly seen with proximal humerus fractures and to evaluate discrepancies in management of these patients by provider type.

Methods

A 15-year retrospective chart review was conducted of elderly patients who sustained a proximal humerus fracture and were treated at a Level I trauma center. Data collected included demographics, treatment team, fracture characteristics and treatment, initial imaging obtained, hospitalization details, and additional injuries.

Results

Of 143 patients, 45.5% had a concomitant fracture, most frequently at the ipsilateral hip or upper extremity, and these patients were more likely to be discharged to a facility than home. Patients managed by a trauma team had twice as much imaging obtained than those managed by other providers, particularly CT imaging, without differences in operative rates, concomitant injuries, length of stay, or discharge disposition.

Discussion

Elderly patients with a proximal humerus fracture often present with a concomitant fracture, most frequently at the ipsilateral upper extremity, ipsilateral hip, or pelvis. The imaging performed for these patients is quite inconsistent, and patients managed by a trauma team have more imaging performed, particularly CT imaging, without finding additional occult injuries. Further study is needed determine optimal treatment.

Contact:
Kelly Zachariasen, MS-4
(785) 230-0008
kzachariasen@kumc.edu

Department: Family & Community Medicine
Faculty Mentor: Gina Berg, Ph.D., MBA
Presentation Number: 52

Category: Student
Session: Morning Oral Presentation
Location: Roberts Amphitheater

Associating Payer Source with Disparities in Procedural Care in a Trauma Population

Maggie Searight, MS-4, Ryan Sorell, MS-4, Gina Berg, Ph.D., MBA, Felecia Lee, Ph.D., Ashley Hervey, MEd

University of Kansas School of Medicine-Wichita

Introduction

Pediatric Tracheostomy is a difficult procedure due to patient disease complexity and smaller anatomy. Relatively little is known about the outcomes and complications of pediatric tracheostomy patients. Previous literature has not described the frequency and factors related to readmission and utilization of medical resources. The purpose of this project was to analyze the clinical course of pediatric patients who underwent a tracheostomy to understand causes for readmissions.

Methods

This was a case series report of pediatric (ages 0-17) patients who had undergone a tracheostomy procedure at Midwestern tertiary hospital within 2008-2016. Data were abstracted from patient charts and included: demographics, hospital course, complications and outcomes.

Results

There were 20 pediatric patients who had undergone tracheostomy. Mean age was 4.8 (5.8) with an average of 2.6 previous medical conditions; seizure disorder was the most common. The mean length of stay was 36.0 (34.1) days. Five patients (25%) were readmitted within 30 days and 3 (15%) patients had a 2nd readmission. Most common diagnosis at readmission was respiratory distress (50%). Readmission averaged 32.2 days from tracheostomy and 6.0 days from last discharge. Of these five patients, there was an average of 4.4 previous medical conditions; 100% had been discharged with home health care.

Discussion

Patients who had a readmission within 30 days had more medical conditions. Home health care is not consistent with decreased readmission 30 days following discharge. Further research should evaluate effectiveness of home health care and discharge education for caregivers in this population.

Contact:
Ryan Sorell, MS-4
(913) 223-4548
rsorell@kumc.edu

Department: Preventive Medicine & Public Health
Faculty Mentor: Elizabeth Ablah, Ph.D., MPH
Presentation Number: 53

Category: Student
Session: Lunch Oral presentation
Location: Roberts Amphitheater

Supermarket Access and Prediabetes

Andrew Weaver, MS-4¹, Justin Moore, M.D.², Milan Bimali, Ph.D.¹, Becky Tuttle, M.A.³,
Elizabeth Ablah, Ph.D.¹

University of Kansas School of Medicine-Wichita¹, Double Arrow Metabolism, LLC², Health ICT³

Introduction

In the U.S., 2.3 million households reside in food deserts, areas with poor access to healthful, affordable food. Food deserts have been associated with higher rates of hypertension, diabetes, and obesity. The objective of this study was to determine whether an association between supermarket access and the prevalence of prediabetes exists.

Methods

Prevalence and biennial incidence data for six diet-related diseases, including prediabetes, were obtained from the Kansas Health Information Network. Distances between population-weighted mean centers of ZIP Code Tabulation Areas (ZCTAs) and supermarkets in Sedgwick County, KS were calculated using GIS. Beta regression was used to model the relationship between supermarket access and the prevalence of diet-related diseases.

Results

The study area contained 43 ZCTAs and 46 supermarkets. There was a weak negative rank correlation (-0.37) between the distance to the nearest supermarket and the prevalence of prediabetes. Beta regression modeling did not identify a strong relationship between supermarket access and prediabetes.

Discussion

This study adds to the growing understanding of the relationship between the built environment and disease. The results suggest interventions to improve supermarket access may not impact the prevalence of prediabetes. Future studies are needed to examine the relationship between access and prediabetes at a finer level of analysis.

Contact:
Andrew Weaver, MS-4
(620) 757-3187
aweaver3@kumc.edu

Department: Family & Community Medicine
Faculty Mentor: Gina Berg, Ph.D., MBA
Presentation Number: 54

Category: Student
Session: Lunch Oral presentation
Location: Roberts Amphitheater

In-Hospital Mortality as a Quality Indicator in Pediatric Trauma: Preliminary Results of a Meta-Analysis

Wade Billings, MS-4, Gina Berg, Ph.D., MBA, Rosey Zackula, MA

University of Kansas School of Medicine-Wichita

Introduction

Evidence-based quality indicators are lacking for pediatric trauma care. This was a meta-analysis evaluating the usefulness of in-hospital mortality as a quality indicator in pediatric trauma care.

Methods

A search of PubMed (January 1, 1996 - February 28, 2017) was conducted with literature published in English, with search terms including, but not limited to, pediatric, trauma, and in-hospital mortality. Studies were included that used in-hospital mortality as a primary outcome to assess pediatric trauma care. Additional articles found via reference lists that met inclusion criteria were also included.

Results

Initial search results yielded 295 articles which were systematically narrowed down to two. An additional seven studies were then added, resulting in nine studies being analyzed. Qualitative and quantitative data were extracted from studies to assess the quality of each article and address the primary outcome. Results of the meta-analysis demonstrated pediatric trauma centers have favorable in-hospital mortality rates compared to adult trauma centers, but these results were heterogeneous even after four sensitivity analyses with I² values ranging from 94% - 99%. The heterogeneity was likely due to inconsistent study designs.

Discussion

In-hospital mortality has limited value when assessing the quality of pediatric trauma care. Additional research is needed to assess the usefulness of other quality indicators such as process of care measures, complications, and post-discharge functional status.

Contact:
Wade Billings, MS-4
(626) 487-4365
wbillings@kumc.edu

Department: Obstetrics & Gynecology
Faculty Mentor: Kevin Miller, M.D.
Presentation Number: 55

Category: Student
Session: Lunch Oral presentation
Location: Roberts Amphitheater

Differences in Apical Repair at the Time of Hysterectomy for Patients with Pelvic Organ Prolapse

Alexandra Melocco, MS-4, Ali Rueschhoff, MS-4, Evan Schwenk, D.O.,
Ruth Lehman Wiens, MS-4, Jennifer Duong, MPH, Edgar LeClaire, M.D., Kevin Miller, M.D.

University of Kansas School of Medicine-Wichita

Introduction

Traditionally, the surgical treatment of pelvic organ prolapse has been vaginal hysterectomy with an apical repair. Performing an apical suspension procedure at the time of hysterectomy increases long-term subjective and anatomic cure rates. The primary objective of this study was to evaluate prolapse repair by hysterectomy type.

Methods

Charts of patients with prolapse, undergoing hysterectomy at a single institution between 2010 and 2014 were retrospectively reviewed. Cases were excluded for: prolapse not documented, hysterectomy for cancer/staging or post-cesarean, or missing operative reports/records. Demographic and surgical data were collected. Operative reports were redacted and blinded, and the Principal Investigator reviewed each case for evidence of apical repair.

Results

Of 495 cases, most patients were white (89.1%, n=441), never smoked (66.5%, n=329), and were menopausal (58.2%, n=288). Average age at surgery was 55±12.9 years old (range: 25 to 89). The majority had only anterior-related prolapse (62.2%, n=308). Vaginal (55.8%, n=276) and robot-assisted (27.3%, n=135) were the main types of hysterectomy performed. Apical repair was performed in 74.1% (n=367) of cases; more repairs performed at the time of vaginal hysterectomy than other types of hysterectomy ($p<0.0001$). Apical repair if the case involved a urogynecologist was 96.5% compared to 54.5% ($p<0.0001$). In 63.0% (n=312) apical repair was described in the dictation and reported in the list of procedures.

Discussion

Apical repair is most commonly performed at the time of vaginal hysterectomy. There is a need for continued education about the importance of apical support to appropriately manage uterovaginal prolapse and improve patient care.

Contact:
Alexandra Melocco, MS-4
(316) 706-7555
amelocco@kumc.edu

Department: Internal Medicine
Faculty Mentor: Nathan Tofteland, M.D.
Presentation Number: 56

Category: Resident
Session: Afternoon Oral presentation
Location: Roberts Amphitheater

Multidisciplinary Weight Loss Programs Lead to Statistically Significant Reductions in Liver Enzyme Levels in Obese Patients with Non-Alcoholic Fatty Liver Disease

Tiffany Schwasinger-Schmidt, M.D., Ph.D.¹, Bobbie Paull-Forney, RN, MPH²,
Milan Bimali, Ph.D.¹, Nathan Tofteland, M.D.¹, William Salyers, M.D., MPH¹,
Georges Elhomsy, M.D.¹

University of Kansas School of Medicine-Wichita¹, Via Christi Regional Medical Center²

Introduction

Non-alcoholic fatty liver disease (NAFLD) is the most common cause of chronic liver disease worldwide and is the third most common indication for liver transplant in North America. Epidemiological data show a strong correlation between NAFLD and obesity, diabetes, and the metabolic syndrome. This study investigated the effect of a medically supervised weight loss program on liver enzymes in patients with NAFLD.

Methods

This research consisted of a retrospective analysis of adults enrolled in a physician-directed, community-based, weight management program from 2009 to 2014. Patients consumed at least 800 kilocalories per day, attended weekly behavioral education classes, and expended 300 kilocalories per day in exercise. The primary outcome of reductions in liver enzyme levels was assessed by comparing weight loss with AST and ALT.

Results

A total of 97 patients with an average weight of 287 pounds, BMI of 45, with baseline elevations in AST and ALT were included in the study. Analysis revealed a positive correlation of 0.45 between weight loss and ALT levels ($p=0.03$) and 0.53 between weight loss and AST levels ($p=0.01$) at one year. A 44% reduction in ALT and a 41% reduction in AST were observed after 12 weeks of therapy, with ALT levels reduced by an additional 6% at one year.

Discussion

This study showed a statistically significant reduction in liver enzymes in obese patients with NAFLD who underwent weight loss utilizing a multidisciplinary approach. Organized weight loss programs play a pivotal role in treating patients with NAFLD and may decrease progression to end stage liver disease.

Contact:
Tiffany Schwasinger-Schmidt, M.D., Ph.D.
(402) 853-2192
tschwasinger-schmidt@kumc.edu

Department: Internal Medicine
Faculty Mentor: N/A
Presentation Number: 57

Category: Faculty
Session: Afternoon Oral presentation
Location: Roberts Amphitheater

Promoting Positive Organizational Psychology

Robert Badgett, M.D.¹, Jiatian Chen, MLHR², Douglas May, Ph.D.², Tom Field, MEd, MHSA³,
Allen Greiner, M.D., MPH³, Leland Graves, M.D.³

University of Kansas School of Medicine-Wichita¹, University of Kansas School of Business²,
University of Kansas Medical Center³

Introduction

Companies from diverse industries recognize that thriving employees are associated with meeting organizational goals. In addition, thriving may promote innovation and protect against burnout. For the last two years, the University of Kansas Medical Center has queried personal about their workplace using the Baldrige survey, advocated by the National Institute of Standards and Technology. We assessed the role of the Baldrige in an academic health center.

Methods

The Baldrige contains 40 questions that query the presence of seven concepts (leadership, strategy, customer focus, workforce focus, operations, results). In 2015, the survey asked employees about their local work units and is the focus of this analysis. We performed confirmatory factor analyses. We informally assessed the ability of the Baldrige to map to Macey's constructs of employee engagement and we created a theory-based, refactored concept ('autonomy') that used three related questions from the Baldrige. Within clinical departments in the School of Medicine, we correlated the original seven categories and the theory-based category to KUSM graduates' assessments of departmental educational quality as measured by the AAMC-GQ.

Results

Eight hundred seventy seven responses were received. The Baldrige did not well map to Macey's constructs and did not validate by confirmatory factor analysis (RMSEA=0.086; CFI=0.829; TLI=0.815). The Baldrige concepts did not correlate with graduates' assessments of educational quality. The theory-based category, autonomy, had a borderline correlation.

Discussion

The Baldrige survey did not perform well. While the correlation for autonomy was borderline, it supports recent observations of the importance of autonomy in self-determination theory in work place thriving and recent recommendations for 'autonomy-supportive' management.

Contact:
Robert Badgett, M.D.
(316) 293-2650
rbadgett@kumc.edu

Department: Medical Sciences
Faculty Mentor: Robert Kraft, M.D.
Presentation Number: 58

Category: Student
Session: Afternoon Oral presentation
Location: Roberts Amphitheater

Enhancing Patient Engagement: A Student-led Quality Improvement Project to Increase Patient Portal Adoption

Eric Easey, MS-4, Joshua Gaede, MS-4, Trinity Graff, MS-4, Miranda McKellar, MS-4, Theresa Neill, MS-4, Robert Kraft, M.D.

University of Kansas School of Medicine-Salina

Quality Improvement

Problem

A patient portal is a secure website that gives a patient access to their health information from anywhere with an internet connection. Salina Family Healthcare Center (SFHC) wishes to enhance patient engagement in their own healthcare by increasing the number of patients registered for the clinic's patient portal. Accordingly, SFHC aims to increase the weekly patient portal adoption rate as measured by their electronic medical record by 5% within two weeks over the baseline 30-day average portal adoption rate.

Baseline Measurement

The baseline 30-day average portal adoption rate measured on March 28, 2017 was 21.62% of patients.

Design

Population Health in Practice students at KUMC-Salina used the Model for Improvement and standard quality improvement tools, such as process mapping, Ishikawa diagrams, and stakeholder analysis, to evaluate SFHC's low portal adoption rate and implement changes to improve that rate. Specific interventions for improvement are still under consideration, but may include office staff training, patient educational materials, and shifting the registration process to other office staff. Interventions will be implemented using Plan-Do-Study-Act (PDSA) cycles.

Results

Performance metrics, specifically average weekly portal adoption rate, will be monitored daily with final results for the project to be evaluated two weeks after initial attempts to implement interventions for improvement.

Conclusions

This student-led quality improvement project is ongoing. Lessons learned should center around determining effectiveness of specific interventions and elucidating barriers to portal adoption. Use of the Model for Improvement and PDSA cycles, even beyond the time frame of this project, should lead to increased portal adoption by SFHC patients.

Contact:
Robert Kraft, M.D.
(785) 820-0983
bkraft@salinahealth.org