RESEARCH SYMPOSIUM
ORAL PRESENTATIONS

June 8th, 2017
7:00 – 9:30am

Laros Auditorium
Education Center

St. Luke's University Health Network

Dental Residency
Emergency Medicine Residency
Family Medicine Residencies
General Surgery Residency
Internal Medicine Residency
Obstetrics & Gynecology Residency
Orthopedic Residency
Pharmacy Residency
Orthopedic Physical Therapy Residency
Podiatry Residency

Osteopathic Internship
Transitional Year Internship

Cardiology Fellowship
Geriatric Medicine Fellowship
Hospice/Palliative Care Medicine Fellowship
Podiatric Dermatology Fellowship
Sports Medicine Fellowship
Surgical Critical Care Fellowship
Urogynecology Fellowship

ORAL PRESENTATIONS

Note: Residents' and fellows' names are bolded.

1)   Patients' Thoughts and Perspectives on Pain in an Outpatient Physical Therapy Practice: A Descriptive Study

Nicholas Adriance, PT, DPT; Stephen Kareha, DPT; Andrue Bergmooser, DPT; Jill Stoltzfus, PhD; Jeffrey Bays, MSPT

2)   The Effect of Acute Alcohol Intoxication on Serum Lab Values in Trauma Patients

Marissa Cohen, MD; Thomas Wojda, MD; **Ashley Jordan, MD**; Joshua Luster, MS3; Holly Stankewicz, DO; Alexander Wallner, MD; Aliaskar Hasani, MS4; Samuel Schadt; Stanislaw Stawicki, MD, MBA; Philip Salen, MD

3)   Association between Serum Alcohol Levels and Polysubstance Use in Injured Patients

Ashley Jordan, MD; Thomas Wojda, MD; **Marissa Cohen, MD**; Aliaskar Hasani, MS4; Holly Stankewicz, DO; Philip Salen, MD; Stanislaw Stawicki, MD, MBA

5)   A Randomized Controlled Trial of Laparoscopic Lens Defogging: Efficacy of Techniques Employing a Novel Simulation Model

Vijay Palvia, MD; Aaron Herrera Gonzalez, MD; Richard Vigh, MD; James Anasti, MD

6)   A New Use TRISS: Can it Predict Morbidity and Length of Stay?

W. T. Hillman Terzian, MD; Brian Hoey, MD; William Hoff, MD; Peter Thomas, DO; Thomas Wojda, MD; James Cipolla, MD; Stanislaw Stawicki, MD, MBA

6)   Glycemic Control after Transitioning from Standard Concentration Insulin to Concentrated Insulin in Patients with Uncontrolled Diabetes: a Longitudinal Case Series

Shari Williams, PharmD; Daniel Longyhore, PharmD, MS, BCACP; Shawn Depcinski, PharmD, BCPS

ORAL PRESENTATION ABSTRACT

Patients' Thoughts and Perspectives on Pain in an Outpatient Physical Therapy Practice: A Descriptive Study

Nicholas Adriance, PT, DPT; Stephen Kareha, DPT; Andrue Bergmooser, DPT;
Jill Stoltzfus, PhD; Jeffrey Bays, MSPT

Introduction/Background

Musculoskeletal pain is the most frequent complaint for which people seek medical treatment. Pain is a powerful motivating force that is subjective, as well as a universal human experience that can guide treatment-seeking behaviors in patients. There is a complexity to pain that combines multiple pain generators and amplifiers, including fear, avoidance, anxiety, stress, beliefs, and depression. Therefore, the purpose of this descriptive survey study was to analyze patients' beliefs, expectations, and misconceptions regarding pain beliefs prior to initial examination.

Methodology and Statistical Approach

We used a mixed methods approach with a convenience sample of 54 patients presenting for physical therapy consultation with a chief complaint of pain. Patients completed a 16-item survey prior to examination. The survey included demographic information such as gender, age, chronicity of symptoms, surgical or non-surgical source, and body part or region involved. The survey also incorporated an 11-point Numeric Pain Rating Scale, as well as several open- and closed-ended questions from established and previously validated outcome measures such as the Fear Avoidance Belief Questionnaire (FABQ), the Pain Catastrophizing Scale (PCS), the Pain Beliefs Questionnaire (PBQ), and the Pain Neurophysiology Questionnaire. Data were collected from March 2015 to September 2015. The qualitative data were then synthesized using a thematic analysis.

Results

Four main themes emerged from the data: 1) chronicity (63% of patients reported pain lasting 6 months or more); 2) emotional lability (25% of patients responded emotionally when they experienced pain); 3) fear avoidance (55% of patients reported that they thought about pain both often and all of the time); and 4) pain catastrophization (64% of patients expressed their belief that having higher pain intensity is proportional to the amount of tissue damage).

Discussion and Conclusion

The results of this study are consistent with those discussed in previous research utilizing a biopsychosocial model. This model integrates the interaction between the environment, psychological, biological, and social components of pain. The model also focuses on patients' limited knowledge regarding pain and maladaptive beliefs that lead to functional disability. The results suggests a need for management through a biopsychosocial approach, given the flaws and gaps within the current biomedical model, which has not grasped the importance of all-encompassing patient care. Additionally, further research is needed regarding the validity of 16-item survey created for this study.

ORAL PRESENTATION ABSTRACT

The Effect of Acute Alcohol Intoxication on Serum Lab Values in Trauma Patients

Marissa Cohen, MD; Thomas Wojda, MD; Ashley Jordan, MD; Joshua Luster, MS3; Holly Stankewicz, DO; Alexander Wallner, MD; Aliaskar Hasani, MS4; Samuel Schadt; Stanislaw Stawicki, MD, MBA; Philip Salen, MD

Introduction/Background

Despite acute alcohol intoxication being relatively common among trauma patients, little is known regarding the effect of serum alcohol levels and hematologic parameters at the time of initial patient evaluation. The aim of this study was to determine the behavior of comprehensive blood count (CBC) components in the context of increasing serum alcohol levels. We hypothesized that increasing alcohol levels would be associated with greater concentration of blood components, with resulting increase in all CBC components.

Methodology and Statistical Approach

The institutional registry at our Level I Trauma Center was queried between August 1998 and June 2015 for all patients in whom blood alcohol content (BAC) was collected. Other data points included patient demographics, injury mechanism/severity information, and basic hematologic parameters. Hematologic data were contrasted across pre-defined BAC strata ($< 0.10\%$, 10-15%, 15-20%, $> 20\%$). Statistical comparisons were performed using analysis of covariance (ANCOVA) with adjustment for patient demographics and injury characteristics. Statistical significance was set at $\alpha = 0.05$.

Results

A total of 1,218 patients who presented to our institution had formal serum alcohol testing during the study period. Serum alcohol levels were < 0.10 in 89% (1,086/1,218); 0.10-0.15 in 6.2% (75/1,218); 0.15-0.20 in 2.2% (27/1,218); and > 0.20 in 2.5% (30/1218). After adjusting for patient age, gender, and Injury Severity Score (ISS), there was a significant increase in both hemoglobin and hematocrit with increasing alcohol levels (Figure 1A and 1B, both $p < 0.01$). Unexpectedly, we noted a 16% drop in WBC count with increasing alcohol levels (Figure 1C, $p < 0.02$). Platelet count behavior was more difficult to quantify, with an irregular V-pattern noted as serum alcohol levels increased (Figure 1D, $p < 0.01$).

Discussion and Conclusion

Although our hypothesis regarding increasing hemoglobin and hematocrit levels with increasing serum alcohol levels was confirmed, we were surprised to note a decline in WBC counts with increasing degrees of alcohol intoxication. Platelet count behavior did not follow a predictable pattern in this sample of patients. As the knowledge of alcohol-induced hematologic changes may influence provider perception of trauma patient hematologic homeostasis, our findings are clinically significant. With 5-16% alcohol-mediated variability in key CBC components, a non-trivial group of patients may have their initial hematologic results misinterpreted in a potentially harmful way.

ORAL PRESENTATION ABSTRACT

Association between Serum Alcohol Levels and Polysubstance Use in Injured Patients

Ashley Jordan, MD; Thomas Wojda, MD; Marissa Cohen, MD; Aliaskar Hasani, ; Holly Stankewicz, DO; Philip Salen, MD; Stanislaw Stawicki, MD, MBA

Introduction/Background

Polysubstance abuse is a major public health problem in the United States. In addition to the negative impact on the health and well-being of substance users, alcohol and/or drug abuse may be associated with significant trauma burden. The aim of this study was to determine if serum alcohol (EtOH) levels at initial trauma evaluation correlate with the simultaneous presence of other substances of abuse. We hypothesized that polysubstance use would be significantly more common among patients who presented to our trauma center with blood alcohol content (BAC) > 0.10%.

Methodology and Statistical Approach

After an IRB exemption was granted, we retrospectively reviewed records from our Level I Trauma Center registry between January 2009 and January 2012. Abstracted data included patient demographics, BAC determinations, all available formal determinations of urine/serum drug screening, injury mechanism and severity (ISS) information, Glasgow coma scale (GCS) assessments, and 30-day mortality. Stratification of BAC was based on the 0.10% cut-off. Statistical comparisons were performed using chi square and Fisher's exact tests, with significance set at $\alpha = 0.05$.

Results

A total of 488 patient records (76.3% male, mean age 38.7 years) were analyzed. Median GCS was 15 [interquartile range (IQR) 14-15]. Median ISS was 9 (IQR 5-17). Median BAC was 0.10% (IQR 0-0.13). There were 284 (58.2%) patients with BAC <0.10% and 204 (41.8%) patients with BAC > 0.10%. Of the 245 patients who underwent formal "tox-screen" evaluations, 31 (12.7%) were positive for marijuana, 18 (7.35%) for cocaine, 28 (11.4%) for opioids, and 32 (13.1%) for benzodiazepines. As presented in Table 1, patients with BAC > 0.10% on initial evaluation also had significantly greater polysubstance use (e.g., EtOH + additional substance) than patients with BAC < 0.10% [53/220 (24.1%) versus 16/25 (64.0%), $p < 0.002$]. Among polysubstance users, BAC > 0.10% was significantly associated with opioid and cocaine use.

Table 1: The Relationship between Initial Blood Alcohol Concentration (BAC) and Polysubstance Use in Trauma Patient Sample

Category	BAC <0.10%	BAC >0.10%	Significance
Benzodiazepine	27/220 (12.3%)	5/25 (20.0%)	p = 0.192
Cocaine	13/220 (5.91%)	5/25 (20.0%)	**p = 0.025**
Marijuana	25/220 (11.4%)	6/25 (24.0%)	p = 0.097
Opioids	21/220 (9.54%)	7/25 (28.0%)	**p = 0.014**
Polysubstance			
0	167/220 (75.9%)	9/25 (36.0%)	
1	31/220 (14.1%)	10/25 (40.0%)	
2	15/220 (6.82%)	4/25 (16.0%)	
3+	7/220 (3.18%)	2/25 (8.0%)	**p = 0.002**

Discussion and Conclusion

This study shows that a significant proportion of trauma patients with admission BAC >0.10% present with evidence of polysubstance use. Patients with BAC >0.10% were more likely to test positive for drugs of abuse than patients with BAC <0.10%. Our findings support the need for substance abuse screening in the presence of suspected EtOH intoxication, focusing on identification of at-risk patients, appropriate clinical management, and implementation of early polysubstance abuse intervention strategies.

ORAL PRESENTATION ABSTRACT

A Randomized Controlled Trial of Laparoscopic Lens Defogging: Efficacy of Techniques Employing a Novel Simulation Model

Vijay Palvia, MD; Aaron Herrera Gonzalez, MD; Richard Vigh, MD; James Anasti, MD

Introduction/Background

Preservation of an operative visual field during laparoscopy optimizes surgical efficiency and safety. Laparoscopic lens fogging (LLF) is a common obstacle during surgery. To resolve this problem, numerous laparoscopic defogging techniques (LDT) have been developed. Previous studies demonstrated efficacy of individual techniques for LLF; however, no major comparative analysis of LDTs has been published. We performed a randomized controlled trial comparing common LDTs (warm saline - WS, anti-fogging solution - FRED, glove warming - GLOV, and chlorhexidine gluconate solution - CHG) by employing a novel simulation model.

Methodology and Statistical Approach

The simulation model was designed as a 13 x 13 x 13 inch box with control of humidity and temperature. A laparoscope was inserted after each application of an LDT. Three observers rated the visual clarity (VC) using a visual analog scale (0 = no clarity, 100 = perfect clarity). Each LDT underwent 4 applications with simultaneous VC scores assigned by 3 observers in blinded fashion. Observers were not blinded to type of laparoscope diameter (5 mm versus 10 mm). Finally, the 3 observers were allowed 10 seconds to assess the VC at 5 seconds, 30 seconds, and 60 seconds.

All VC scores were presented as a mean ± standard deviation. One-way analysis of variance (ANOVA) or Kruskal-Wallis method was applied as appropriate. The Student–Newman-Kuels test was employed for all post-hoc multiple pairwise comparisons. VC scores at the 60 second time point were used to compare LDTs to each other. Significance was determined by $p \leq 0.05$.

Results

The 10 mm and 5 mm scope each showed significant differences when comparing VC scores at 60 seconds (VC60) for each LDT ($p < 0.001$). FRED, SOAP and WS had higher VC60 scores than controls with the 10 mm scope (4.8 ± 2.1, 7.8 ± 0.8, 7.9 ± 1.0, versus 2.6 ± 1.1, $p < 0.05$) and 5mm scope (6.6 ± 0.9, 7.6 ± 0.7, 7.8 ± 0.8, versus 4.3 ± 1.6, $p < 0.05$). Both SOAP and WS VC60 scores were higher than FRED VC60 scores with the 10mm scope (7.8 ± 0.8, 7.9 ± 1.0 versus 4.8 ± 2.1, $p < 0.05$) and 5mm scope (7.6 ± 0.7, 7.8 ± 0.8 vs 4.3 ± 1.6, $p < 0.05$).

Discussion and Conclusion

Our study is the first randomized controlled trial comparing efficacy of different LDTs, which showed that WS and CHG were more effective than FRED. Our findings and our novel simulation model can guide future studies using animal and human subjects.

ORAL PRESENTATION ABSTRACT

A New Use TRISS: Can it Predict Morbidity and Length of Stay?

W. T. Hillman Terzian, MD; Brian Hoey, MD; William Hoff, MD; Peter Thomas, DO; Thomas Wojda, MD; James Cipolla, MD; Stanislaw Stawicki, MD, MBA

Introduction/Background

The Trauma and Injury Severity Score (TRISS) was designed as a survival prediction paradigm. Our aim was to determine if TRISS correlated with morbidity and hospital length of stay (LOS) using data from our Level 1 Trauma Center institutional registry (TCIR). We hypothesized that lower TRISS probability of survival is associated with increased morbidity and longer LOS.

Methodology and Statistical Approach

We performed a review of the TCIR between 1999 and 2015. Of 32,000 charts, 23,205 contained data required to calculate TRISS probabilities of survival (POS). Results were controlled for demographic factors. We performed univariate analyses to determine relationships between TRISS and mortality, morbidity, and LOS (for hospital, step-down, ICU). Corresponding receiver operator characteristic (ROC) curves were constructed. Statistical significance was set at 0.05.

Results

There were 23,205 patients (60.3% male; 5.1% penetrating trauma; 22.1% admitted to ICU). Median age was 45 years (interquartile range, IQR, 24-70). Median Injury Severity Score (ISS) was 5, with 3.1% overall mortality. TRISS was highly predictive of mortality (AUC 0.95), outperforming GCS (AUC 0.83), ISS (AUC 0.80), and age (AUC 0.65). Likewise, TRISS predicted complications (AUC 0.81) better than its subcomponents. Finally, TRISS outperformed GCS and age at predicting ICU admissions, being comparable only to ISS (AUC 0.80 and 0.81, respectively). Lower TRISS POS correlated strongly with LOS (**Table 1**).

Table 1: TRISS vs. Hospital / Stepdown / ICU Length of Stay (LOS), with Values Adjusted for Patient Age and Gender

Probability of Survival	90-100% (n=21,853)	80-90% (n=67)	<80% (n=745)
Hospital LOS*	1.28 ± 0.82 days	2.31 ± 1.74 days	2.39 ± 2.23 days
Stepdown LOS*	0.25 ± 1.5 days	1.36 ± 3.74 days	1.87 ± 6.41 days
ICU LOS*	1.07 ± 0.47 days	1.86 ± 1.57 days	2.11 ± 1.85 days

*Denotes statistically significant differences ($p < 0.01$)

Discussion and Conclusion

Although the utility of TRISS has been questioned in contemporary literature, we found that our TRISS data were useful in predicting mortality, morbidity, and hospital LOS. The latter two findings are novel and unique to this study. Given the above, TRISS may be predictive of outcomes other than mortality and should not be abandoned at this time.

ORAL PRESENTATION ABSTRACT

Glycemic Control after Transitioning from Standard Concentration Insulin to Concentrated Insulin in Patients with Uncontrolled Diabetes: a Longitudinal Case Series

Shari Williams, PharmD; Daniel Longyhore, PharmD, MS, BCACP;
Shawn Depcinski, PharmD, BCPS

Introduction/Background

There are an increasing number of patients unable to achieve glycemic control with the use of standard concentration insulin (U-100). Due to this reality, the use of concentrated insulin formulations has expanded and became a more readily available treatment option. Despite widespread availability, there are limited data regarding real-life patient transitions from standard to concentrated insulin and the impact on glycemic control. The purpose of this study was to determine the efficacy of concentrated insulin in improving glycemic control in patients with uncontrolled glucose utilizing standard concentration insulins.

Methodology and Statistical Approach

This was a retrospective, multi-center, longitudinal case series analyzing medical records from an Internal Medicine and Endocrinology practice from January 2011 to January 2017. Insulin regimens pre- and post-concentrated insulin transitions were evaluated to determine glycemic control by reduction in hemoglobin A1C, change in total daily dose, and change in number of injections per day.

Results

Among the treatment groups represented, the average reduction in A1C was statistically significant for those patients using Reg U-500 (-1.2%, $p < 0.001$), Glar U-300 (-0.6%, $p < 0.001$), or combination Lis U-200/Glar U-300 (-1.1%, $p = 0.002$). Regarding total number of units required per day, there was a statistically significant difference in patients using Glar U-300 (+9.4 units, $p = 0.009$) or combination Lis U-200/Glar U-300 (+30.9 units, $p = 0.018$). Lastly, the number of injections per day remained consistent per treatment group with the exception of patients using Reg U-500 (-1 inj/day, $p < 0.001$).

Discussion and Conclusion

The transition to concentrated insulin presents advantages for improved glucose control. Regimens of U-500, Glar U-300, and the combination of Lis U-200 with Glar U-300 yielded lower A1C values. However, only Reg U-500 was able to demonstrate this reduction without a significant increase in insulin dose and a significant reduction in the number of injections administered per day.

ACKNOWLEDGEMENTS

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POSTER PRESENTATIONS

Note: Residents' and fellows' names are bolded.

1) Screening for Nephropathy in Diabetes Mellitus: Just What the Doctor *Should* Order

   Samih Barcham, MD; Helaine Levine, MD; Maria Reichel, MD

2) Focused Improvement in Abdominal Aortic Aneurysm Screening Practices in a Resident-Driven Clinic Setting

   Steven Cardio, MD; Jason Bacon, MD; Cara Ruggeri, DO

3) Accessibility and Compliance of School Students with Primary Care Evaluation

   Thomas Chattathil, MD; Decosy Hercules, DO; Celestine Nnaeto, MD; Maheep Vikram, MD; Brian Gloyeske, MS, LAT, ATC; Alexander Smith; Christina Wong

4) Assessing Knowledge Gaps Regarding End-of-Life Issues in Patients Admitted to the Hospital

   Marissa Cohen, MD; Mayank Mehrotra; Luis Vera, MD: Vamsi Balakrishnan, MD; Rebecca Jeanmonod, MD

5) The Prevalence of Movement-Related Conditions in the Primary Care Setting

   Jenna Cornell, DPT; Stephen Kareha, DPT

6) History and Physical Exam Predictors of Intracranial Injury in the Elderly Fall Patient: a Prospective Multicenter Study

   Timothy Dotzler, DO; Jamie Roper, DO; Luis Vera, MD; Donald Jeanmonod, MD; Rebecca Jeanmonod, MD; Shellie Asher, MD; Mark Reiter, MD; Eric Bruno, MD; Josephine Winters, MD; Nirali Shah, MD

8) Fecal Microbial Transplant for Clostridium Difficile Infection Refractory to Conventional Treatment

   Rodrigo Duarte-Chavez, MD; Thomas Wojda, MD; Stanislaw Stawicki, MD; Gloria Fioravanti, DO; Berhanu Geme, MD

8) Prealbumin Levels in Critically Ill Patients Correlate with Computed Tomography-Derived Psoas Muscle Characteristics

   Nicholas Ferguson, MD; Stanislaw Stawicki, MD, MBA; Jamie Thomas, DO

POSTER PRESENTATIONS

9) Are CT Scans Over-Utilized in the Workup of Vertebral Compression Fractures?

   Shane McGowan, MD; David Ramski, MD; Brittany Homcha, BA; Gbolabo Sokunbi, MD

10) The Impact of a Standardized Checklist on Length of Time to Complete Sign Out During Emergency Department Physician Change of Shift

   Alyssa Milano, DO; Holly Stankewicz, DO; Philip Salen, MD; Jill Stoltzfus, PhD

11) A Systemic Review to Assess Optimal Management of Laparoscopic Cholecystectomy in Patients with Left Ventricular Assist Devices

   Ronnie Mubang, MD; Samuel Schadt; Halward Blegen, DO; Mark Schadt, MD

12) Genetic Counseling Services in Oncologic Practice: Recognizing the Underutilization of Genetic Referrals in At-Risk Cancer Patients

   Vijay Palvia, MD; Nicholas Taylor, MD; Israel Zighelboim, MD; Andrea Smith, MS, CGC

13) Amniotomy Affects the Urine Protein Creatinine Ratio Test Accuracy in the Diagnosis of Preeclampsia

   Sara Quinn, MD; Jessica Lennon, MD; Aaron Herrera Gonzalez, MD; Elizabeth Dierking, MD; James Anasti, MD

14) Reducing Hospital Readmissions in Short Term Rehab Patients Through Implementation of Clinical Pathways

   Stephanie Rabenold, DO; Omolara Bamgbelu, MD; Alaa Mira, MD; Amaravani Mandalapu, MD

15) Correlation of Diabetic Education with HBA1C Levels

   Urja Shah, DPM; Nargiza Mahmudova, DPM; Rebekah Cherian, DPM

16) Making Comfort Count: A Hospice Prescribing Process Quality Improvement Project

   Anna Thomas, MD; Diane Hummel-Spruill, RN, MSN; Ric Baxter, MD

POSTER PRESENTATIONS

17) End Tidal Carbon Dioxide as an Early Marker for Transfusion Requirement in Trauma Patients

    John Tran, MD; Jason Black, DO; Rebecca Jeanmonod, MD; Dhanalakshmi Thiyagarajan, MS3

18) Cost Implications with Utilizing a Five-Percent Versus Ten-Percent Dose Rounding Policy for Biologic Antineoplastic Agents

    Jessah Villamor, PharmD; Brian Waldron, PharmD, MSCR; Tricia Papademetrious, PharmD

Medical Student Posters

1) Understanding the Social Determinants of Health in a Student-Run Free Clinic at Temple/St. Luke's Hospital

    Leah Grandi, MS4; Jonathan Hunt, MS4; Alvin George, MS4; Bonnie Coyle, MD, MS; **Yurhee Lee, MD;** Rachel Moyer

2) Preoperative CHA2DS2-VASc Score Predicts Post-Operative Atrial Fibrillation after Lobectomy

    Charles Lee, MS4; William Burfeind, MD; **David Strauss, MS4; Lauren Stone, MS3;** Jill Stoltzfus, PhD; Matthew Puc, MD

POSTER PRESENTATION ABSTRACT

Screening for Nephropathy in Diabetes Mellitus: Just What the Doctor *Should* Order

Samih Barcham, MD; Helaine Levine, MD; Maria Reichel, MD

Introduction/Background

Diabetic nephropathy occurs in 20-40% of diabetics, and annual screening by urine albumin /creatinine ratio is recommended. Low screening rates are commonly attributed to patient factors, including lack of follow through with ordered testing or missed appointments. We hypothesized the following: 1) low screening rates resulting from physician factors would lead to failure to order the testing; and 2) focused education can raise diabetic nephropathy screening rates 20 % in the short term, with continuing educational support potentially leading to further increases.

Methodology and Statistical Approach

The study design followed quality improvement methodology with successive plan-do-check-act (PDCA) cycles over 20 months. Billed ICD diabetic codes identified diabetic visits at Coventry Family Practice (CFP) for the SLW Family Medicine Residency. Every diabetic patient visiting CFP was included in the baseline 14-month period. Intervention cohorts were assessed over 1-2 month periods. Faculty participation remained constant, but different residents participated in different cycles. Urine albumin orders and results were collected retrospectively from charts of serial cohorts, with percentages of total available urine results and orders compared between the different patient groups. Presence or absence of orders was used to differentiate between physician factors (no order) and patient factors (non-compliance) Physician educational interventions were modified prior to each new cycle based on previous cycle results.

Results

An increase of 20% of available results over baseline was maintained over all intervention cycles. Absence of physician order decreased 22% initially, but further gains between interventions 1-2 were achieved through increased patient compliance. Measurement of orders on previously missed patients was added after education session 3 and revealed a 127% increase in cycle 2-3.

Discussion and Conclusion

Diabetic nephropathy is the leading cause of end-stage renal disease. Modification of treatment in proteinuric patients can slow progression. Therefore, annual urine albumin screening is both a payer outcomes quality measure and an American Diabetes Association (ADA) recommendation. Our baseline results confirmed our hypothesis that low screening rates at CFP result from physician failure to order the testing rather than patient non-compliance. Effectiveness of the focused educational intervention was demonstrated by maintenance of a 20% increase of available results over baseline in different patient cohorts, with a corresponding increase in physician orders after the first and third interventions. The PDCA cycles approach is especially helpful in an educational setting with a constantly changing physician pool.

POSTER PRESENTATION ABSTRACT

Focused Improvement in Abdominal Aortic Aneurysm Screening Practices in a Resident-Driven Clinic Setting

Steven Cardio, MD; Jason Bacon, MD; Cara Ruggeri, DO

Introduction/Background

Population-based studies in adults older than 50 years have found that the prevalence of abdominal aortic aneurysm (AAA) ranges from 3.9% - 7.2% in men. The incidence of AAA increases steadily with advancing age, and there is a 3- to 5-fold increase in prevalence in individuals who have ever smoked. It is important to consider potential screening strategies for AAA because most are asymptomatic for many years until they rupture. The overall mortality rate from a ruptured AAA can be as high as 75% - 90%. Numerous studies show adequate evidence that one-time ultrasonography is a safe and accurate screening test for AAA, with high sensitivity and specificity of 94% - 100% and 98% - 100%, respectively. Therefore, as a class B recommendation, the U.S. Preventative Services Task Force (USPSTF) advises one-time screening for AAA in men ages 65- 75 years who have ever smoked ("ever smoked" is defined as having smoked at least 100 cigarettes during a lifetime). Although this recommendation has been in place since 2005, it is rarely followed, resulting in large gaps between guideline recommendations and translation into actual practice standards.

Our quality improvement project aimed to assess the current adherence of our general internal medicine clinic (Southside Medical Center) to the USPSTF's AAA screening guidelines, as well as determine the impact of simple, low-cost interventions on practice behavior by comparing screening rates before and after these interventions.

Methodology and Statistical Approach

To establish our baseline data, patient records were initially obtained from the clinic's electronic medical record (EMR) system, AllScripts, with the assistance of the network's information technology (IT) support staff. Filters were applied to capture inclusion criteria, which included men ages 65 - 75 years old with a current or former smoking history, with and without diagnosis codes associated with "screening for AAA" as of December 2016. Filtered data were further by manually reviewing each individual chart in AllScripts to ensure that baseline data did indeed reflect the inclusion criteria and to determine whether these patients were actively being seen at our clinic. Data from AllScripts were cross-referenced with data from our inpatient EMR system, EPIC, as well as our former system Portal to determine if these patients may have been screened by ultrasound or alternative means incidentally (e.g., CT scan) during the recommended screening age interval.

Results
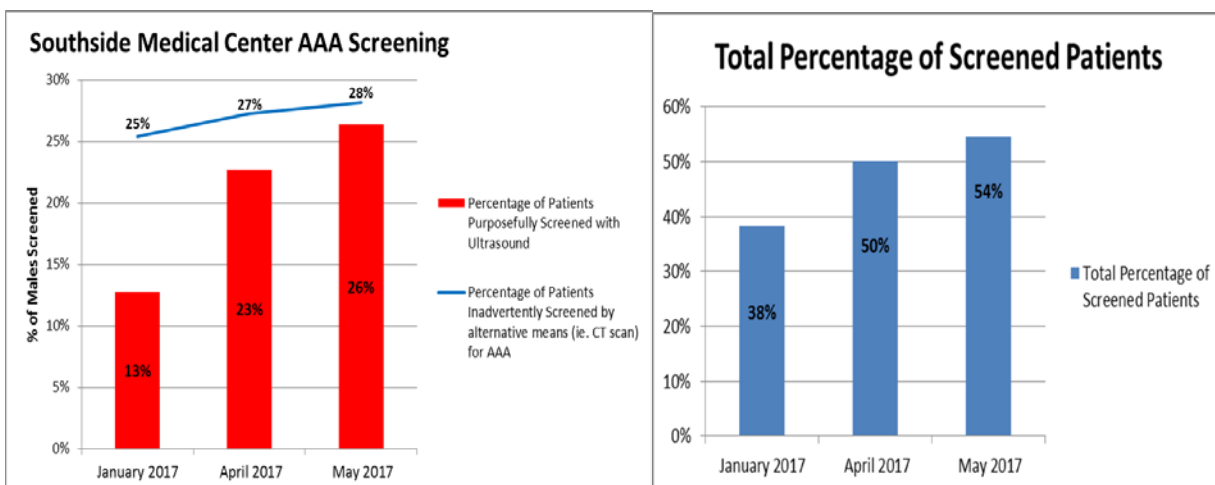
January 2017		Screened by u/s	Inadvertently screened by alternative means
	Total N=110	N = 14	N = 28
		13%	25%
Total Screened %	38%		
April 2017			
	Total N=110	N = 25	N = 30
		23%	27%
Total Screened %	50%		
May 2017			
	Total N=110	N = 29	N = 31
		26%	28%
Total Screened %	54%		

Discussion and Conclusion

This study showed that implementation of low-cost multifaceted interventions aimed at provider education/reminders increased the rate of AAA screening at our clinic. We believe this was a successful focused intervention, since our ultrasound screening rate doubled, while our inadvertent screen rate stayed relatively stable. Further research regarding sustainability of this intervention is warranted.

POSTER PRESENTATION ABSTRACT

Accessibility and Compliance of School Students with Primary Care Evaluation

Thomas Chattathil, MD; Decosy Hercules, DO; Celestine Nnaeto, MD; Maheep Vikram, MD; Brian Gloyeske, MS, LAT, ATC; Alexander Smith; Christina Wong

Introduction/Background

Our Sports Medicine organization proudly serves many schools in the community and performs 7,000 – 8,000 physicals per year. They are usually done thrice a year for each school according to fall, winter, and spring sports participation. During the course of these sports physicals, it has been bserved that many students either do not have or have not visited a primary care physician / pediatrician for an annual well visit. Occasionally, the sports physicals are substituted for this annual health physical; however, this is not recommended, since these evaluations are complimentary, with different primary objectives. Hence, our study evaluated students' accessibility to primary care health providers and their compliance with regular annual health exams.

Methodology and Statistical Approach

We administered an anonymous, five-item, web-based survey using a handheld tablet during sports physicals. Students without a primary care physician/pediatrician or who did not visit a provider within the last one year were given contact information for St. Luke's Pediatric Practices and the Community Medicine Mobile Health Van. This process will be done for a full cycle of sports physicals dates and repeated next year to assess its impact on improving health care accessibility for school-aged students.

The survey questions were as follows:

1. Do you have a Pediatrician or Family Physician?
2. Who is your Pediatrician or Family Physician?
3. Have you seen your Pediatrician or Family Physician in the last one year?
4. When did you last see your Pediatrician or Family Physician?
5. Have you seen a Dentist in the last 1 year?

Results

A total of 459 were surveyed (285 from Allentown School District, 174 from Bethlehem School District). If students' response to the first questions was "No", we handed out pamphlets with contact information for providers, as previously described. In the Bethlehem School district, 93.1% of athletes reporting having primary care providers, while 79.1% of athletes in Allentown School District reporting having primary care providers. Of these athletes, 79.1% of Bethlehem School District students saw their providers within past year, compared to 68.1% of Allentown School District students. Amongst these athletes, the majority in both school districts saw their providers over six months ago. There was greater compliance with dental follow up among athletes within both school districts.

Discussion and Conclusion

Our results revealed that while many students receive sports physicals, they have not had primary care evaluations for more than a year, with a substantial number of students lacking routine follow up for more than six months. We hope to educate this student population as well as primary care providers regarding the importance of both forms of physicals. We also hope to improve student athletes' follow up with primary care providers.

POSTER PRESENTATION ABSTRACT

Assessing Knowledge Gaps Regarding End-of-Life Issues
in Patients Admitted to the Hospital

Marissa Cohen, MD; Mayank Mehrotra; Luis Vera, MD;
Vamsi Balakrishnan, MD; Rebecca Jeanmonod, MD

Introduction/Background

Healthcare expenditures continue to rise in the United States. Many patients incur their highest health care utilization at the end of life, and 85% of patients die in hospitals, although most studies demonstrate a preference for death at home. We sought to assess patients' knowledge gaps regarding end-of-life issues, including Do Not Resuscitate (DNR) and Do Not Intubate (DNI) orders, Physician Orders for Life-Sustaining Treatment (POLST), knowledge of and outcomes after cardiopulmonary resuscitation (CPR), and preferences regarding end-of-life care. Additionally, we surveyed patients regarding prior hospitalizations and discussions with healthcare providers about end-of-life care.

Methodology and Statistical Approach

This was a cross-sectional survey-based study of adult patients ages 55 and older who were admitted to the hospital. A convenience sample of patients admitted to the medical floors was identified by research assistants and approached for survey completion. Only English speaking patients were enrolled. Written consent was waived, as the survey was anonymous. Patients were queried regarding demographic information, prior discussions about end-of-life care, prior hospitalization history, knowledge of DNR/DNI, POLST, CPR (including complications and outcomes), intubation, and priorities in end-of-life scenarios. Additionally, patients were asked to complete an open-ended question regarding anything they would like to know about CPR, DNR, DNI, comfort care, and living wills.

Results

A total of 105 patients elected to complete the survey [59% female; 43% ages 55-70 (with the remaining 57% above age 70); 87% Caucasian; > 50% reporting annual income under $30,000; and 54% reporting either attendance or completion of high school as the highest level of education]. Most patients (66%) had public insurance, while 29% had private insurance, and 3% were self-pay. Almost all patients (98%) reported having had a PCP who they see once a year, but only 26% recalled having had conversations with their PCP regarding decisions about end of life care (CPR or mechanical ventilation). Furthermore, 65% of patients had been admitted to the hospital within the past year, and despite the requirement of documented code status associated with every admission, only 41% of patients recalled having spoken with a hospital provider about end-of-life decisions. Just over half of patients (52%) answered that they had discussed end-of-life decisions with family, and the same percentage answered that they had signed paperwork indicating end-of-life goals of care. When queried about survival rates following CPR in and out of the hospital, 60% and 36% expected better outcomes than current statistics regarding in-hospital and out-of-hospital CPR, respectively (Figures 1 and 2). When asked to rank factors that signify a "good death," patients thought it was most important to have a painless death and/or to have family present, followed by being at home, then having a long life. Patients thought it was the least important to be in the hospital or have a physician present (Figure 3). Anecdotally, compared to similarly conducted studies

devised by our Emergency Department, patients were much less willing to answer questions about end-of-life issues than they were about other topics.

Discussion and Conclusion

Our study addressed multiple components relating to end-of-life care. Overall, we observed a notable lack of communication and/or understanding between patients and their physicians when discussing CPR/ventilators. Patients overestimated the positive outcomes in cases of CPR for cardiac arrest. Although most medical care is devoted to patients at the end of life, and the vast majority of patients end their lives in hospitals, patients tend to envision ideal end-of-life conditions in the comfort of their homes and surrounded by family.
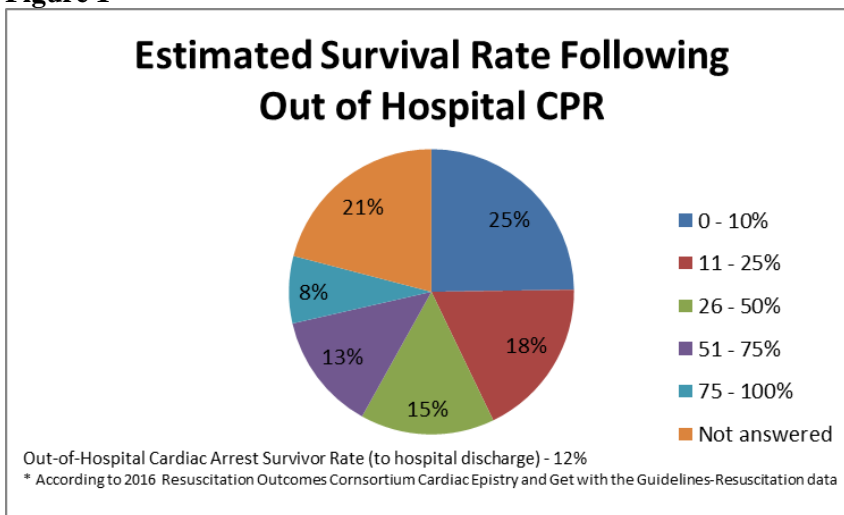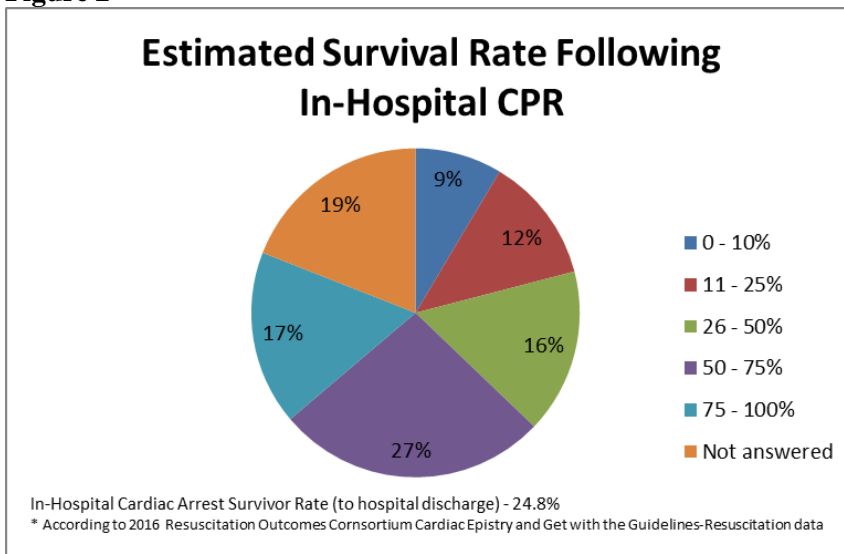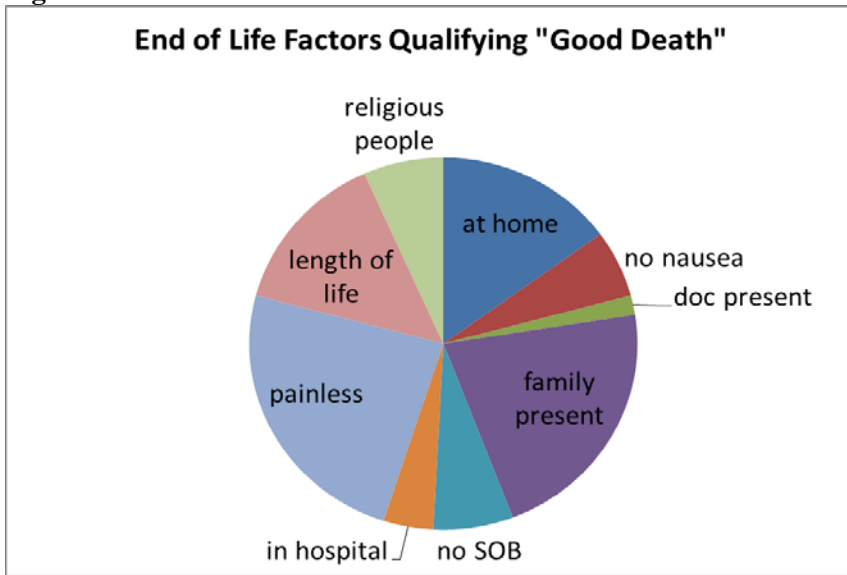

Figure 1

Estimated Survival Rate Following Out of Hospital CPR

0 - 10%: 25%
11 - 25%: 18%
26 - 50%: 15%
51 - 75%: 13%
75 - 100%: 8%
Not answered: 21%

Out-of-Hospital Cardiac Arrest Survivor Rate (to hospital discharge) - 12%
* According to 2016 Resuscitation Outcomes Cornsortium Cardiac Epistry and Get with the Guidelines-Resuscitation data

Figure 2

Estimated Survival Rate Following In-Hospital CPR

0 - 10%: 9%
11 - 25%: 12%
26 - 50%: 16%
50 - 75%: 27%
75 - 100%: 17%
Not answered: 19%

In-Hospital Cardiac Arrest Survivor Rate (to hospital discharge) - 24.8%
* According to 2016 Resuscitation Outcomes Cornsortium Cardiac Epistry and Get with the Guidelines-Resuscitation data

Figure 3

End of Life Factors Qualifying "Good Death"

POSTER PRESENTATION ABSTRACT

The Prevalence of Movement-Related Conditions in the Primary Care Setting

Jenna Cornell, DPT; Stephen Kareha, DPT

Introduction/Background

Movement of the human body is essential to personal and societal function. It has been reported that 58% of Americans suffer from musculoskeletal conditions, with an associated cost of $213 billion per year for care. The human movement system encompasses multiple inter-related systems, and therefore it is hypothesized that the prevalence of movement-related conditions is even higher. The purpose of this study was to determine the prevalence of movement-related conditions in patients seeking treatment in a primary care setting.

Methodology and Statistical Approach

Data were obtained from an ongoing quality improvement project. A questionnaire was administered to patients arriving in the primary care setting to identify movement-related conditions. If a patient reported pain or difficulty with movement, they were encouraged to select the body region of complaint from a pre-specified list along with the movement with which they were having pain or difficulty.

Results

The questionnaire was administered to 379 consecutive patients seeking care in a primary care setting. The prevalence of self-reported movement related conditions was 39%. The most common body regions associated with movement-related conditions were the spine (60%) followed by the lower extremity (56%). Pain or difficultywith lifting/carrying (52%), bending (51%), and sleeping (38%) were the most frequent functional complaints among patients with movement-related conditions.

Discussion and Conclusion

While the human movement system extends beyond the musculoskeletal system, the percentage of patients reporting pain or difficulty with movement in this study was 39.1%, compared to the previously reported 58% incidence of musculoskeletal conditions. There was a subgroup of patients (5.8%) who answered "no" to the initial question but indicated areas or movements with which they had difficulty. This disassociation of patient perception of a disorder and the existence of movement-related conditions is problematic. Since delay in addressing movement system dysfunction results in increased long-term disability and added cost to the health care system, it is essential to improve patient awareness and implement systems to discover these problems in the primary care setting.

POSTER PRESENTATION ABSTRACT

History and Physical Exam Predictors of Intracranial Injury in the Elderly Fall Patient: a Prospective Multicenter Study

Timothy Dotzler, DO; Jamie Roper, DO; Luis Vera, ; Donald Jeanmonod, MD; Rebecca Jeanmonod, MD; Shellie Asher, MD; Mark Reiter, MD; Eric Bruno, MD; Josephine Winters, MD; Nirali Shah, MD

Introduction/Background

Falls are major causes of morbidity in the elderly population. A prior single-center study demonstrated historical and exam features that predict intracranial injury (ICI) in low-risk elderly fall patients.

Methodology and Statistical Approach

This was a prospective observational study of patients 65 years and older presenting with fall to three tertiary care facilities. Patients were eligible if they were at baseline mental status and not triaged to the trauma bay. At presentation, a data form was filled out by a research assistant or treating physician regarding mechanism of fall, history of head strike, presence of new headache, loss of consciousness (LOC), use of blood thinners and/or antiplatelet agents, history of dementia, and signs of head trauma. Unknown parameters (e.g., LOC) were conservatively analyzed by assuming they were present. Radiographic imaging was obtained at the discretion of treating physicians, with results reviewed subsequently. All patients were followed up at 30 days to determine outcomes in those who were not imaged and assess for delayed complications. Data were analyzed with multivariate logistic regression.

Results

A total of 723 patients were enrolled; 12 patients were lost to follow-up and not included. Seventy-six patients had a documented GCS < 15; 154 had baseline dementia; 406 were on anticoagulation and/or antiplatelet agents; and 568 underwent head CT. A total of 52 (7.31 %) patients had traumatic ICI. Multivariate logistic regression demonstrated independent predictors of ICI: history of LOC [adjusted odds ratio (aOR) = 1.98, 95% CI 1.10 - 3.57, p = 0.02) and signs of head trauma (aOR = 2.65, 95% CI 1.25 - 5.59, p = 0.01). The sensitivity of these items was 86.5% (95% CI 73.6% - 94%) with a specificity of 38.9% (95% CI 35.1% - 42.7%). The positive predictive valve in this population was 10% (95% CI 7.5% - 13.3%) with a negative predictive valve of 97.3% (95% CI 94.4% - 98.8%). Had these items been applied as a decision rule, 273 patients would not have undergone CT scanning, and 7 injuries would have been missed, none of which required surgical intervention.

Discussion and Conclusion

The best predictors of ICI are signs of trauma to the head and history of LOC. History of head strike, presence of headache, and history of blood thinners and/or antiplatelet agents did not help distinguish patients with versus without ICI.

POSTER PRESENTATION ABSTRACT

Fecal Microbial Transplant for Clostridium Difficile Infection
Refractory to Conventional Treatment

Rodrigo Duarte-Chavez, MD; Thomas Wojda, MD; Stanislaw Stawicki, MD;
Gloria Fioravanti, DO; Berhanu Geme, MD

Introduction/Background

Clostridium difficile (CDI) is the most common health care-associated infection and has replaced Methicillin-resistant Staphylococcus aureus (MRSA). The yearly cost attributed to CD infection (CDI) is $6.3 billion. Metronidazole is the treatment for mild CDI, while in recurrent or severe CDI, oral vancomycin is superior. From 10 - 30% of patients will have recurrence after initial resolution, 40 - 65% will have recurrent after a second episode, and 65 to 80% will have recurrent after a third event.

Fecal microbiota transplant (FMT) prevents CDI recurrence by competing with CD for the available nutrients, regulating the immune response, and producing antimicrobial peptides. Overall, the cure rate is 87% - 94%, but this decreases with severe CDI. We sought to describe the characteristics of patients receiving FMT at our institution.

Methodology and Statistical Approach

This was a retrospective, single-center study of FMT using colonoscopy for the treatment of CDI refractory to conventional therapy from July 2015 to February 2017. We used descriptive statistics to report side effects and features associated with both successful and failed FMT.
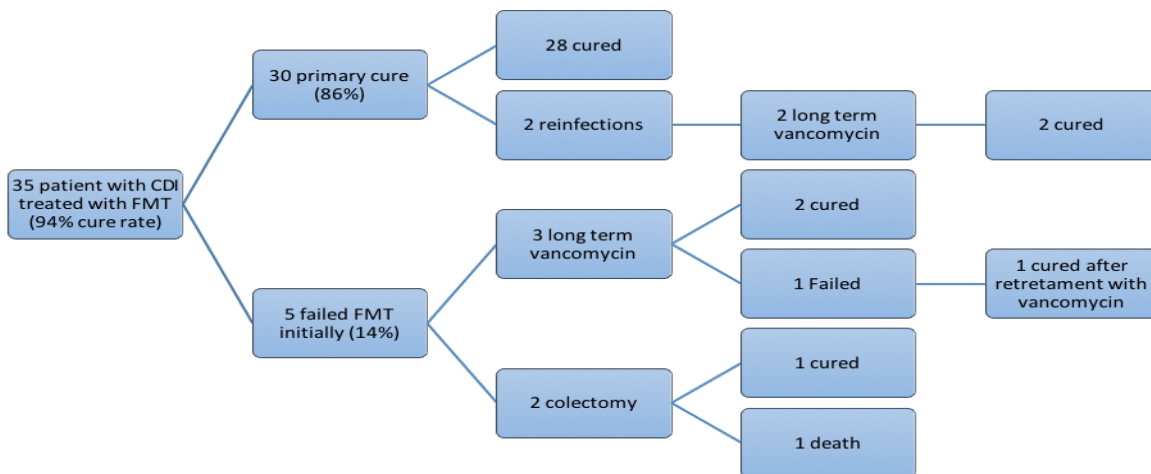
Results

Thirty-five patients with a mean of 2.7 recurrences underwent FMT. The mean age $\pm$ standard deviation was 58.6 $\pm$ 18.3 years, with 71% females and 29% males, and 29% having severe disease. During the initial infection, 40% of patients were using opioids, and 40% were taking a PPI, while 26% had risk factors for immunosuppression, and 23% had a previous cholecystectomy. During and after FMT, patients were using opioids and PPIs at rates of 31% and 43%, respectively.

Overall, FMT was successful in 94% of patients, with primary cure achieved in 86% (Figure 1). Of the 29% with severe disease prior to FMT, the cure rate was 80%, with primary cure achieved in 60%. FMT failed initially to cure CDI in 14% of patients; compared to patients with primary cure, these patients were older, had more incidence of severe disease, and were using opioids during initial infection and FMT. Use of PPI during initial infection and FMT were similar, as well as rates of immunosuppression and previous cholecystectomy (Table 1). The most common adverse effects were loose stools (34%) and abdominal pain (11%).

Discussion and Conclusion

FMT is safe and effective for the treatment of refractory CDI. Opioid use was highly prevalent in patients who had initial failed response to FMT. The potential role of opioids in CDI requires further study.

Figure 1: Outcomes

	Failed Initial FMT	Primary Cure with FMT
Age	69.9 years	56.7 years
Severe CDI	80%	13%
Recurrences	1.2	2.8
Opioid use during initial infection	60%	37%
Opioid use during and after FMT	60%	27%
Female sex	80%	67%
Immunosuppression	20%	27%
PPI use during initial infection	40%	40%
PPI use during and after FMT	40%	43%
Prior cholecystectomy	20%	23%

Table 1: Failed Initial FMT Versus Primary Cure with FMT

POSTER PRESENTATION ABSTRACT

Prealbumin Levels in Critically Ill Patients Correlate with Computed Tomography-Derived Psoas Muscle Characteristics

Nicholas Ferguson, MD; Stanislaw Stawicki, MD, MBA; Jamie Thomas, DO

Introduction

Physiologic changes associated with acute stress may render traditional markers of nutritional status unreliable in the intensive care unit (ICU), creating the need for more objective alternatives. One such alternative to traditional serum laboratory testing is the use of data from computed tomography (CT), including the psoas muscle (PM) area and density. This study examined the associations between prealbumin and CT characteristics (e.g., density-corrected psoas area or DCPA) in a cohort of ICU patients. We hypothesized that PM area, density, and DCPA would correlate significantly with prealbumin in this population.

Methodology and Statistical Approach

In this pilot study, a convenience sample of ICU patients from January 2010 to July 2015 was reviewed retrospectively. Data collected included demographics [age, gender, body mass index (BMI)]; labs (prealbumin, albumin, total protein,lymphocyte counts); and abdominal CT measurements of PM density [Hounsfield units (HU)]; and area (measured in mm2). Psoas data were acquired using axial CT images at the superior aspect of the L4 vertebral body. Using advanced image processing software (GE Healthcare, Chicago, Illinois), the trace tool was used to outline PM borders. Software-generated cross-sectional area /HU were recorded. Bilateral PM data were averaged for cross-sectional area and density. The primary study variable was DCPA (average PM area/average PM density), and was further categorized into "low" (≤ 28) and "high" (> 28) based on the mean dataset value. Permitted time between the CT and nutritional labs was 72 hours (based on the 3-day half-life of prealbumin). Clinical data were contrasted against "high" and "low" DCPA. Univariate comparisons included the Mann-Whitney U-test, Student's t-test, and Fisher's exact test, as appropriate.

Results

A total of 86 measurement pairs were analyzed. The DCPA was associated with patient weight and prealbumin levels, but not with BMI, lymphocyte count, albumin, or total protein determinations. Neither the average PM area nor density alone correlated well with prealbumin. Although neither of its constituent variables (psoas density or area) correlated meaningfully with prealbumin, DCPA ≤ 28 was associated with lower prealbumin levels. This identifies DCPA as a potential marker of suboptimal nutritional status in ICU patients.

Discussion and Conclusion

Although neither psoas density nor area correlated with prealbumin in this pilot study, we found that DCPA ≤ 28 was associated with lower prealbumin levels. Although this finding identifies DCPA as a potential marker of suboptimal nutritional status, the clinical implications require independent confirmation, further investigation, larger sample sizes, and greater data granularity.

Parameter	DCPA ≤28	DCPA >28
Weight*	60.5±7.1 kg	92.8±3.1 kg
BMI	29.1±1.4	32.0±1.5
Albumin	2.02±0.13 g/dL	1.94±0.14 g/dL
Prealbumin*	11.3±0.75 mg/dL	14.4±0.98 mg dL
Total Protein	5.34±0.23 g/dL	5.48±0.17 g/dL
Lymphocytes (%)	7.82±0.71	9.48±1.7

POSTER PRESENTATION ABSTRACT

Are CT Scans Over-Utilized in the Workup of Vertebral Compression Fractures?

Shane McGowan, MD; David Ramski, MD; Brittany Homcha, BA; Gbolabo Sokunbi, MD

Introduction/Background

Compression fractures are an increasingly common diagnosis in the United States, coinciding with the rapid increase of osteoporosis and osteopenia in the general population. Computed tomography (CT) does not reliably aid in determination of fracture chronicity and contributes to higher cost of care as well as unnecessary radiation exposure. An examination of extraneous testing and development of a guided treatment algorithm would help to inform providers in choosing appropriate studies during the workup of patients with compression fractures.

Methodology and Statistical Approach

A retrospective chart review was performed that evaluated all patients who received kyphoplasty or vertebroplasty from 2009 to 2016. Inclusion criteria were a diagnosis of spinal compression or burst fracture, age 18-90, kyphoplasty or vertebroplasty performed between 2009-2016; exclusion criteria included no imaging studies available in the hospital PACS system and age <18 or >90. The primary end point of the study was to elucidate extraneous imaging ordered for the purposes of determining definitive treatment. The secondary outcome of the study was to evaluate increased radiation exposure and cost resulting from unnecessary studies.

Results

Between 2009 and 2016, 254 patients underwent kyphoplasty or vertebroplasty, 228 of which had images in PACS available. A total of 258 unique imaging workups were included, which consisted of the following studies: 203 plain radiographs, 87 CT scans, 156 MRI studies 44 bone/SPECT scans. There were 104 instances (40.3%) in which patients underwent only MRI or bone scan after radiographs. There were 27 instances (10.5%) in which patients underwent only radiographs with a comparison study. There were 76 instances (29.5%) in which patients underwent extraneous CT scans and 13 instances (5%) in which patients underwent both MRI and bone scan prior to procedure (Figure 1). This resulted in increased charges of at least $18,500 and $5,350, respectively. There were 62 radiation dose reports available for patients who underwent CT scans, revealing an average of 979.4 mGy-cm additional radiation exposure (Figure 2).

Discussion and Conclusion

Efficiency in diagnosis of compression fractures while reducing costs and unnecessary radiation exposure become primary goals for providers. We recommend a unifying algorithm for workup that favors either radiographs in the presence of a comparison study or acquiring an MRI or bone scan to aid in determining injury acuity. If these studies are available, a CT scan is unnecessary for treatment. It is therefore imperative to establish acuity early in the treatment regimen to streamline and deliver care in a safe and cost effective manner.

Figure 1: Imaging Studies Obtained in Workup of Compression Fracture, as Proportion of All Image Workups (n=258); MRI = Magnetic Resonance Imaging; XR = X-Ray; CT = Computed Tomography
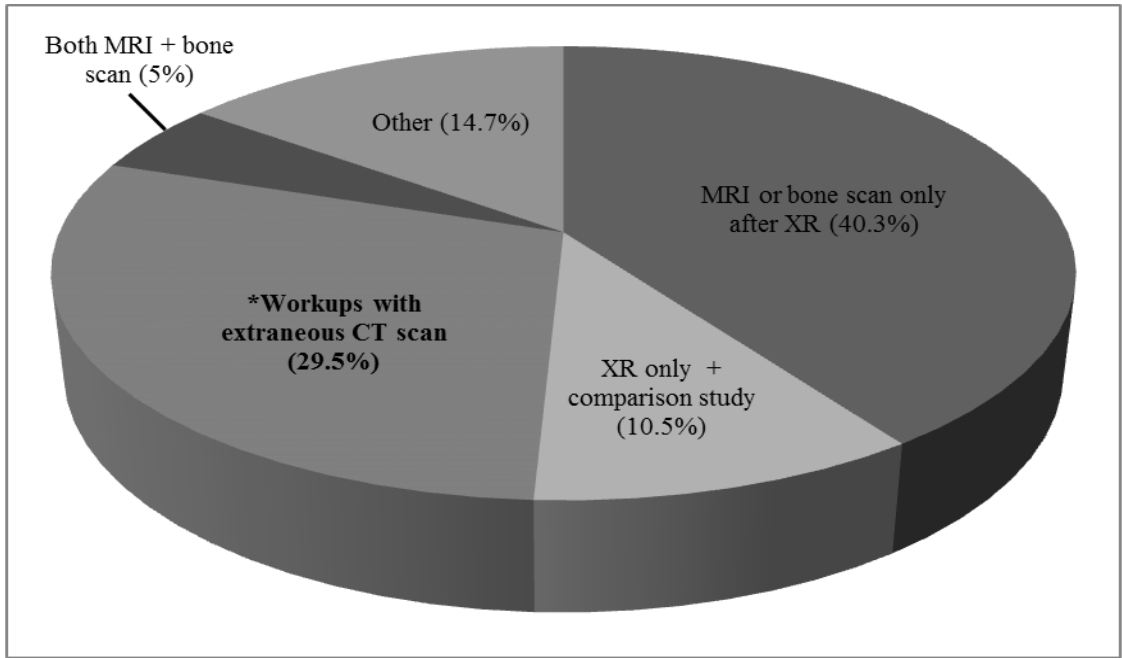
Figure 2: Study Population Average Radiation Exposure in Millirems, Highlighting Average Increased Radiation Incurred in Patients Undergoing Extraneous CT Scan asP of Compression Fracture Workup (Logarithmic Scale). Ave = Average; Inc = Increased; Exp = Exposure; L = Lumbar; XR = X-Ray
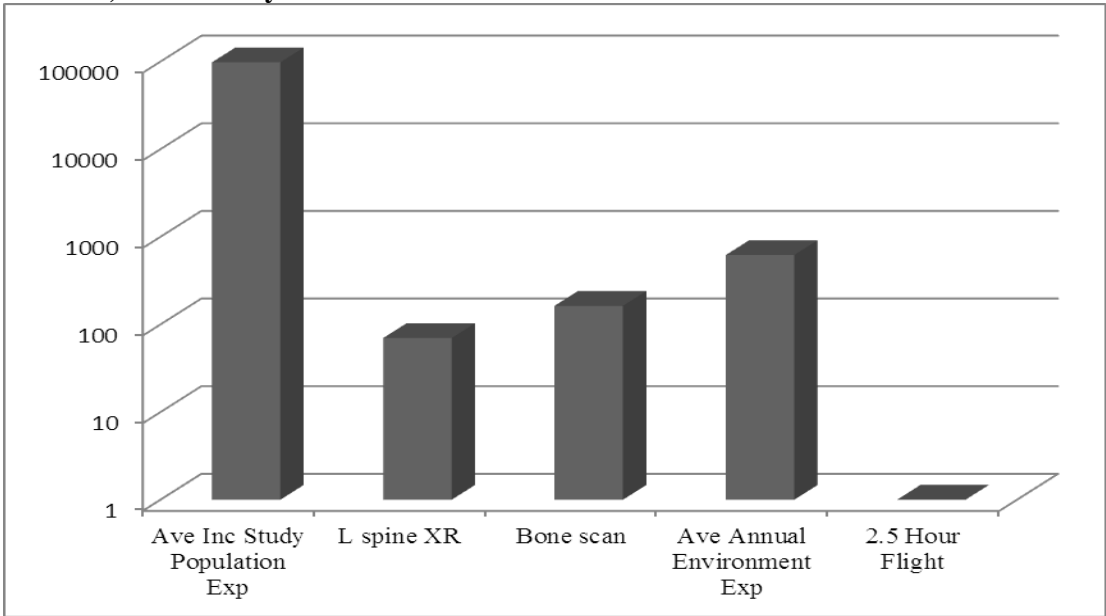
POSTER PRESENTATION ABSTRACT

The Impact of a Standardized Checklist on Length of Time to Complete Sign Out During Emergency Department Physician Change of Shift

Alyssa Milano, DO; Holly Stankewicz, DO; Philip Salen, MD; Jill Stoltzfus, PhD

Introduction/Background

Transitions of patient care during physicians' change of shift introduce the potential for critical information to be missed or distorted, resulting in possible morbidity. Since 2009, the Joint Commission has encouraged improving transitions of care as a national safety goal. Our study sought to determine if utilization of a sign-out checklist during Emergency Medicine (EM) resident transition of care changed the length of time to complete sign out.

Methodology and Statistical Approach

This prospective study assessed EM residents' transition of care during departmental group sign out. Residents of varying post-graduate years transferred their patients' care to the incoming physician team. For two months, residents gave their typical sign out. For the next two months, residents utilized a standardized sign-out checklist. Times were recorded from first to last patient sign out. Continuous data were reported as medians, with separate Wilcoxon signed rank tests conducted as appropriate.

Results

Assessment of transition of care was performed for 77 days (38 days of status quo, 39 days utilizing a checklist). There were 548 assessments in the pre-checklist cohort (PCL) and 697 in the post checklist cohort (CL). Length of time for sign out in PCL cohort was 13 minutes, compared to 9 minutes in the CL cohort. This finding was statistically significant (p = 0.03).

Discussion and Conclusions

A standardized checklist appears to decrease length of time to complete sign out with the checklist.

POSTER PRESENTATION ABSTRACT

A Systemic Review to Assess Optimal Management of Laparoscopic Cholecystectomy in Patients with Left Ventricular Assist Devices

Ronnie Mubang, MD; Samuel Schadt; Halward Blegen, DO; Mark Schadt, MD

Introduction/Background

Since its introduction 20 years ago, left ventricular assist devices (LVADs) are increasingly being used in heart failure patients, and may be used as a bridge to heart transplantation, as temporary treatment, or as destination therapy. It is estimated that 25% of these patients will require non-cardiac surgical interventions. These devices add significant technical limitations to abdominal surgeries due to the location of the power supply and driveline, which cross the abdomen and may be damaged during the operation. We performed a systematic literature review to provide optimal management guidelines when performing laparoscopic cholecystectomy for acute cholecystitis in LVAD patients.

Methodology and Statistical Approach

An exhaustive review of the literature was performed using EBSCO, Pubmed, Google Scholar, and Bioline with key words of "laparoscopy", "cholecystectomy", "left ventricular assist device", and "complications" to assess frequency of laparoscopic cholecystectomies with similar assist devices. We found a total of 8 cases describing the above procedure, including an additional case completed at our hospital. We did not exclude cases based on lack of information regarding preoperative/perioperative planning. Our primary endpoint was successful completion of laparoscopic cholecystectomy. Our second endpoints were mortality and morbidity within the immediate 30-day perioperative period.

Results

Laparoscopic cholecystectomy was performed without significant hemodynamic intraoperative and perioperative compromise in all 8 cases, with no mortality. One of the 8 patients had postoperative bleeding at a trocar site requiring laparoscopy. A team approach and detailed briefing among various team members, including anesthesiologists, cardiac surgeons, perfusionists, cardiologists, and surgeons, were essential to the success of the operation. The use of imaging such as intraoperative fluoroscopy was necessary to help mark positions for port placement in order to avoid device damage and minimize preload disturbances, with subsequent postoperative anticoagulation team discussions.

Discussion and Conclusion

Our review reinforces the small body of evidence indicating that laparoscopic cholecystectomy can be performed safely in patients with LVADs. Complications may be avoided by holding detailed briefings amongst various departments involved in patient care. The use of intraoperative monitoring and fluoroscopy for port placements is ideal, since each laparoscopic procedure performed in these patients provide unique challenges that must be addressed, and preoperative planning and fluoroscopy are vital to the success of the operation.

POSTER PRESENTATION ABSTRACT

Genetic Counseling Services in Oncologic Practice: Recognizing the Underutilization of Genetic Referrals in At-Risk Cancer Patients

Vijay Palvia, MD; Nicholas Taylor, MD; Israel Zighelboim, MD; Andrea Smith, MS, CGC

Introduction/Background

Studies have shown an underutilization of genetic counseling services within different medical fields, including oncology. The National Comprehensive Cancer Network (NCCN) provides screening guidelines based on family history and criteria for "automatic referral" (e.g., age less than 50 years, histology-specific cancer diagnoses, family history). Despite the fact that oncological practices have equal access to family history and screening guidelines, we hypothesized that there is failure in identifying and referring "automatic referral" patients to genetic counseling within these practices.

Methodology and Statistical Approach

This study was a retrospective chart review of patients from 3 oncologic practices (gynecologic - GO, surgical - SO and medical - MO) at St. Luke's University Health Network. Inclusion criteria required a cancer diagnosis recognized by the St. Luke's Family Cancer Risk Evaluation Program. All eligible patients were screened by NCCN guidelines, which provided criteria for "automatic referral" to genetic counseling services.

Primary outcomes included the rate of "failure to identify" (FTI) patients who met criteria for referral. A rate of less than 20% was considered a minimum acceptable rate of FTI. Secondary outcomes included rate of referral and completion of genetic counseling services along with proportion of patients who met criteria for "automatic referral." Data were analyzed using chi-square tests.

Results

Each oncologic practice contributed eligible patients to the study (40 GO, 43 SO, 40 MO). The rate of FTI was 14% (4/28) for GO, 31% (5/16) for SO, and 33% (3/9) for MO (p = 0.30). The rate of referral and completion of genetic counseling services for each practice were as follows: GO (100% and 96%), SO (91% and 73%), and MO (66% and 50%). Proportions of unidentified patients who met criteria for "automatic referral" were as follows: GO (22%, 4/18); SO (40%, 4/10); and MO (17%, 1/6).

Discussion and Conclusion

Only the gynecology group demonstrated an acceptable rate of "failure to identify." An unexpected ratio of unidentified patients who met criteria for "automatic referral" was observed. We recognize a unique opportunity for improved identification and referral of cancer patients to genetic counseling services within our hospital network. These findings should constitute the basis for a comprehensive strategy aimed at identifying and better serving these patients.

POSTER PRESENTATION ABSTRACT

Amniotomy Affects the Urine Protein Creatinine Ratio Test Accuracy in the Diagnosis of Preeclampsia

Sara Quinn, MD; Jessica Lennon, MD; Aaron Herrera Gonzalez, MD; Elizabeth Dierking, MD; James Anasti, MD

Introduction/Background

Preeclampsia is a leading cause of obstetric-related morbidity and mortality, making prompt diagnosis crucial. While the gold standard for evaluation of maternal urinary protein is a 24-hour urine collection, the spot urine protein creatinine ratio (Up/Ucr ratio) greater than 0.3 mg/mg has been instituted as an alternative. No studies have evaluated the effect of amniotomy, spontaneous or artificial, on the accuracy of the Up/Ucr ratio. We hypothesized that the proteins and creatinine found in amniotic fluid may erroneously alter the test result, leading to an incorrect diagnosis of preeclampsia.

Methodology and Statistical Approach

We performed a case-control study where each patient served as her own control. A random catch urine was obtained for Up/Ucr ratio. Following amniotomy a second random Up/Ucr ratio was obtained. The urine samples were analyzed in the hospital chemistry department and results compared for consistency.

Results

The 63 study patients had the following characteristics (mean $\pm$ standard deviation): age = 28.5 ± 5.6 years gravidity = 2.7 ± 1.6; gestational age = 39.2 ± 1.8 weeks; and body mass index (BMI) = 31.6 ± 6.4 kg/m^2. Regarding comorbidities, there were 5 gestational diabetic, 3 chronic hypertensive, and 5 pre-eclamptic patients. Post-amniotomy Up/Ucr ratio was significantly higher than pre-amniotomy Up/Ucr ratio (1.3 ± 2.5 versus 0.34 ± 0.83, $p < 0.001$). The number of patient with Up/Ucr greater than 0.3 mg/mg was higher post-amniotomy than pre-amniotomy (41/63 versus 14/63, $p < 0.001$).

Discussion and Conclusion

Amniotomy results in false elevation of the Up/Ucr ratio. Obtaining urine via straight catheterization may be necessary to reduce false positive results.

POSTER PRESENTATION ABSTRACT

Reducing Hospital Readmissions in Short Term Rehab Patients Through Implementation of Clinical Pathways

Stephanie Rabenold, DO; Omolara Bamgbelu, MD; Alaa Mira, MD; Amaravani Mandalapu, MD

Introduction/Background

Hospital readmissions within 30 days of discharge are associated with increased patient morbidity and mortality, increased overall health care costs, decreased patient satisfaction, and reduced payment from Medicare. Medicare defines readmission as unplanned return to an acute care hospital within 30 days of hospitalization for one of the following conditions: myocardial infarction (MI), heart failure (CHF), pneumonia, chronic obstructive pulmonary disease (COPD), and elective total hip (THA) and total knee (TKA) arthroplasties. Nationwide, all-cause readmissions presenting from a skilled nursing facility (SNF) range from 15.1% - 28.1% of the Medicare population during this time period. Patients at high risk for readmission are often referred for acute rehabilitation prior to return to previous living environment. Through the implementation of clinical pathways in a short-term rehabilitation SNF, we sought to reduce hospital readmissions for those conditions at high risk for recurrent exacerbation.

Methodology and Statistical Approach

In this quality improvement project, clinical pathways were developed to standardize the care of patients in our short term rehab facility. They were evidence based and clinically driven using a multidisciplinary team approach with focus on diabetes mellitus, COPD, CHF, lower extremity major joint replacement, MI, pneumonia, and sepsis. Nursing staff and physicians received education during provider meetings. Patients with qualifying diagnoses were placed on appropriate pathways on admission. Data were collected from January 2015 through July 2016 and focused on 30-day readmission rate as well as length of acute rehabilitation stay.

Results

Hospital readmission rates from 2013 - 2014 were up to 24%. Following implementation of the clinical pathways, we saw a steady decline in readmissions from 14.7% during the second quarter 2015 to a rate of zero in July 2016. Additionally, short-term rehabilitation average length of stay decreased from 32 days in February 2015 to 19 days in July 2016.

Discussion and Conclusion

Implementing clinical pathways for high-risk patients with multiple comorbidities in addition to Medicare readmission targeted diseases improves patient care through reduction in hospital readmissions and acute rehabilitation length of stay. These improvements likely influence patient satisfaction, improve patient outcomes and health care systems flow, and reduce overall costs.

POSTER PRESENTATION ABSTRACT

Correlation of Diabetic Education with HBA1C Levels

Urja Shah, DPM; Nargiza Mahmudova, DPM; Rebekah Cherian, DPM

Introduction/Background

In the podiatric medicine profession, an overwhelming majority of the patient population is diabetic. Diabetes mellitus is an extremely debilitating disease that affects blood flow and sensation to lower extremities in the human body. Due to the location and weight-bearing function of feet, they are extremely prone to complications such as ulcerations and infections, which could ultimately lead to limb loss.

In diabetics, hemoglobin A1C (HBA1C) refers to glycated hemoglobin, which identifies average plasma glucose concentration over 3 months. Podiatrists tend to see high-risk patients every 3 months in order to more effectively monitor their diabetic health through education of blood sugar/HBA1C management and examination of feet. This study was conducted to educate diabetic patients about the importance of proper diabetic management in order to prevent such circumstances.

Methodology and Statistical Approach

Inclusion criteria for study patients were diagnosis of diabetes by their primary physician, receipt of an educational packet from the American Diabetic Association (ADA) website about which foods are healthy for a diabetic, and willingness to participate in the study. Upon initial examination, patients were presented with a questionnaire asking about foods they thought were healthy for a diabetic diet. This questionnaire was used to establish a baseline assessment of the patients' view on healthy foods. HBA1C was assessed and used to educate patients about proper food and lifestyle habits, with presentation of an educational packet. Ideal patient follow up was 3 months, with measurement of HBA1C after this time interval. A Wilcoxon signed rank test was used to compare pre- and post-intervention HBA1C values.

Results

For the majority of patients, HBA1C either stayed the same or increased, and 3/30 patients had no follow-up HBA1C. Ideally, although HBA1c values were to be monitored in 3 months, in reality, the time span ranged from 3 months to 1 year. The difference in pre- and post-intervention HBA1C levels was not statistically significant ($p = 0.48$). Median pre-intervention HBA1C was 7.7 (range = 6.0 – 13.3), while median post-intervention HBA1C was 7.6 (range = 5.6 – 11.1). However, the value range did decrease slightly post-intervention.

Discussion and Conclusion

This study revealed no significant difference in pre- and post-intervention HBA1C values. However, these results are limited by poor patient compliance with follow up, patients' economic status, and limited patient resources. In the future, it would be beneficial to conduct a similar study in a private office setting to better assess the association of factors such as socioeconomic status and personal resources with patient compliance.

POSTER PRESENTATION ABSTRACT

Making Comfort Count: A Hospice Prescribing Process Quality Improvement Project

Anna Thomas, MD; Diane Hummel-Spruill, RN, MSN; Ric Baxter, MD

Introduction/Background

In the hours of a dying patient's greatest need, hospice nurses are trained to administer medications to relieve suffering, and having a comfort pack (CP) of essential medications in the home is a crucial part of hospice care. Three Plan-Do-Check-Act (PDCA) cycles were undertaken at St. Luke's Hospice with the aim of improving time to receipt of the CP in the patient's home by March 1, 2017, with a primary outcome goal of CPs arriving on average less than 48 hours from start of care (SOC), and secondary goals of (1) 80% of CPs profiled by the nurse less than one calendar day from SOC, and (2) 80% of prescriptions returned by the physician to pharmacy less than or equal to one calendar day.

Methodology and Statistical Approach

All home hospice patients who had a CP shipped via the hospice pharmacy from January 1, 2016 to March 1, 2017 were evaluated for consideration in the study via a retrospective chart review. January 1 –August 15 of 2016 was considered the pre period; the three PDCA cycles occurred during August 16 2016 – March 1, 2017 as the post period. The Student's two-tailed t test with unequal variance was used to analyze the primary outcome.

Results

Of the 950 charts that were reviewed for eligibility, 449 met study inclusion criteria. Average time to arrival of the CP improved from 66.7 hours in the pre period to 46.1 hours in the post period, reaching statistical significance ($p < .0001$) and meeting the study objective. Secondary objectives were achieved during the post-study period, with 84% (versus 80%) of CPs profiled less than one calendar day of SOC and 93% (versus 77%) of prescriptions returned by the physician to the pharmacy less than or equal to one calendar day from profiling.

Discussion and Conclusion

At the end of three simple Plan-Do-Check-Act Cycles, significant improvements were seen in time to delivery of comfort packs in this hospice-oriented quality improvement project. Continued efforts and improvements should be considered to further maintain the success of this intervention.

POSTER PRESENTATION ABSTRACT

End Tidal Carbon Dioxide as an Early Marker for Transfusion Requirement in Trauma Patients

John Tran, MD; Jason Black, DO; Rebecca Jeanmonod, MD;
Dhanalakshmi Thiyagarajan, MS3

Introduction/Background

Within the human body, carbon dioxide (CO_2) and sodium bicarbonate comprise the primary buffer system to protect against acidosis and acidemia. Blood measurement of base deficit, lactate, and pH are often utilized to detect and monitor acidosis. End tidal CO_2 (ETCO2) measurement requires no blood draw and should be reflective of overall acidosis, as occurs during hemorrhage. It has the benefit of real-time measurement and can be obtained in any spontaneously breathing patient. The purpose of this study was to determine the use of ETCO2 in non-intubated trauma patients as a general marker for a hypo-perfused state, as well as its correlation to transfusion requirement in the first 24 hours after trauma.

Methodology and Statistical Approach

This is a single-center prospective cohort study was conducted at a Level 1 trauma center. Consenting patients ages 18 and older who were not intubated, but for whom trauma activation occurred, were enrolled. Nasal cannula ETCO2 detectors were placed upon arrival, and levels were recorded every 3 minutes for at least 6 minutes by a research team member. Patients were managed as per trauma team discretion. Patients' records were subsequently reviewed to determine any transfusion requirements, length of hospital stay, operative interventions to control bleeding, and hemoglobin level. A Mann Whitney rank sums test was conducted to analyze the data, with additional calculation of sensitivity, specificity, positive predictive value (PPV), and negative predicted value (NPV).

Results

A total of 41 patients were enrolled, with a median age of 52 [interquartile range (IQR) 27.0 - 66.5]; 6 (14.6%) required transfusion. There was a statistical trend toward lower median ETCO2 levels in patients requiring transfusion (25.9 versus 35, $p = 0.077$). Using a cut-off value of 30, the sensitivity/specificity of ETCO2 as a predictor of the need for transfusion was 66.7% and 68.6%, respectively, with a positive predictive value of 26.7% and a negative predictive value of 92.3%.

Discussion and Conclusion

ETCO2 may be useful in identifying sicker trauma patients, but more data are required to best determine how this technology may be applied in such a population.

POSTER PRESENTATION ABSTRACT

Cost Implications with Utilizing a Five-Percent Versus Ten-Percent Dose Rounding Policy for Biologic Antineoplastic Agents

Jessah Villamor, PharmD; Brian Waldron, PharmD, MSCR;
Tricia Papademetrious, PharmD

Introduction/Background

As cancer-related treatment costs continue to rise, cost-minimization strategies are becoming more essential. Despite clinical data, it is common practice to round within 5% of the prescribed dose with minimal risk of producing a substantial difference in clinical effect. Although studies have found significant savings with 10% rounding in cases of non-curative intent, there are limited data comparing 5% and 10% rounding strategies in such situations. The purpose of this study was to evaluate the cost implications when using a 5% versus 10% chemotherapy and biologic therapy pharmacy dose rounding policy and to assess adherence to St. Luke's University Health Network's current 5% policy.

Methodology and Statistical Approach

We conducted a retrospective chart review of all patients with an order for bevacizumab, rituximab, bortezomib, pembrolizumab, or ipilimumab from July 2014 to July 2016. Demographic information and order details were collected. Cost outcomes were reported based on average wholesale pricing. The primary outcome was cost difference when utilizing a 5% versus 10% dose rounding policy. Secondary outcomes included adherence to the current 5% policy, costs with versus without the policy, and costs due to non-adherence. Descriptive statistics were used to summarize findings.

Results

A total of 2,600 orders were included; 1,262 orders were eligible for 5% dose rounding, and an additional 435 orders would have been eligible for 10% rounding. In the 2-year period, the projected cost savings with 10% versus 5% rounding was $315,092. The current 5% policy allowed for a projected savings of $760,817. With the current rate of adherence at 22.1%, our projected cost savings is approximately $288,918. Bethlehem and Allentown were identified as the highest contributors to the low adherence rate, at 18.8% and 4.8%, respectively.

Discussion and Conclusion

The projected cost savings that were identified with 10% rounding were similar to shorter-duration existing studies. Despite our findings showing potentially substantial savings, we still have no clinical outcomes to support the threshold, suggesting the need for a risk versus benefit determination. Additionally, the adherence to the policy was likely affected by the study period beginning immediately after study implementation. However, the findings from this study indicate a need for a closer evaluation and re-education for pharmacists.

MEDICAL STUDENT POSTER PRESENTATION ABSTRACT

Understanding the Social Determinants of Health in a Student-Run Free Clinic at Temple/St. Luke's Hospital

Leah Grandi, MS4; Jonathan Hunt, MS4; Alvin George, MS4;
Bonnie Coyle, MD, MS; Yurhee Lee, MD; Rachel Moyer

Introduction/Background

Project Health Education and Advocacy Resources at Temple/St. Luke's Clinic (HEARTS) is a student-run free clinic offered at St. Luke's University Health Network in collaboration with Lewis Katz School of Medicine at Temple University (LKSOM). Project HEARTS offers basic primary care services, health screenings, and referral services to the uninsured population in Bethlehem, Pennsylvania. Our study sought to analyze the effectiveness of a tool assessing social determinants of health (SDOH) that may affect patients' healthcare outcomes, as well as to determine the tool's impact on medical student education.

Methodology and Statistical Approach

In our cross-sectional study, we surveyed patients using the Arizona Community Health Assessment Tool after they had been seen by a provider. The assessment was conducted by an inter-professional team of medical students from LKSOM and undergraduate students from Lehigh University. We compared the data found from our assessment tool at Project HEARTS to the population data acquired from the St. Luke's University Health Network University Hospital Community Health Needs Assessment (CHNA).

Results

All 29 patients seen at the clinic during a 7-month period took the survey; of the 23 (79%) who responded regarding current insurance coverage, 4 had private insurance, 1 had Medicare, 2 had Medicaid, and 16 were uninsured. Of the uninsured, 9 (56%) were ineligible for insurance given immigration status in the U.S. Eighteen (62%) were either unemployed or considered to be at high risk for unemployment, while 5 (17%) reported stable employment and were considered low risk (17%). Compared to the larger Bethlehem population obtained from the CHNA, 64% of clinic respondents were employed. The lack of insurance and unemployment were important barriers to preventive care in our patient population.

Discussion and Conclusion

Our study determined that an SDOH tool was effective in identifying barriers for uninsured patients to improve their health status. Following our trial period with the assessment tool, we were also more likely to connect our patients to available resources in the community. We concluded that this assessment tool was an effective strategy in our free-care clinic, both in helping patients access care and in educating pre-medical and medical students about SDOH. We are currently researching and testing other SDOH instruments that may be more adaptable to the student-run free clinic context.

MEDICAL STUDENT POSTER PRESENTATION ABSTRACT

Preoperative CHA2DS2-VASc Score Predicts
Post-Operative Atrial Fibrillation after Lobectomy

Charles Lee, MS4; William Burfeind, MD; David Strauss, MS4; Lauren Stone, MS3; Jill Stoltzfus, PhD; Matthew Puc, MD

Introduction/Background

Post-operative atrial fibrillation (POAF) affects 10 - 20% of non-cardiac thoracic surgeries and increases both patient morbidity and costs. The purpose of this study was to determine if preoperative CHA_2DS_2-VASc score can predict POAF after pulmonary lobectomy for non-small cell lung cancer.

Methodology and Statistical Approach

Patients with complete CHA_2DS_2-VASc data who underwent lobectomies at a single institution from January 2007 to January 2016 were analyzed in a retrospective case-control study utilizing a prospectively collected database. An independent samples t-test was conducted to compare mean CHA_2DS_2-VASc scores of POAF and non-POAF patients. A multivariate logistic regression analysis (MVA) evaluated the independent contribution of variables of the CHA2DS2-VASc score in predicting POAF. Chi-square tests with univariate odds ratios were used to determine the cut-off score above which there was significant prediction of POAF. Additionally, preoperative CHADS2 score was analyzed as a potential POAF predictor.

Results

Of 525 total patients, 82(15.6%) developed POAF [mean $\pm$ standard deviation (SD) CHA2DS2-VASc score = 2.7 $\pm$ 1.5], with 443 (84.4%) non-POAF patients (mean score $\pm$ SD = 2.3 $\pm$ 1.4); the mean difference of 0.43 was significant (p = 0.01, 95% CI 0.09 - 0.76). In multivariate logistic regression analysis, significant predictors of POAF were age 65 -74 years [adjusted odds ratio (aOR) = 2.45, 95% CI 1.31 - 4.70, p = .006] and age > 75 years (aOR = 3.11, 95% CI 1.62 - 5.95, p = .0006) (Figure 1). Patients with CHA2DS2-VASc scores > 4 had significantly increased odds for POAF (OR = 2.59, 95% CI 1.22 - 5.50). CHADS2 scores did not yield significant mean differences or odds ratios between groups.

Discussion and Conclusion

Preoperatively calculated CHA_2DS_2-VASc score may predict POAF in patients undergoing pulmonary lobectomy. Age was the strongest independent predictor, and patients who developed POAF had higher CHA_2DS_2-VASc scores, with values between 5-7 indicating significantly increased risk. Since current literature supporting the use of antiarrhythmic prophylaxis for POAF in non-cardiac surgery is controversial, trials for POAF prophylaxis should target this patient population.

Odds Ratios with 95% Wald Confidence Limits
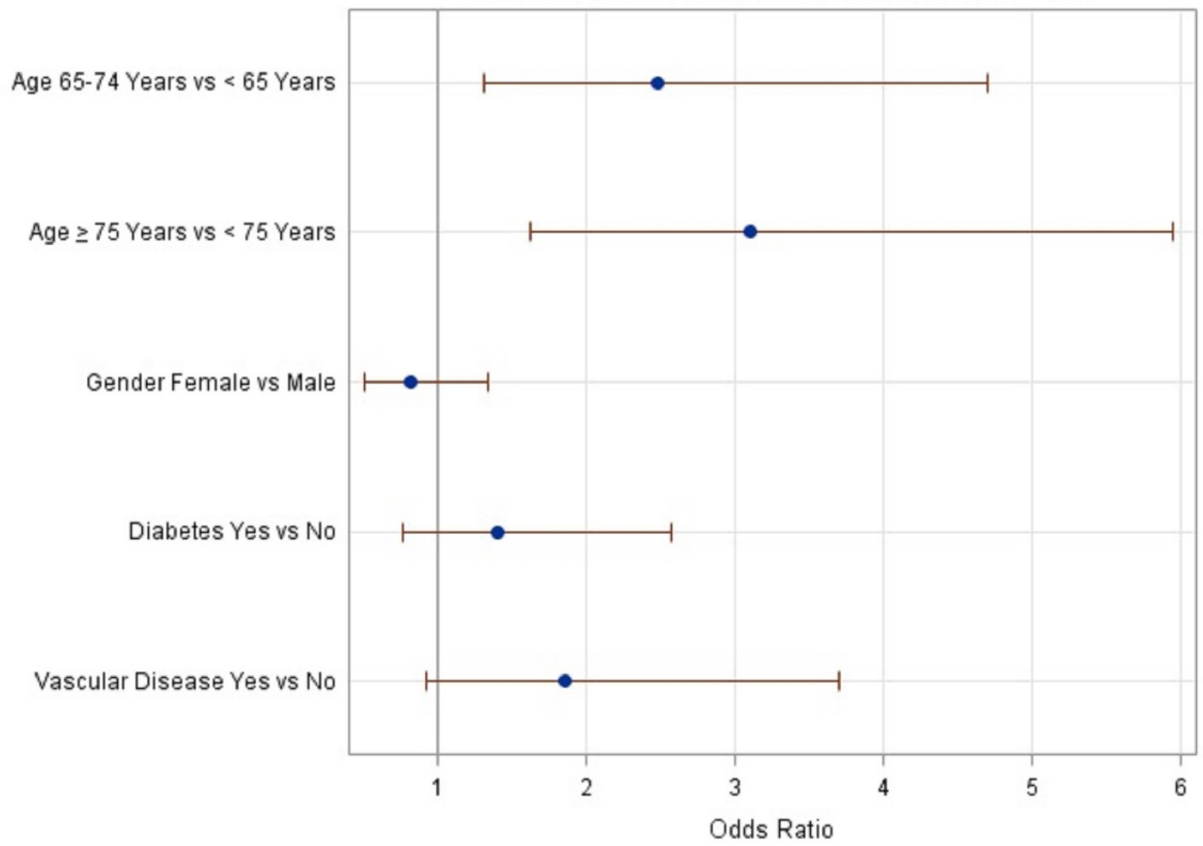
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